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**Thirty-second Meeting of States Parties to
the United Nations Convention on the Law of the Sea**
New York, 13-17 June 2022
Item 13 of the provisional agenda*
**Election of twenty-one members of the Commission on
the Limits of the Continental Shelf**

Complete curricula vitae of the candidates nominated by State parties for the election of 21 members of the Commission on the Limits of the Continental Shelf

Note by the Secretary-General

Introduction

The Secretary-General hereby submits to the Meeting of States Parties to the United Nations Convention on the Law of the Sea the curricula vitae of the candidates nominated by State parties for the election of 21 members of the Commission on the Limits of the Continental Shelf.¹

¹ With the exception of personal information, which has been excised for privacy purposes when present, the curricula vitae of the candidates are reproduced as received from the nominating States, without editing.

* [SPLOS/32/L.1](#).

Al Azri, Adnan Rashid (Oman; nominated by: Oman)

PERSONAL INFORMATION

Nationality: Omani

Year of birth: 1967

Languages:

Arabic (native speaker)

English (fluent, spoken and written)

French (basic)

Research Gate: <https://www.researchgate.net/profile/Adnan-Al-Azri>

NASA:

<https://earthdata.nasa.gov/learn/user-resources/who-uses-nasa-earth-science-data-user-profiles/user-profile-adnan-al-azri>

ACADEMIC QUALIFICATION

Doctor of Philosophy in Biogeochemistry, 2003 University of North Wales, United Kingdom.

Master of Sciences in Oceanography, 1995 Florida Institute of Technology, United States of America.

Bachelor of Science in Marine Sciences & Fisheries, 1991 Sultan Qaboos University, Oman.

WORK EXPERIENCE AND SKILLS

Projects management skills

Leadership skills

Reasonable skills in drafting, negotiation of contracts

Computer skills and application software including Geocap, Arc Marine GIS, Fledermouse.

Extensive experience as instructor, communicator and mentor

Experience in dealing with diplomatic negotiations

PROFESSIONAL EXPERIENCE

2021-Present - Acting Head, Office of the Continental Shelf and Maritimes Affairs, Ministry of Foreign Affairs.

2019- Present - Chair of the Commission on the Limit of the Continental Shelf (United Nations).

2014-Present - Diplomate (Ambassador), Advisor on Oman Continental Shelf Extension Project, Office of the Continental Shelf and Maritimes Affairs, Ministry of Foreign Affairs.

2011-2014 - Secondment in the Office of the Continental Shelf and Maritimes Affairs, Consultant Continental Shelf Extension Project, Ministry of Foreign Affairs.

2012-2014 - Associate Professor in Department of Marine Sciences and Fisheries, Sultan Qaboos University, Head of Oceanography Group and Technical Member of Oman continental shelf extension committee Ministry of Foreign Affairs.

2011-2016 - Technical expert responsible for the hydrographic and geological data component of the Oman Submission to the Commission on the Limits of the Continental Shelf.

2008-2011 - Member of the Oman technical group for the Desktop Study for the Extension of the Oman Continental Shelf. Discussion and follow up with GNS Science and other international data center to acquire necessary data for the Oman Continental Shelf Project.

2003-2012 - Assistant Professor in Department of Marine Sciences and Fisheries, Sultan Qaboos University, Head of Oceanography group and Technical member of Oman continental shelf extension committee Ministry of Foreign Affairs.

1995-2003 - Lecturer in Department of Marine Sciences and Fisheries, Sultan Qaboos University.

1991-1995 - Demonstrator in Department of Marine Sciences and Fisheries, Sultan Qaboos University.

PROFESSIONAL PROFILE

Dr Al Azri is an Oceanographer with 29 years of working experience at national and international levels in academic and research. He has over 25 years of academic experience, involving teaching a wide range of subjects including biogeochemical/ecological processes to climate change, supervising and examining postgraduate students at Sultan Qaboos University and international universities. His research focuses on marine oceanography, coastal surveys, marine environmental aspects, environmental impact assessment, marine geology and climate change. He was in charge of the oceanography group at the national level and was significantly involved in research exchange programs with international universities, institutes and research centers. Dr Al Azri has participated in various international conferences and authored many scientific papers in peer review journals and book chapters. Since 2008, he was seconded and later moved to the Ministry of Foreign Affairs to take charge of the Omani continental shelf extension project. He was in charge of the geological/geophysical survey and follow up on the multi-disciplinary tasks required for the project such as but not limited to: contracting consultant on the project, developing desktop study, developing training program and strategic plan (2019-2030) for Omani candidates, participating in international conferences on implementation of Article 76 of UNCLOS. In 2017, he was elected as a member of the commission on the limits of the continental shelf for a period of 5 years and serving in four subcommissions in which he is a vice-chair on two of them. In 2019, he was elected as a Chair of the commission on the Limits of the Continental Shelf (CLCS).

PROFESSIONAL EXPERIENCE RELATED TO CONTINENTAL SHELF STUDIES

Involved in the scientific, technical, administrative and negotiation activities of the Oman Continental Shelf Extension project.

Assisted in the development of the Oman preliminary submission of the technical summary.

Worked closely with consultant to develop desktop study and collection of data required for the development of submissions to CLCS in New York.

Consulting with government officials and stakeholders on issues related to continental shelf such as preparing written and oral advice and recommendations on consultancy and scientific surveys.

Managing and reporting on project implementation and monitoring project performance. Direct involvement with GNS Science to co-organize inception workshop on article 76 in Muscat, Oman in March 2014. In charge of administrative and technical aspects of the continental shelf project survey.

Advising the OCSE committee on surveys and data analyses.

Develop proposals and implementation plan to mentor technical and legal candidates of the OCSE project.

**UNITED NATIONS AFFILIATION
COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF (CLCS)**

2019 - Chair of CLCS.

2019 - Vice-Chair of the Subcommission considering Submission made by Palau.

2018 - Vice-Chair of the Subcommission considering Submission made by Spain

2017 - Vice-Chair of the Subcommission considering Submission made by France in the areas of La Reunion and Saint Paul and Amsterdam.

2017 - Member of Subcommission considering the Submission made by Portugal.

2017 - Member of Subcommission considering the Submission made by Cote D'Ivoire.

2017 - Elected member of CLCS

**NATIONAL AND INTERNATIONAL CONFERENCES AND SYMPOSIA ON
UNCLOS**

Participated in the 10th ABLOS Conference: "Opportunities and challenges in the governance of the planet ocean" Monaco 8-9 October 2019.

Participated in the sixth international symposium on scientific and legal aspects of the regimes of the continental shelf and the area. Wuzhen, China June 2018.

Invited as a keynote speaker at the 4th International symposium on the law of sea. 20th anniversary of the commission on the limits of the continental shelf, achievements and challenges. Expectations and challenges of submissions: logistical and technical aspects. Tokyo Japan December 2017.

Participated in the 8th ABLOS Conference: "advances in managing the blue world" Monaco 20-22 October 2015.

Co-Organized and participated in the workshop organized by UK Hydrographic Office: "Sultanate of Oman Technical Aspects of Maritimes Boundaries, Baselines and Outer Continental Shelf". Muscat 31 May- 6 June 2015.

Co-organized and Participated in the workshop organized by GNS science "UNCLOS article 76" Muscat, Oman, 17-19 March 2014.

Participated in ABLOS Seminar and Presented a paper "The Sultanate of Oman Continental Shelf Extension Project: An overview" Muscat, Oman 30-31 October 2013.

Participated in the Sixth ABLOS Conference: "Contentious Issues in UNCLOS" Monaco 25-27 October 2010.

Participated in the conference on the Law of the Sea "The Current Problematic Issues in the Law of the Sea" Dublin, Ireland 3 - 4 June 2010.

Participated in ABLOS Conference "Difficulties in implementing the provisions of UNCLOS" Monaco 16 -17 October 2008.

MEMBERSHIP/ PROFESSIONAL SOCIETIES

Member of the American Society of Limnology and Oceanography (ASLO). Regional representative of the Integrated Marine Biogeochemical and Ecological Research (IMBER).

Member of Scientific Committee on Oceanic Research SCOR (USA) on harmful algal blooms.

Member of the Steering Committee of the Sustained Biogeochemistry and Ecosystem Research (SIBER).

Apaalse, Lawrence Asangongo (Ghana; nominated by: Ghana)

PERSONAL DATA

Name: Lawrence Asangongo Apaalse
Date of Birth: 05 April 1959
Languages: English (Fluent), Russian (Satisfactory)

CURRENT POSITION

Chief Director, responsible for initiating energy policy formulation, monitoring and evaluation as well as supervision and coordination of activities of all Ghana's sixteen (16) Agencies under the Ministry of Energy.

EDUCATION

- Diploma, Rhodes Academy of Oceans Law & Policy- July 2014
- M.Sc. Micropaleontology, University College London, UK - August 2000
- M. Sc. Petroleum Geology. Russian State University of Oil & Gas, Moscow - June 1990

(Thesis: Geological structures, oil and gas content and a project of exploratory drilling in the North-Kluchovskaya area, Volgograd Province)

WORK EXPERIENCE

- Twenty-five (25) years work experience as a Petroleum Geologist in the National Oil Company, Ghana National Petroleum Corporation (GNPC).
- Subsurface geological studies of the Sedimentary Basins of Ghana, as well as wellsite geological duties.
- Undertook South Tano Albian Reservoir studies at Kosmos Energy, Dallas, Texas in August 2005 that impacted on Komos' decision to drill the Mahogany-1 well, which led to the discovery of the Jubilee Field, offshore Ghana.

PROFESSIONAL TRAINING

- Delineation of the outer limits of the continental shelf beyond 200 nautical miles and preparation of submissions to the Commission on the Limits of the Continental Shelf, organized by the Division for Ocean Affairs and the Law of the Sea (DOALOS), 5-9 December 2005, Accra, Ghana.
- Exclusive Economic Zone Management & Operations Course, organized by Ghana Armed Forces Command & Staff College (GAFSC) in conjunction with the Maritime Warfare School, HMS Collingwood of the Royal Navy, 6-17 February 2006, Ghana.
- International Boundary Research Unit (IBRU) workshop on Negotiating International Boundary, 7-9 April 2008, Durham University, UK
- International Boundary Research Unit (IBRU) Workshops on Maritime Boundary Delimitation & Managing Transboundary Resources, 20-24 July 2009, Durham University, UK.
- International Boundary Research Unit (IBRU) workshop on Boundary Dispute Resolution, 12-14 April 2010, Durham University, UK
- Caris Lots v4.0 Training by the Federal Institute for Geosciences and Natural Resources (BGR) of Germany, Accra, August 25 – September 05, 2008
- Seismic Micro Technology (SMT) Version 8.2 workstation.
- European Computer Driving License. British Computer Society, UK, 2000.

ACTIVITIES RELATING TO THE WORK OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF (CLCS)

- Served in the National Continental Shelf Advisory Committee (NCSAC) that drafted a Justification Report and Cabinet Memo for the establishment of the Ghana National Continental Shelf Delineation Project (GNCSDP) in August 2006.
- Led a team of geoscientists to carry out Desktop study for the implementation of Article 76 in Ghana.
- Project Coordinator of the Ghana National Continental Shelf Delineation Project (GNCSDP) and Head of Technical Core Group responsible for the preparation of Ghana's submission to CLCS for the Establishment of the Outer Limits of the Continental Shelf beyond 200 nautical miles in accordance with Article 76 of UNCLOS.
- Made presentation on Ghana's Submission to the Commission on the Limits of the Continental Shelf (CLCS), 24th Session, New York, August 26, 2009.
- Coordinated the planning and execution of a €4 million seismic data acquisition for the implementation of Article 76 Project in Ghana.
- Led the Technical Team of Environmental Solution Ltd (ESL), Ghana, to carry out Article 76 Desktop study for the Republic of Liberia.
- Resource Person & Guest Speaker "Delimitation of Maritime Space: Continental Shelf beyond 200 nautical miles". Pan African Conference on Maritime Boundaries & Continental Shelf for the implementation of the African Union Border Programme (AUBP), November 9 – 10, 2009, International Conference Centre, Accra, Ghana.
- Participated in the International Workshop on "Sharing Experiences on the Delineation of the Outer Limit of the Continental Shelf" organized by the National Commission on the Outer Limit of the Continental Shelf of Argentina (COPLA), Buenos Aires, 12-14 October 2011.
- Guest Speaker "Desktop Study for the Establishment of the Outer Limits of the Continental Shelf of Ghana beyond 200 Nautical Miles", 12th International User Group Conference & Educational Session. Make a Spatial Connection @ Caris 2008, Bath, UK.

OTHER SPEAKER ENGAGEMENTS

- Guest Speaker "The State of Maritime Boundaries in the Gulf of Guinea: Implications for E&P Operations", CWC Ghana Summit, April 12-14, 2011.
- Guest Speaker "Ghana Oil: Upstream Overview & Business Opportunities", 5TH German African Energy Forum, Hamburg, Germany, April 04, 2011
- Guest Speaker "Jubilee Oil Production: Quantum & Significance", 6th Exclusive Economic Zone Management & Operations Course, Ghana Armed Forces Command & Staff College (GAFSC), February 18, 2011.
- Guest Speaker "Status of the Petroleum Industry in Ghana with reference to Legal Framework, Environmental & Security Challenges". Presentation to Parliamentarians at the PETRAD Oil for Development Workshop, Accra, September 07, 2010.

PUBLICATIONS

1. Lawrence Apaalse & Edwin Egede (2010) Ghana's Extended Continental Submission to the Commission on the Limits of the Continental Shelf under Article 76 of the Law of the Sea Convention 1982. Sri Lanka Journal of International Law, Vol. 22 (1), pp141-172.
2. A. B. Arkaah et al, (2005) Early Paleogene Climate and Productivity of the Eastern Equatorial Atlantic, off the western coast of Ghana, QUATERNARY INTERNATIONAL.
3. T. Manu, I. Botchway, L. Apaalse (2005) Petroleum Exploration Opportunities in the Keta area. THE VOLTA MONITOR, Vol. 1, 2005.
4. L. Apaalse (1997) Cretaceous and Tertiary Palynomorphs from the South Tano-9H well, offshore South Tano Field, Ghana, Abstract, IGCP Project 381 SAMC NEWS No.7, P25, June 1997.

PROFESSIONAL ASSOCIATIONS

Current Membership:

- Member, Ghana Institution of Geosciences (GhIG)
- Ghana Boundary Commission

Previous Membership:

- Member, Ghana National Commission for UNESCO Natural Science Committee
- Member, Ghana National Committee for the Intergovernmental Oceanographic Commission (GNC/IOC)
- American Association of Petroleum Geologists (AAPG)
- National Representative, IGCP Project No. 381 - South Atlantic Mesozoic Correlation (SAMC)

REFEREES

Mr. R. A. Ajene

P. O. Box 702,
Bolgatanga, UER.

Dr. Paul Bown

Dept. of Geological Sciences
University College London
Gower Street
London WC1E 6BT

Brekke, Harald (Norway; nominated by: Norway)

Date of birth: 22 May 1953
Place of Birth: Vik i Sogn, Norway
Nationality: Norwegian

EDUCATION

1978 - 1983 University of Bergen, Norway - Cand. real degree (Masters/Ph.d equivalent) in hard rock geology
1975 - 1977 Agder University College, Kristiansand, Norway - Additional exams in mathematics, statistics and computer programming as well as exams in philosophy and physics
1973 - 1975 Agder University College, Kristiansand, Norway - College degree in analytical chemistry

EMPLOYMENT RECORD

1973 Teacher of mathematics and physical education at Chongwe Secondary School, Zambia
1975 Teacher of chemistry at Agder Regional College, Norway
1980 - 1983 Part-time research assistant at the Geological Institute, University of Bergen, Norway
1983 - 1984 Full-time research assistant at the Geological Institute, University of Bergen, Norway
1984 - Senior Geologist and Project Coordinator in the Exploration Department in the Norwegian Petroleum Directorate (NPD), Stavanger, Norway.
1996 - Technical advisor to the Norwegian Government on the delineation of the Norwegian continental shelf
2000 - Member of national committee on the delineation of the continental shelf of Norway

In capacity as senior geologist and project coordinator in the Norwegian Petroleum Directorate (NPD), I have had the following tasks and responsibilities:

- Geological/geophysical mapping of the geology and petroleum resources of the Norwegian continental shelf
- Petroleum resource assessment on regional and national scale
- Planning and development of resource assessment methods and tools
- Evaluation of company applications for new exploration licences
- Acted as NPD coordinator for application rounds for exploration licences on the Norwegian Continental Shelf
- Providing technical advice to Ministry of Industry and Energy
- Representing the NPD in various geoscientific programmes involving universities and industry
- Giving external presentations on the geology, perspective and resources of the Norwegian continental shelf at various conferences on behalf of NDP
- Advisor to the Namibian State Oil Company (NAMCOR) under the Norwegian Foreign Aid Programme (1990-1994)
- Lecturing on the petroleum resources of the Arctic region at the University of Svalbard

EXPERIENCE RELATED TO GEOSCIENCE OF THE POLAR REGIONS

In capacity of project coordinator for the mapping of the outer limits of the continental shelf of Norway and joint Norwegian-Russian geo-scientific mapping projects on the continental shelf of the Barents Sea, I refer to the following responsibilities and activities:

- Cruise Leader for marine geophysical data acquisition by icebreaker in the Arctic Ocean (2001, 2005)
- Government adviser and technical coordinator for the mapping and establishment of the outer limits of the continental shelf, including the continental shelves of the Arctic (Barents Sea) and Antarctic (Dronning Maud Land and Bouvetøya).
- Coordinator and national point of contact for the annual meetings at technical/diplomatic level between the five Arctic Ocean states (Canada, Denmark, Norway, Russia and USA) regarding the mapping and establishment of the outer limits of the continental shelf in the Arctic Ocean.
- Coordinating joint Norwegian-Russian geo-scientific and boundary mapping projects on the continental shelf of the Barents Sea (1996 – to date).
- Coordinating NPD funded Norwegian scientific programs for geo-scientific research and data acquisition in the Arctic Ocean, the Barents Sea and the Southern Ocean.
- Given specific review and advice on the scientific research and documentation regarding the submissions on the outer limits of the continental shelf in the Arctic for Canada, Denmark, Norway, Russia and USA.

ACTIVITIES RELATED TO THE LAW OF THE SEA

International positions

1997 - 2002	Member of the first Commission on the Limits of the Continental Shelf
2002 - 2007	Member of the second Commission on the Limits of the Continental Shelf
2007 - 2012	Vice-Chairman of the third Commission on the Limits of the Continental Shelf
2012 -	Member of the Legal and Technical Commission of the International Seabed Authority
2021 -	Chair of the Legal and Technical Commission of the International Seabed Authority

Preparation for CLCS

Member of the Group of Experts convened in September 1995 by the United Nations Secretariat to prepare for the Establishment of the Commission on the Limits of the Continental Shelf. Member of the core group within the Group of Experts that worked out a draft for a list of scientific documentation required for making claims for the outer limits of the continental shelf.

Commitments as member of CLCS

As a member of the Commission, I have devoted much time contributing to the documents it has produced. During my three terms in the Commission, I have filled the following positions:

- Chairman of one of the six working groups set up to formulate the scientific and technical guidelines
- Chairman of the working group that drew up the final chapter on delineation of the outer limits of the continental shelf based on sediment thickness.
- Chairman of the Editorial Committee in 2002 - 2004 when the Commission undertook a major revision of the Rules of Procedures of the Commission
- Chairman of the Training Committee since 2004
- Expert adviser to the Sub-commission set up to consider the submission made by Brazil, regarding seismic interpretation and sediment thickness analyses.
- Chairman of the Sub-commission set up to consider the submission made by Australia.

- Chairman of the Sub-commission set up to consider the submission made by New Zealand.
- Member of the Sub-commission set up to consider the submission made by France with regard to French Guiana and New Caledonia
- Vice-Chairman of the Sub-commission set up to consider the submission made by The United Kingdom of Great Britain and Northern Ireland with regard to the Ascension Island.
- Chairman of the Sub-commission set up to consider the submission made by Japan
- Member of the Sub-commission set up to consider the submission made by France with regard to the French Antilles and the Kerguelen Islands
- Member of the Sub-commission set up to consider the submission made by Philippines with regard to the Benham Rise region.
- Appointed acting Chairman of the CLCS for its twenty-seventh session, March – August 2011.

Advice to coastal States

Named in Executive Summaries of submissions made to the CLCS by coastal States, I have given advice regarding the delineation of the continental shelf as follows:

- Participated in the preparation of the submissions made by Bahamas, Iceland, Madagascar, Mauritius, Nigeria, Seychelles and Sri Lanka.
- Given review of the submissions made by Bangladesh, Canada, Denmark, Iceland, Kenya, Mozambique, Russia, South Africa.
- Co-ordinator and advisor to the joint project that prepared the submissions made to the CLCS by Mauretania, Senegal, Cape Verde, Gambia, Guinea, Guinea Bissau and Sierra Leone.

The DOALOS training courses

I and my fellow Commission member, Mr Galo Carrea, were the two scientific editors of the DOALOS Training Course on *the delineation of the continental shelf and the preparation of a submission to the CLCS*, in accordance with CLCS/24/Corr. 1. DOALOS have, in collaboration with respective Governments, arranged a series of regional five-day training courses, with a special aim to assist developing States, in Fiji, Sri Lanka, Ghana, Argentina and Colorado. Mr Carrera and I compiled the scientific and technical contents for the DOALOS Training Manual and prepared the material for the presentations to be held at these courses.

Lectures and training courses

I was one of the two scientific editors preparing the manual and the presentation material for the DOALOS Training Course on *the delineation of the continental shelf and the preparation of a submission to the CLCS*.

I have been a frequently invited lecturer at law of the sea conferences, academic courses, and workshops on the topics of delineation of the continental shelf, and international deep sea minerals management.

LIST OF PUBLICATIONS: Publications by Harald Brekke

- Brekke, H. 1999. *Range of Systematic Error in the Positioning of the Outer Limit of the Continental Shelf as Determined from Sediment Thickness*. In: *Proceedings of the International Conference on Technical Aspects of Maritime Boundary Delineation and Delimitation, 8-9 September 1999*, International Hydrographic Bureau, Monaco, 287 p.
- Brekke, H. 2000. *The tectonic evolution of the Norwegian Sea Continental Margin with emphasis on the Vøring and Møre Basins*. In: A. Nottvedt et al. (Editors), *Dynamics of the Norwegian Margin*. Geological Society, London, Special Publications, 167: 327-378.

- Brekke, H. 2014. *Defining and recognizing the outer limits of the continental shelf in the polar regions*. In: R. Powell and K. Dodd (Editors), *Polar Geopolitics? Knowledges, Resources and Legal Regimes*. Edward Elgar Publishing Ltd., Celtenham, UK; Northampton, MA, USA.: 38 - 54.
- Brekke, H. 2018. *Towards Establishing a Regime for Seabed Jurisdiction: The Role of the Commission*. In: Nordquist, M. H, Moore, J. N. and Long, R. (eds), *Legal Order in the World's Oceans*. Centre for Oceans Law and Policy, vol 21, Brill, Nijhoff, 269-287. https://doi.org/10.1163/9789004352544_015.
- Brekke, H. 2020. *Setting Maritime Limits and Boundaries: Experiences from Norway*. In Banet, C. (ed), *The Law of the Seabed*. Publications on Ocean Development, vol 90, Brill, Nijhoff, 85-103. DOI: https://doi.org/10.1163/9789004391567_006.
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- Brekke, H. & Solberg, P. O. 1987. *The Geology of Atløy, Sunnfjord, western Norway*. Norges geologiske undersøkelse Bulletin, vol 410, 73-94.
- Brekke, H. and Symonds, P. A. 2004. The Ridge Provisions of Article 76 of the UN Convention on the Law of the Sea. In: Nordquist, M. H., Norton Moore, J. and Heidar, T.H. (eds), *Legal and Scientific Aspects of Continental Shelf Limits*. Martinus Nijenhoff Publishers, 169 - 199.
- Brekke, H. and Symonds, P. A. 2011. *Submarine ridges and elevations of Article 76 in light of published summaries of recommendations of the Commission on the Limits of the Continental Shelf*. Ocean Development and International Law, 42:4, 289-306.
- Brekke, H. and Kalheim, J.E 1996. *The NPD Assessment of the Undiscovered Resources of the Norwegian Continental Shelf - Background and Methods*. In Dore, T. (Ed). *Quantification and Prediction of Hydrocarbon Resources*. Norwegian Petroleum Society, Special Publication No 6. Amsterdam, Elsevier, 91-104.
- Brekke, H., Furnes, H., Nordås, J. and Hertogen, J. 1984. *Lower Palaeozoic convergent plate margin volcanism on Bømlo, SW Norway, and its bearing on the tectonic environments of the Norwegian Caledonides*. J. Geol. Soc. London, vol 141, 1015-1032.
- Brekke, H., Kalheim, J.E., Riis, F., Egeland, B., Blystad, P., Johnsen, S. and Ragnhildstveit, J. 1992. *Two-way time map of the unconformity at the base of the Upper Jurassic (north of 69°N) and the unconformity at the base of the Cretaceous (south of 69°N), offshore Norway, including the main geological trends onshore*. Scale 1:2 mill. NPD Continental Shelf Map No. 1. The Norwegian Petroleum Directorate/The Geological Survey of Norway.
- Brekke, H., Amalixsen, K.G., Færseth, R.B., Jorde, K., Naterstad, J., Nilsen, E., Nordås, J., Ragnhildstveit, J. and Ree, R. 1993. *Bømlo bedrock map 1114 2, 1:50 000, black and white edition*. Geological Survey of Norway.
- Brekke, H., Dahlgren, S., Nyland, B. and Magnus, C. 1999. *The prospectivity of the Vøring and Møre basins on the Norwegian Sea continental margin*. In: A. J. Fleet and S. A. R. Boldy (Editors), *Petroleum Geology of Northwest Europe: Proceedings of the 5th Conference*. Geological Society, London, 261-274.
- Brekke, H., Sjulstad, H. I., Magnus, C. and Williams, R. W. 2001. *Sedimentary environments offshore Norway – an overview*. In: O.J. Martinsen and T. Dreyer (Editors), *Sedimentary Environments Offshore Norway – Palaeozoic to Recent*. NPF Special Publication No 10, Elsevier, Amsterdam, 7-37.

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- Braathen, A. and Brekke, H. 2020. *Characterizing the Seabed: a Geoscientific Perspective*. In Banet, C. (ed), *The Law of the Seabed*. Publications on Ocean Development, vol 90, Brill, Nijhoff, 21-35. DOI: https://doi.org/10.1163/9789004391567_003
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- Eidvin, T., Brekke, H., Riis, F. and Renshaw, D. K. 1998. *Neogene and Upper Paleogene Stratigraphy on the Mid-Norwegian Continental Shelf*. Norsk Geologisk Tidsskrift vol. 78, 125-151.
- Eidvin, T., Jansen, E., Rundberg, Y., Brekke, H. and Grogan, P. 2000. *The upper Cainozoic of the Norwegian continental shelf correlated with the deep sea record of the Norwegian Sea and the North Atlantic*. Marine and Petroleum Geology, 17: 579-600.
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- Kalheim, J.E. and Brekke, H 1996. *The Usefulness of Resource Analysis in National Economic Planning - Examples From the Norwegian Shelf*. In Dore, T.(Ed). *Quantification and Prediction of Hydrocarbon Resources*. Norwegian Petroleum Society, Special Publication No 6, Amsterdam, Elsevier, 313-324.
- Kristoffersen, Y., Coakley, B., Jokat, W., Edwards, M., Brekke, H., Gjengedal, J., 2004. *Seabed erosion on the Lomonosov Ridge, central Arctic Ocean: A tale of deep draft icebergs in the Eurasia Basin and the influence of Atlantic water inflow on iceberg motion?* Paleoceanography 19(3).
- Larsen, R.M., Brekke, H., Larsen, B.T. and Talleraas, E. (Editors), 1992. *Structural and Tectonic Modelling and its Application in Petroleum Geology*. Norwegian Petroleum Society, Special Publication No. 1. Amsterdam, Elsevier, pp 549.
- Madureira, P., Brekke, H., Cherkashov, G. and Rovere, M. 2016. Exploration of polymetallic nodules in the Area: Reporting practices, data management and transparency. Marine Policy 70, 101-107. <http://dx.doi.org/10.1016/j.marpol.2016.04.051>
- Mjelde, R., Digranes, P., Shimamura, H., Shiobara, H., Kodaira, S., Brekke, H., Egebjerg, T., Sørenes, N., Thorbjørnsen, S., 1998. *Crustal structure of the southern part of the Vøring Basin, Mid-Norway Margin, from wide-angle seismic and gravity data*. Tectonophysics 293(3):175-205.

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- Padget, P. and Brekke, H. 1996. *Arendal, Bedrock Map*. Scale 1 : 250 000. Norwegian Geological Survey.
- Soloviev, A. V., Zaionchek, A. V., Suprunenko, O. I., Brekke, H., Faleide, J. I., Rozhkova, D. V., Khisamutdinova, A., Stolbov, N.M., Hourigan, J. K., 2015. *Evolution of the Provenances of Triassic Rocks in Franz Josef Land: U/Pb LA-ICP-MS Dating of the Detrital Zircon from Well Severnaya*. Lithology and Mineral Resources 50(2):102-116.
- Symonds, P.A. and Brekke, H. 2004. *A Scientific Overview of Ridges Related to Article 76 of the UN Convention on the Law of the Sea*. In: Nordquist, M. H., Norton Moore, J. and Heidar, T.H. (eds), *Legal and Scientific Aspects of Continental Shelf Limits*. Martinus Nijenhoff Publishers, 141

Carandang, Efren Perez (Philippines; nominated by: Philippines)

Deputy Administrator
National Mapping and Resource Information Authority
Department of Environment and Natural Resources
Republic of the Philippines

PERSONAL INFORMATION

Year of Birth: 1961
Place of Birth: Calamba City, Philippines
Languages: Filipino and English

CORE COMPETENCIES

Thirty-eight (38) years of combined experience in Hydrography, Extended Continental Shelf Studies and Law of the Sea, Maritime Boundary Delimitation, Maritime Policy, Geospatial Information Management, Physical Oceanography, Land Surveys and Mapping, Strategic Planning, Quality Management Systems, Human Resource and Organizational Development

ELIGIBILITIES

- FIG/IHO Category B Hydrographic Surveyor
- Career Executive Service Officer (CESO) II
- Licensed Civil Engineer
- Career Executive Service Assessor and Validator

PROFESSIONAL EXPERIENCE

Deputy Administrator, 2010 - Present
National Mapping and Resource Information Authority

- Project Manager of the Philippine Extended Continental Shelf (ECS) Project which prepared and successfully defended the Philippine submission for an ECS in the Benham Rise (now Philippine Rise) Region
- Member of Philippine Maritime Boundary Delimitation (MBD) Panel; Chairperson of the Philippine MBD Technical Team
- Chairperson of the Inter-Agency Technical Working Group (TWG) on Geographical Names and TWG on Undersea Feature Names
- Member of Philippine Delegation to the ASEAN-China Joint Working Group on the Implementation of the Declaration on the Conduct of Parties in the South China Sea
- Alternate Member of the National Task Force for the West Philippine Sea, representing the Department of Environment and Natural Resources
- Philippine Alternate Chairperson of UN Global Geospatial Information Management (GGIM) Working Group on Disasters (2015-2018) which formulated and conducted global consultations for the GGIM Strategic Framework on Geospatial Information and Services for Disasters – adopted by the UN Economic and Social Council in July 2018
- Supervising Deputy Administrator for the Geospatial Information Management Branch (GISMB) and Resource Data Analysis Branch (RDAB) for seven (7) years; currently supervising the Hydrography Branch (HB) and Mapping and Geodesy Branch (MGB)
- Former Quality Management Representative; led the establishment of NAMRIA's Quality Management System conforming to ISO 9001-2008 and later to ISO 9001-2015 standards

- Resource Person providing technical support to national and regional initiatives on maritime and ocean concerns, including deliberations in the Senate and House of Representatives on proposed maritime-related legislations.
- Philippine representative to UN Global Geospatial Information Management (GGIM), International Seabed Authority, and UN Group of Experts on Geographical Names
- NAMRIA's Human Resource and Organizational Development Champion, and Chairperson of NAMRIA Personnel Selection Board
- NAMRIA's Open Data Champion

Director, Engineering Services Department, 2000 - 2010
National Mapping and Resource Information Authority

- Head of NAMRIA's Development Studies and Standards Office which prepared the long and medium-term strategic plans of the agency; formulated policies; developed and managed linkages with local and international partner-agencies; packaged and managed the ECS Project and Philippine Geodetic Reference System Project
- Resource Person/Lecturer on the Technical Aspects of the Law of the Sea, the National Territory, and Maritime Zones and Boundaries
- Member of Philippine Panel on Philippines-Indonesia and Philippines-Vietnam Joint Permanent Working Group on Maritime and Ocean Concerns; and Philippines-Indonesia Maritime Boundary Delimitation
- Supervised the agency's information technology infrastructure support, electronics and telecommunications, physical facilities and transport groups
- Special Technical Assistant to the Administrator of NAMRIA

Chief, Oceanography Division, 1993 - 1999
National Mapping and Resource Information Authority

- Assisted in the formulation of the National Marine Policy which was approved by the President in 1994 in conjunction with the coming into force of the UN Convention on the Law of the Sea
- Advanced the international data exchange capability of the National Oceanographic Data Center
- Prepared the proposal for the modernization of the national marine environmental surveys which led to the agency's acquisition of two state-of-the-art, multi-disciplinary survey vessels and upgrading of the agency's nautical charting capability
- Served as member of the Editorial Board of the International Bathymetric Charts of the Western Pacific, and South China Sea Group of Experts on Hydrographic Data and Information Exchange
- Served as member of the Technical Committee of the Cabinet Committee on Maritime and Ocean Affairs

Hydrographic, Geodetic and Oceanographic Surveyor, 1984 - 1993
National Mapping and Resource Information Authority
(formerly Bureau of Coast and Geodetic Survey)

- Philippine Study Leader of the ASEAN-Australia Regional Ocean Dynamics Project
- Head of the Electronic Data Processing Unit
- Hydrographic, Geodetic and Oceanographic Survey Officer onboard Republic of the Philippines Ship ARLUNYA
- Survey Officer for the Metro Manila Graphic Information Base Project

PROFESSIONAL TRAININGS, SEMINARS AND LEARNING EVENTS

Group Training Course in Hydrographic Surveying (1990)
 Japan Hydrographic Department

Series of Seminars and Workshops on the Preparation and Defense of Extended Continental Shelf Submission (2007-2009)

UN Division of Ocean Affairs and Law of the Sea (held in Brunei Darussalam), Mexican Foreign Affairs Ministry, GNS Science New Zealand, and NAMRIA

Oceanographic Research Cruise in the Western Pacific Ocean onboard TAKUYO MARU (1988) Japan Hydrographic Department

Regional Ocean Dynamics Collaborative Research and Data Evaluation
Australia, Singapore, Malaysia, Thailand, Indonesia and Brunei

More than 50 short courses and seminars on 1982 UNCLOS, maritime zones and boundaries, hydrography, oceanography, geodesy, mapping, remote sensing, GIS, geospatial information management

USA, Canada, France, Spain, Monaco, China, Japan, Australia, New Zealand, Mexico and ASEAN

Establishment of Quality Management Systems Certifiable to ISO 9001-2008 and ISO 9001-2015 Development Academy of the Philippines

Strategic Planning (2013)

PH-Australia Human Resource and Organizational Development Facility

Strategic Human Resource Transformation and Organizational Development (2011)

Pennsylvania State University

Integrated Executive Leadership Program (Gabay, Salamin and Diwa ng Paglilingkod sa Bayan) Career Executive Service Board 2002

Seven Habits of Highly Effective People Seminar (2000) and Power Principle Seminar (2003)
Franklin Covey/Center for Leadership and Change, Inc.

PAPERS, PUBLICATIONS AND PUBLIC PRESENTATIONS

The Philippine Extended Continental Shelf Project

Presented in various fora

How the Shelf Was Won

Published in NAMRIA Infomapper (2012)

Bajo de Masinloc, Maps and Documents (co-editor)

Published by the NAMRIA and University of the Philippines-Institute for Maritime Affairs and Law of the Sea (2014)

The Geography of Panay Island, Then and Now (co-author)

Published in the Murillo Bulletin Issue No. 11, by Philippine Map Collectors Society (2021)

Sea Level Monitoring Activities in the Philippines

Presented at the International Conference on Sea Level Monitoring in Tokyo (1991)

Sea Level Variations in the Philippine Islands

Presented at the ASEAN Science and Technology Week Conference, Singapore (1992)

Potential Impacts of Sea Level Rise on the Coastal Resources of Manila Bay (co-author)

Published on Water, Air and Soil Pollution, Vol. 92, Nov. 1996 by the Kluwer Academic Publishers

Physical Characteristics of the Sulu Sea (co-author)

Presented at the International Conference on Regional Ocean Dynamics, Indonesia (1995)

Physical Properties of the Mindanao Sea (co-author)
Presented at the International Conference on Regional Ocean Dynamics (1995)

Uses of Hydrographic Information for Marine Navigation and National Development
Presented at the APAC Conference, Malaysia (2009)

Several papers and lectures on *Extended Continental Shelf, Maritime Zones and Boundaries, Maritime Boundary Delimitation, Archipelagic Sea Lanes, National Territory, 2016 South China Sea Arbitral Award*

Presented in various fora such as the Armed Forces of the Philippines, Department of Foreign Affairs, Philippine Senate and House of Representatives, National Task Force for the West Philippine Sea

EDUCATIONAL BACKGROUND

Master of Business Administration
De La Salle University
Manila, Philippines
March 2003

Bachelor of Science in Civil Engineering
Adamson University
Manila, Philippines
March 1983

OTHER CIVIC AND PROFESSIONAL ACTIVITIES

Member, National Union of Career Executive Service Officers
Board Member, DENR Association of Career Executives
Founding Chairperson, NAMRIA Provident Fund
Member, Committee on Awards - Career Executive Service Board
Member, The Maritime League
Member, Philippine Association of Research Managers, Inc.

AWARDS

2006 Presidential Gawad Career Executive Service, Office of the President - Career Executive Service Board
2003 Most Outstanding Alumnus in the Field of Surveying and Mapping, Adamson University
2003 Huwaring Anak for Public Service, Parangal sa Pamilyang Pilipino Awards
1995 Most Outstanding Employee, NAMRIA-CGSD

Damrat, Mateusz (Poland; nominated by: Poland)

PERSONAL INFORMATION:

Gender: Male
Year of Birth: 1984
Place of birth: Gdynia, Poland
Academic expertise: Marine geology
Employer: Polish Geological Institute - National Research Institute
Languages: Polish (native); English

ACADEMIC QUALIFICATIONS:

- 2021 Postgraduate Degree, General Management, Faculty of Management, University of Warsaw
- 2016 PhD - Earth Sciences - specialization: Marine Geology, Institute of Geological Sciences, at Jagiellonian University, Cracow
- 2011 Engineer's degree in the field of Geology and Mining majoring in Petroleum Geology (Thesis: "Petrophysical variability of Rotliegende deposits in Zalecze gas field"), Faculty of Geology, Geophysics and Environment Protection, AGH University of Science and Technology, Cracow.
- 2009 M. Sc. in the field of Geology, specialization: Mineralogy, Petrology and Geochemistry (Thesis: "Secondary mineralization of (Fe, Zn, Pb) sulfides stored under conditions of limited influence of atmospheric factors"), Institute of Geological Sciences, at Jagiellonian University, Cracow.

PROFESSIONAL EXPERIENCE:

- 2019 - present Director (general) of the Polish Geological Institute - NRI, Polish Geological Survey, Warsaw
- 2018 - 2019 Senior expert in Marine Geology Field, Marine Geology Branch in Gdańsk, Polish Geological Institute - NRI
- 2016 - 2018 Adjunct - researcher, Marine Geology Branch in Gdańsk, Polish Geological Institute - NRI
- 2014 - 2016 Specialist - Marine Geology Programme, Polish Geological Institute - NRI, Gdańsk
- 2013 Assistant geologist in scientific project QUAL (Quantifying climate variability since Late-glacial) in Southern Svalbard, Academy of Finland, Geological Survey of Finland
- 2012 - 2013 Scientific researcher/contractor - in project "Vistula - the main supplier of suspension to the Baltic Sea. Transportation and preservation of terrigenous material in the Gulf of Gdańsk", Department of Marine Ecology, Institute of Oceanology Polish Academy of Science (PAS)
- 2009 - 2014 PhD student, Institute of Geological Sciences, at Jagiellonian University, Cracow

PROFESSIONAL ACTIVITIES:

- 2020 - Vice-President of the Assembly of International Seabed Authority for the 26th session (East European Group)
- 2016 - 2019 Member of the Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem (WGEXT) of international council for the exploration of the sea (ICES)
- 2015 - 2018 Project Contractor from the Polish side in the European Marine Observation and Data Network (EMODnet)
- 2015 -2016 Co-author of the TECHNICAL REPORT on the Interoceanmetal Joint Organization polymetallic nodules project in the Pacific Ocean Clarion-Clipperton Fracture Zone.

AWARDS:

- 2016 Laureate of the Krzysztof Beres Scholarship granted by The Polish Geological Society
- 2014 Best Poster Award - The 12th Colloquium on Baltic Sea Marine Geology, Warnemünde, September 8-12

SELECTED PUBLICATIONS:

- Damrat M. & Warumzer R. 2018. The ascension and intrusion processes of salt water into aquifers along the tectonic discontinuities in the Żarnowieckie Lake area” 25th Salt Water Intrusion Meeting (SWIM 2018), Gdańsk, Poland, Edited by Szymkiewicz, A.; Sadurski, A.; Jaworska-Szulc, B.; E3S Web of Conferences, Volume 54, <https://doi.org/10.1051/e3sconf/20185400006>
- Ojala, A.E.K., Arppe, L., Luoto, T.P., Wacker, L., Kurki, E., Zajączkowski, M., Pawłowska, J., Damrat, M., & Oksman, M. 2016. Sedimentary environment, lithostratigraphy and dating of sediment sequences from Arctic lakes Revvatnet and Svartvatnet in Hornsund, Svalbard. Polish Polar Research, <https://doi.org/10.1515/popore%2016%20005>
- Włodarska-Kowalczyk, M., Mazurkiewicz, M., Jankowska, E., Kotwicki, L., Damrat, M., Zajączkowski, M. 2016. Effects of fluvial discharges on meiobenthic and macrobenthic variability in the Vistula River prodelta (Baltic Sea), Journal of Marine Systems Vol. 157, P. 135-146, <https://doi.org/10.1016/j.jmarsys.2015.12.009>
- Relisko-Rybak J., Damrat M. & Uścińowicz Sz. 2014. Sedimentological paleostructures formed during the Littorina Sea transgression (Pomeranian Bay). The 12th Colloquium on Baltic Sea Marine Geology, Warnemünde, September 8-12, 2014, Abstract Volume, p. 72.
- Damrat, M., Zaborska, A. & Zajączkowski, M. 2013. Sedimentation from suspension and sediment accumulation rate in the River Vistula prodelta, Gulf of Gdańsk (Baltic Sea). Oceanologia 2013, no. 55 (4), p. 937-950, <http://dx.doi.org/10.5697/oc.55-4.937>

Dos Santos de Campos, Aldino Manuel (Portugal; nominated by: Portugal)

PERSONAL INFORMATION

Date of birth: 10 December 1967
Languages: Portuguese (native speaker)
English: (fluent, spoken and written)
French: (independent user)
Spanish: (basic user)

ACADEMIC QUALIFICATIONS

Bachelor in Naval Socio-Military Sciences, 1992, Escola Naval, Lisbon (Portugal);

Specialization in Hydrography (FIG/IHO category A), 1996, School of hydrography and oceanography of the Portuguese Hydrographic Institute, Lisbon, Portugal;

Master of Engineering in Geodesy and Geomatics Engineering, 2001, University of New Brunswick, Fredericton, Canada;

Master of Sciences in Geographic Information Systems, 2002, Instituto Superior Técnico, Lisbon (Portugal);

Diploma on Hydrographic Engineer (with final report on Hydrographic Data Warehousing), 2002, Instituto Hidrográfico, Lisbon (Portugal);

PhD in Territory Engineering (major and thesis in the Extension of the Continental Shelf Project), 2009, Instituto Superior Técnico, Lisbon (Portugal);

PhD in International Relations (major in Globalization and Environment and thesis on Ocean's Governance), 2021, Faculty of Social Sciences – Nova University of Lisbon, Portugal.

PROFESSIONAL EXPERIENCE

- 2017→ Member of the Commission on the Limits of the Continental Shelf (2017-2022)
Member of the Committee of Confidentiality (Vice Chair 2017-20; Chair 2020-22);
Member of the Subcommittee of India.
Member of the Subcommittee of the Kingdom of Tonga (Chair);
Member of the Subcommittee of the Russia with respect to the Arctic Ocean;
Member of the Subcommittee of the joint submission of France and South Africa with respect to Crozet Archipelago and Prince Edward Island (vice-chair);
Member of the Subcommittee of the submission of Sri Lanka (vice-chair).
- 2017→ Research Fellow at the Portuguese Institute of International Relations (IPRI)
- 2016→ Researcher at the Naval Investigation Centre (CINAV – Escola Naval)
- 2016→ 2017 Visiting Professor, Marine related projects (Design and Development) Faculty of Engineering - University of Porto, Porto, Portugal

- 2012→2016 Head of the Portuguese Task Group for the Extension of the Continental Shelf.
- 2009→2021 Lecturer of Geographic Information Systems, Portuguese Naval Academy, Lisbon, Portugal; Lecturer of Geo-Spatial Information Management, Portuguese Naval Academy, Lisbon, Portugal.
- 2009→2021 Lecturer of Geographic Information Systems, Faculty of Sciences of the University of Lisbon, Portugal.
- 2007→2012 Geomatics Coordinator of the Task Group for the Extension of the Continental Shelf; Adviser for the GIS and Hydrography fields in the process of follow up of the Portuguese Submission to the Extension of the Continental Shelf; Technical expert responsible for the Geomatics component of the Portuguese Submission to the Commission on the Limits of the Continental Shelf.
- 2007→2009 Adviser of the Division of Hydrography for Spatial Data Management (Bathymetric Data); Development and maintenance of the Hydrographic Data Warehouse, Portuguese Hydrographic Office.
- 2004→2007 Deputy-head of the Division of hydrography: Permanent consultant of the Portuguese Hydrographic Institute at the Task Group for the Extension of the Continental Shelf (Geomorphometric Analysis Information Systems); Management of the bathymetric information system (HDW); Software design and implementation for the ray tracing analysis of the EM120 and EM710 Multibeam Systems; Software design and implementation for the evaluation of the effort of the Multibeam surveys in deep waters; Software development of Spatial Data Mining tools to assess the quality of the bathymetric coverage on the Hydrographic Data Warehouse; Design and implementation of a remote control system for bridge control to the EM120 Multibeam system (Win32-UNIX); Lecturer at the School of Hydrography and Oceanography of the Portuguese Hydrographic Office (GIS, Spatial Data Bases, Hydrographic, Nautical charting and Computer Sciences); Lecturer of the Hydrography course at the Portuguese Naval Academy (Hydrographic Surveying).
- 2003→2004 Lecturer of Hydrography at Faculty of Sciences of the University of Lisbon, Portugal.
- 2001→2004 Deputy-head of the Technical and scientific Data Centre: Database Administrator of the Oracle Database production system; Member of the Working Group for the Desktop Study for the Extension of the Portuguese Continental Shelf. Design and development of the bathymetric and geophysics' database to support the initial desktop studies.
- 1996→1999 Deputy-head of the Hydrographic Brigade: Participation in several hydrographic surveys (harbour, coastal and oceanic) in Continental Portugal, the Azores, and Madeira Archipelagos. This included the planning, field execution (both as surveyor and survey director) and data processing; Coordinator of the Practical course on Hydrography (CPH99); Coordinator of the bathymetric acquisition and data processing course at the Hydrographic Brigade.
- 1991→1995 Served in the Portuguese Navy aboard of several ships of the surface fleet and hydrographic ships.

SPECIAL ASSIGNMENTS AND ACTIVITIES

Member of the Engineering Society – Geographic Surveying College – 69419;

Member of the scientific board of the International Summer School on Marine Spatial Planning GISlands 2010. Universidade dos Açores, Ponta Delgada, August 2010;

Member of the scientific board of the Hydrographic Engineering Conference. Instituto Hidrográfico, Lisbon, June 2010.

MILITARY CAREER

Ranks: Midshipman, 1991; Ensign, 1992; 2nd Lieutenant, 1993; 1st Lieutenant, 1997; Lieutenant-Commander, 2004; Commander, 2010.

Decorations: Medal of Distinguished Services (Silver)
Medal of Exemplar Behavior (Silver)

ACTIVITIES RELATED TO UNCLOS

Adviser for the GIS and Hydrography fields in the follow up process of the Portuguese Submission to the Extension of the Continental Shelf;
Technical Expert responsible for the Geomatics aspects of the Portuguese Submission to the CLCS (GIS, Geodesy and Hydrography);

Design and implementation of a data mining methodology to optimize the delineation of the outer limit of the continental shelf based on multibeam data;

Design and implementation of an alternative algorithm to determine the median line from two distinct coastal States in ArcGIS (ESRI) environment.

PUBLICATIONS IN ENGLISH

Calado, H. M. G. P., Pegorelli, C., Vergílio, M. H. D. S., Hipólito, C., Campos, A., Moniz, F., Costa, A. C., Pereira da Silva, C., Fonseca, C., Frazão Santos, C., Gabriel, D., Guerreiro, J., Gil, A. J. F., Johnson, D. E., Ng, K., Monwar, M. M., Ventura, M. A. M., Suárez-de Vivero, J. L., Pinho, M. R., Papaioannou, E. A. (2021). Expert knowledge-based co-development of scenarios for maritime spatial planning in the Northeast Atlantic. *Marine Policy*, 133, [104741].
<https://doi.org/10.1016/j.marpol.2021.104741>

Campos, A. (2021). Notice to European Sea Navigation - The Continental and Atlantic Approaches to a Common Sea. *Public Policy Portuguese Journal 2021*, Volume 6, Number 1, pp. 71 – 78, Universidade de Évora, UMPP - Unidade de Monitorização de Políticas Públicas

Campos, A. (2020). The Challenges of the Commission on the Limits of the Continental Shelf. In M. C. Ribeiro, F. L. Bastos, & T. Henriksen (Eds.), *Global Challenges and the Law of the Sea* (pp. 191-202). Springer. https://doi.org/10.1007/978-3-030-42671-2_11

Campos, A. (2018). Data and methodologies applied to morphometric analysis to support morphological prolongation. *Global Ocean Regime Conference Maritime Cooperation in Undelimited Area*. Jeju, Republic of Korea, May 16th to 18th, 2018

Jay, S., Fátima, F. L., O'Mahony, C., Gomez, M., Rooney, a., Almodovar, M., Gee, K., Vivero, J. L. S., Gonçalves, J. M.S., Fernandes, M. L., Tello, O., Twomey, S., Prado, I., Fonseca, C., Bentes, L., Campos, A., et al. (2016). Transboundary dimensions of marine spatial planning: Fostering inter-jurisdictional relations and governance, *Marine Policy*, Elsevier, March 2016.

Gomes-Pereira, J.N., N. Vasco-Rodrigues, Afonso, A., Albuquerque, M., Berecibar, E., Bernardes, L., Calado, A., Castanheira, A., Tojeira, I., Tempera, F., Dias, F.C., Santos, R.S., Campos, A. S. (2015) Mono-specific facies of *Parazoanthus axinellae* in Luiz Saldanha Marine Park, *Marine Biodiversity Records / Volume 8 / 2015*, e99 (4 pages), Copyright © Marine Biological Association of the United Kingdom 2015

- Dias F.C., Gomes-Pereira J., Tojeira I., Souto M., Afonso A., Calado A., Madureira; P., Campos, A. (2015). Area Estimation of Deep-Sea Surfaces from Oblique Still Images. PLoS ONE 10(7): e0133290. doi:10.1371/journal.pone.0133290
- F. Tempera, E. Giacomello, N. Mitchell, A.S. Campos, A. Braga Henriques, A. Martins, I. Bashmachnikov, T. Morato, A. Colaço, F.M. Porteiro, D. Catarino, J. Gonçalves, M.R. Pinho, E.J. Isidro, R.S. Santos and G. Menezes (2011). Mapping the Condor seamount observatory (Azores, NE Atlantic). *Geomorphology as Benthic Habitat: GeoHab Atlas of seafloor geomorphic features and benthic habitats* - Elsevier Insights;
- Navarro, A., Campos, A., Brandão, F., Lobo, A., Abreu, M.P. (2010). Updating the National Coastline of Portugal to Support the Portuguese Submission under Article 76 of UNCLOS. 6th Biennial ABLOS Conference, Monaco, October 2010;
- Fernando Tempera, Andreia Braga Henriques, José Nuno Pereira, Aldino Santos Campos, Joaquim Luís, Ana Colaço, Telmo Morato, Gui Menezes, Filipe Mora Porteiro & Ricardo Serrão Santos (2010). "Terrain characterization of the Condor seamount in preparation of deepsea habitat predictive modeling." HERMIONE Annual Meeting April 2010, Malta;
- F. C. Dias; N. Lourenço; A. Lobo; A. Santos de Campos; M. Pinto de Abreu (2009). "FRIED EGG": An Oceanic Impact Crater in the Mid-Atlantic? AGU Fall Meeting 2009, San Francisco, CA, USA;
- Campos, A. (2009). Modelling the Continental Shelf Extension near the Foot of the Slope Fuzzy-band. Dissertação para obtenção do grau de Doutoramento, Departamento de Engenharia Civil e Arquitectura, Instituto Superior Técnico, Lisboa, Portugal;
- Campos, A., Abreu, P.; Pimentel, F. (2008). FoS Miner – An added Value tool for UNCLOS Article 76 implementation. Canadian Hydrographic Conference 2008, Victoria, Canada;
- Campos, A.; Chim, V.; Navarro, A.; Artilheiro, F. (2008). Adjusting the Nautical Cartography from ED50 to ETRS89 in a Database Production Environment. Canadian Hydrographic Conference 2008, Victoria, Canada;
- Campos, A., Pimentel, F. M., Abreu, M.P. (2007). Geomorphometric Data Management for the Portuguese Continental Shelf Extension Project. CoastGIS07 Conference, Santander, Espanha;
- Campos, A., Wells, D. (2002). Spatial Data Warehousing – A Bathymetric Data Storage System. Canadian Hydrographic Conference 2002, Toronto, Canada;
- Campos, A. (2001). Hydrographic Data Warehouse – An added value to hydrographic Data. M.Eng. report, Department of Geodesy and Geomatics Engineering Technical Report, University of New Brunswick, Fredericton, Canada;
- Monahan, D., Hecht, H., Wells, D., Kenny, M., Campos, A. (2001). Challenges and Opportunities for Hydrography in the new Century. *International Hydrographic Review*, Vol.2, No.3 (New Series), December 2001.

Garcez Faria, Antonio Fernando (Brazil; nominated by: Brazil)

PERSONAL INFORMATION

Year and place of birth: 1962, Rio de Janeiro, Brazil

CURRENT POSITIONS:

1. Law of the Sea Senior Technical Advisor
Organization: Brazilian Hydrographic Service (Directorate of Hydrography and Navigation)
2. Financial Assistant
Organization: ITAIPU Binacional
(Brazil-Paraguay Hydroelectric Power Station)

OVERVIEW OF EXPERTISE: Oceanography, Hydrography, Geology, Geophysics, Nautical Cartography, and Marine Meteorology

Languages: Portuguese (native), English (fluent), Spanish (intermediate)

ACADEMIC QUALIFICATION

Doctoral Degree in Marine Sciences, Policy, Strategy and Decision Making - Brazilian Naval War College - Thesis: "Geopolitics of petroleum: new Brazilian perspectives and its consequences for the Brazilian Navy", 2010

Master of Business Administration (MBA) in International Management - COPPEAD Graduate School of Business of the Federal University of Rio de Janeiro, 2010

Master's Degree in Marine Sciences - Brazilian Naval War College, 2000

Doctor of Philosophy in Physical Oceanography - Naval Postgraduate School - United States Navy - Dissertation: "Nearshore Currents over a Barred Beach", 1997

Master of Science in Physical Oceanography, with Distinction - Naval Postgraduate School - United States Navy - Thesis: "A simplified Quasi-3D Model for Longshore Currents", 1995

Specialization in Hydrography (FIG/IHO category A) - School of Hydrography and Oceanography of the Brazilian Hydrographic Service (Directorate of Hydrography and Navigation), 1987

Bachelor's Degree in Marine Sciences, Brazilian Naval Academy, 1983

MILITARY CAREER

Ranks: Midshipman, 1983; Ensign, 1984; Lieutenant (Junior Grade), 1986; Lieutenant, 1989; Lieutenant-Commander, 1995; Commander, 2001; Captain, 2006; Rear Admiral, 2012; Vice Admiral, 2016

PROFESSIONAL ACTIVITIES

- | | |
|--------------|---|
| 2021 to date | Member of the Commission on the Limits of the Continental Shelf |
| 2021 to date | Law of the Sea Senior Technical Advisor of the Brazilian Hydrographic Service (Directorate of Hydrography and Navigation) |
| 2019 to date | Financial Assistant at the company ITAIPU Binacional (Brazil-Paraguay) |

2018-2019	Director of the Brazilian Hydrographic Service (Directorate of Hydrography and Navigation) - Hydrographer and Oceanographer of the Brazilian Navy
2016-2018	Director of Education of the Brazilian Navy
2014-2016	Director of the Brazilian Naval War College
2012-2014	Deputy Chief of Budget and Planning of the Brazilian Naval General Staff
2011-2012	Deputy Chief of the Commander of the Brazilian Navy Office
2010	Deputy Director of the Brazilian Hydrographic Service (Directorate of Hydrography and Navigation) and Brazilian Naval War College Policy, Strategy and Decision Making Course (Student)
2007-2010	Director of the Brazilian Hydrographic Center
2006-2007	Chief of Staff of the Third Naval District Command
2004-2006	Commanding Officer of the R/V Antares
2001-2004	Technical activities at the Brazilian Hydrographic Service (Directorate of Hydrography and Navigation)
2000	Brazilian Naval War College Staff Course (Student)
1997-2000	Technical activities at the Brazilian Hydrographic Service (Directorate of Hydrography and Navigation)
1993-1997	Naval Postgraduate School - United States Navy (MSc Student and PhD Candidate)
1992-1993	Chief Scientist of the R/V Antares
1990-1992	Head of the Hydrographic and Oceanographic Division of the Polar R/V Barão de Teffé
1988-1990	Chief Scientist of the R/V Canopus
1987	Specialization in Hydrography Course - School of Hydrography and Oceanography of the Brazilian Hydrographic Service (Directorate of Hydrography and Navigation)
1984-1987	Technical activities at the R/V Canopus

ACTIVITIES RELATED TO UNCLOS

A.F. Garcez Faria (presenter) et al. - Presentation of the Brazilian Equatorial Margin Partial Revised Submission to the Commission on the Limits of the Continental. United Nations Headquarters, New York, 07 August 2019.

A.F. Garcez Faria (presenter) et al. - Presentation of the Brazilian Southern Region Partial Revised Submission to the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, 07 February 2019.

A.F. Garcez Faria (presenter) et al. - Presentation of the Brazilian Southern Region Partial Revised Submission to the Commission on the Limits of the Continental Shelf. United Nations Headquarters, New York, 19 November 2018.

- 2018-2019 Head of the Brazilian Delegation during the 48th, 49th and 50th Sessions of the Commission on the Limits of the Continental Shelf
- 2018-2019 General Coordinator of the Operational Group for the delimitation of the outer limits of the Brazilian Continental Shelf
- 2007-2010 As Director of the Brazilian Hydrographic Center, responsible for coordinating the scientific planning, data collection and analysis for the Brazilian Continental Shelf Survey Project of the Directorate of Hydrography and Navigation
- 2005 Commanding Officer and Chief Scientific during the R/V Antares Survey of the Brazilian Amazon Deep Sea Fan

OTHER RELEVANT SCIENTIFIC AND TECHNICAL ACTIVITIES

- 2019 Head of the Brazilian Delegation to the 52nd Session of the Intergovernmental Oceanographic Commission (IOC) Executive Council and 30th Session of the IOC Assembly
- 2019 Head of the Brazilian Delegation to the 13th Meeting of the International Hydrographic Organization (IHO) South West Atlantic Hydrographic Commission (SWAtHC)
- 2019 Head of the Brazilian Delegation to the 15th Meeting of the IOC Regional Alliance for Oceanography in the Upper and Tropical Southwest Atlantic (OCEATLAN - Aliança Regional para a Oceanografia no Atlântico Sudoeste Superior e Tropical)
- 2018 Head of the Brazilian Delegation to the 18th Meeting of the IHO Meso-American Caribbean Sea Hydrographic Commission (MACHC)
- 2018 Head of the Brazilian Delegation to the IHO Council Meeting
- 2018 Head of the Brazilian Delegation to the 51st Session of IOC Executive Council
- 2008 Head of the Brazilian Delegation to the 15th Conference of the IHO Hydrographic Commission on Antarctica (HCA)
- 2018-2019 Brazilian Navy representative at the Brazilian Defense Geoinformation Council
- 2007-2010 Directorate of Hydrography and Navigation representative at the (i) Brazilian Commission on Meteorology, Climatology and Hydrology; (ii) Military Meteorological Commission, (iii) Military Cartographic Commission; (iv) National Cartographic Commission; (v) Subcommittee for the Brazilian Sectorial Plan for Sea Resources; (vi) Amazon Charting Program; (vii) Brazilian Navy Science, Technology, and Innovation Technical Commission
- 2008 Directorate of Hydrography and Navigation representative at the Brazilian National Dredging Program
- 2008 Deputy Chief of the Brazilian Delegation to the 9th Meeting of the IHO MACHC
- 2008 Deputy Chief of the Brazilian Delegation to the 8th Conference of the IHO HCA

- 2008 Deputy Chief of the Brazilian Delegation to the 20th Meeting of the IHO Committee on Hydrographic Requirements for Information Systems (CHRIS) - now IHO Services and Standards Committee (HSSC)
- 2008 Deputy Chief of the Brazilian Delegation to the 4th Meeting of the IOC OCEATLAN

MAJOR RESEARCH CRUISE EXPERIENCE

- Jan.-Feb. 2006 OCEANO SUDESTE-IV by R/V Antares (Commanding Officer and Chief Scientist)
- Oct.-Dec. 2005 OCEANO NORTE-II (Brazilian Amazon Deep Sea Fan) by R/V Antares (Commanding Officer and Chief Scientist)
- Jun.-Set. 2005 PIRATA BR-VIII by R/V Antares (Commanding Officer and Chief Scientist)
- Jan.-Mar. 2005 OCEANO LESTE-II by R/V Antares (Commanding Officer and Chief Scientist)
- Oct.-Dec. 2004 OCEANO ENSINO / XVI SEMANA NACIONAL DE OCEANOGRAFIA / OCEANO NORDESTE-II by R/V Antares (Commanding Officer and Chief Scientist)
- Jul.-Ago. 2004 PIRATA BR-VII by R/V Antares (Commanding Officer and Chief Scientist)
- Jul. 1993 OCEANOMARTE-VIII by R/V Antares (Chief Scientist)
- May-Jun. 1993 SISPER I / OCEANOMARTE-VII by R/V Antares (Chief Scientist)
- Jan.-Mar. 1993 OCEANOMARTE-VI by R/V Antares (Chief Scientist)
- Jul.-Set. 1992 PROSOM I / OCEANOMARTE-V by R/V Antares (Chief Scientist)
- Nov. 1991-Mar. 1992 ANTARTICA X by R/V Barão de Teffé
- Nov. 1990-Mar. 1991 ANTARTICA IX by R/V Barão de Teffé
- Aug.-Nov. 1989 Hydrographic Survey by R/V Canopus (Chief Scientist)
- May-Jun. 1989 Hydrographic Survey by R/V Canopus (Chief Scientist)
- Feb.-Mar. 1989 Geological Survey of Pernambuco Sea Mountains by R/V ROBERT D. CONRAD (USA)
- Mar.-May. 1985 Hydrographic Survey SUL-I by R/V Canopus
- Sep.-Dec. 1984 Hydrographic Survey of the Ponta da Madeira terminal maritime channel by R/V Canopus

ACADEMIC ACTIVITY

- 2014-2016 Guest lecturer at the Brazilian Navy War College
- 2013 Guest lecturer at the School of Hydrography and Oceanography of the Brazilian Hydrographic Service (Directorate of Hydrography and Navigation)
- 2004 Guest lecturer at the Brazilian Naval Academy

- 2003-2006 Referee of the International Journal of Remote Sensing
- 1998-2009 Member of PhD and MSc Examining Boards at the Federal University of Rio de Janeiro (Geology and Oceanic Engineering Departments); of the University of São Paulo (Oceanographic Institute); Oceanography Department of the State of Rio de Janeiro University; and at the Brazilian National Institute for Space Research (Meteorology Department)
- 1998-2002 School of Hydrography and Oceanography of the Brazilian Hydrographic Service (Directorate of Hydrography and Navigation). Professor of Oceanography

SELECTED PUBLICATIONS (IN ENGLISH)

- A.F. Garcez Faria, E.B. Thornton, T.C. Lippmann, T.P. Stanton. "Undertow Over a Barred Beach". Journal of Geophysical Research, EUA, VOL. 105, NO. C7, PAGES 16,999-17,010, 2000.
- A.F. Garcez Faria, E.B. Thornton, T.P. Stanton, C.V. Soares, T.C. Lippmann, "Vertical Profiles of Longshore Currents and Related Bed Shear Stress and Bottom Roughness". Journal of Geophysical Research, EUA, VOL 103, NO. C2, PAGES 3217-3232, 1998.
- A.F. Garcez Faria, E.B. Thornton, T.P. Stanton. "Small Scale Morphology Related to Wave and Current Parameters Over a Barred Beach". In: COASTAL ENGINEERING, 1997, ORLANDO, FL - USA. Proceedings of the XXV International Conference COASTAL ENGINEERING, p. 3391-3404, 1997.
- A.F. Garcez Faria, E.B. Thornton, T.P. Stanton. "A Quasi-3D Model of Longshore Currents". In: COASTAL DYNAMICS'95, Proceedings of the International Conference on Coastal Research in Terms of Large Scale Experiments, p. 389-400, 1996.

SELECTED PARTICIPATIONS IN SYMPOSIA, SEMINARS, CONFERENCES, AND MEETINGS

- 2019 Fluid Mud Navigation on the Amazon Mouth Seminar
- 2019 LAAD Defence & Security
- 2018 1st Brazilian Seminar on Port Hydrography
- 2017 LAAD Defence & Security
- 2016 XVI Brazilian Safety of Navigation Symposium
- 2015 LAAD Defence & Security
- 2015 11th United States Naval War College Regional Symposium
- 2014 21st Sea Power Symposium
- 2009 1st Brazilian Forum on the Blue Amazon and Antarctic
- 2009 3rd Sea Power for Africa Symposium
- 2008 Regional Meeting of the Brazilian Society for Science Development
- 2008 GEO Summit Latin America
- 2008 4th Brazilian Cartography and Remote Sensing Seminar
- 2007 Brazilian Navy 10th Operational and Logistical Research Symposium

- 2005 1st Brazilian Navy Workshop on Technology Management and Intellectual Property
- 2004 Brazilian Congress of Oceanography
- 2003 Fourth South Atlantic Climate Change (SACC) PIs Annual Meeting
- 2003 International Conference - Waves in Shallow Water Environments
- 2003 International Workshop - Dynamics of Fluid Mud Layers in Coastal Waters
- 2002 3rd Seminar on Remote Sensing Ocean Detection
- 2002 1st Journey on Defense Remote Sensing
- 1998 Brazilian Navy 2nd Operational and Logistical Research Symposium
- 1997 International Conference on Coastal Research in Terms of Large Scale Experiments - COASTAL DYNAMICS'97.
- 1996 XXV International Conference COASTAL ENGINEERING
- 1996 American Geophysical Union (AGU) 1996 Fall Meeting
- 1995 COASTAL DYNAMICS'95
- 1995 AGU 1995 Fall Meeting
- 1994 AGU 1994 Fall Meeting

DECORATIONS AND AWARDS

- 2019 Merit Award of the Brazilian Navy Corps of Engineers
- 2018 Naval Merit Order (Degree of “Great Officer”)
- 2018 Cartographic Merit Order (Degree of “Great Officer”)
- 2017 Military Justice Merit Order (Degree of “High Distinction”)
- 2017 Army Merit Order (Degree of “Comendador”)
- 2017 Military Gold Medal (Platinum Ribbon)
- 2016 Santos Dumont Merit Medal
- 2015 Peacemaker Medal
- 2014 Air Force Merit Order (Degree of “Comendador”)
- 2014 Marechal Cordeiro de Farias Merit Medal
- 2013 Honorary Member of the Brazilian Navy Logistical Corps (“Corpo de Intendentes da Marinha”)
- 2012 Victory Medal
- 2011 Defense Merit Order (Degree of “Officer”)
- 2009 Austrian Cartographic Mission Award
- 2006 Coronel Milton Freire de Andrade Academic Merit Medal

2002	Tamandaré Merit Medal
2002	Sea Service Merit Medal (Two Anchors)
1995	Naval Postgraduate School Outstanding Academic Achievement Award for International Students
1987	Comandante Vital de Oliveira Award Medal
1987	Almirante Paulo Moreira Award
1987	Academic Distinction Award

Giao, Pham Huy (Viet Nam; nominated by: Viet Nam)

Major: Geological-Geophysical and Geotechnical Engineering

Year and place of birth: 1958, Ha Noi, Viet Nam

Language: Vietnamese, English, Romanian; Russian (reading), Thai (speaking)

EDUCATION

- Dipl. Ing. (MSc) in Geological-Geophysical Engineering (Oil & Gas Geophysics), 1977-82, Bucharest University, Romania
- MEng (1990-92) & DEng (1993-97) in Geotechnical Engineering (Engineering Geology & Applied Geophysics), Asian Institute of Technology, AIT, Bangkok, Thailand

CURRENT POSITION

- Associate Professor in Earth Science of PetroVietnam University (PVU)
- Vice-director of the Water Resources and Environment Institute under the Vietnam Association of Hydrogeologists (VAH)
- Senior Specialist, Vietnam Petroleum Institute (VPI), Hanoi, Viet Nam
- Adjunct Faculty in Geotechnical and Earth Resources Engineering of Asian Institute of Technology, Bangkok, Thailand

EMPLOYMENT RECORD

- Associate Professor and Chair (2017-2019) of Geotechnical and Earth Resources (GTE) program, School of Engineering and Technology (SET), AIT (2011 - 2019)
- Assistant Professor & Coordinator of Geosystem Exploration & Petroleum Geoengineering (GEPG) program, SET, AIT (2006 – 2011)
- Assistant Professor & Joint Coordinator of the Offshore Technology and Management (OTM) Program, SET, AIT (2006 – 2008)
- Senior Research Engineer & Affiliated Faculty, Coordinator of the Geosystem Exploration & Petroleum Geoengineering (GEPG) master program, School of Civil Engineering, AIT (2001 – 2006)
- Visiting Faculty, Brain Korea 21 Project, School of Civil and Ocean Engineering, Dong-A University, Korea (1999 – 2001)
- Senior Research Associate, Geotechnical Engineering Field of Study, School of Civil Engineering, AIT (1997 – 1999)
- Research Associate, Geotechnical Engineering Division, AIT (1992 – 1997)
- Geophysicist, Hanoi Geophysical Division, Vietnam Department of Mineral Resources and Geology (1982-1987: Chief of Exploration Team, Regional Geophysics Department; 1987-1990: Geophysicist, Center of Geophysical Researches and Applications)

PROFESSIONAL EXPERIENCE

- Key participant to different projects related to continental shelf.
- Advisor/ Facilitator/ Consultant to signing MOUs/MOAs in research and education in geosciences and geo-engineering between Viet Nam and several countries, such as India, Thailand, Japan, Korea and Netherlands.

- Principal Investigator and key member of a number of research projects funded by Canada, EU, Thailand, Viet Nam, private sector etc. for geoscience, geoenvironment studies and international education development.
- Chair, co-chair, co-organizer, scientific/technical/organizing committee member, author or speaker to many national, regional and international professional training courses, conferences, symposiums, seminars and workshops, including:
 - Asia-Pacific Meetings on Near-surface Geoscience and Engineering, NSGE, by the European Association of Geoscientists and Engineers (EAGE), i.e., Indonesia, 2018; Malaysia, 2019; Thailand, 2020; and Viet Nam, 2021.
 - Viet Nam Symp. on Advances in Offshore Engineering, VSOE (Viet Nam 2018, 2021)
 - Annual Meetings of European Association of Geoscientists and Engineers, EAGE (Czech, 2003; Spain, 2015; Denmark, 2018; Spain, 2022)
 - Intl'. Symp. Society of Exploration Geophysics of Japan, SEGJ (Japan 2004, 2006, 2009, 2011, 2015, 2018, 2021)
 - Intl.' Conf. on Asian Marine Geology (Japan 2008; China, 2018)
 - Annual meeting of Society of Exploration Geophysics, SEG (USA, 2016; 2022)
 - Intl.' Formation Evaluation Symposium of Japan, JFES (Japan 2015)
 - Intl' Symp. on Lowland Technology (Japan 1998, 2000, 2004, 2010, 2014)
 - International Petroleum Technology Conference IPTC,7-9 (Thailand, 2012)
 - Intl' Conference on Applied Geophysics (Thailand 2012)
 - Asian Workshop on “Land Reclamation and Coastal Structures in Asia” (Viet Nam, 2005).

SPECIAL HONORS AND AWARDS

- The Romanian Government Scholarship for a study at Bucharest Univ., 1977-1982
- Outstanding Academic Performance Award for a Vietnamese student studying abroad by Ministry of Education and Training (MOET) of Viet Nam, 1982
- The Australian Government Scholarship for a master study at the Asian Institute of Technology, 1990-1992
- The best papers at Intl' Congress on Modelling & Simulation (MODSIM97), selected to be published in the Intl' Journal of Env. Modelling & Software, 14 (1999) 141-151, Elsevier
- The Tan Swan Beng Award of the SE Asian Geotechnical Society, 2005, co-winner
- Honorable Recognition Award as the Invited Speaker for the EAGE Student Lecture Tour in the Asia-Pacific region by European Association of Geoscientists and Engineers (EAGE) for the period of 2013-2015
- Distinguished Teacher Award 2016 by AIT
- Award on Outstanding Contribution in Reviewing by Engineering Geology Journal, Elsevier, 2017
- The Trusted Reviewer Certificate awarded by Institute of Physics (IOP), 2020, for exceptionally high-quality review work

PROFESSIONAL MEMBERSHIP

- Vice-president, Vietnam Association of Engineering Geology and Environment (VAEGE)
- Member, European Association of Geoscientists and Engineers (EAGE)
- Member, Society of Exploration Geophysics (SEG), USA
- Member, Society of Petro-physicist and Well Log Analysts (SPWLA)
- Life Member, International Association for Mathematical Geosciences (IAMG)
- Life Member, SE Asia Society of Geotechnical Engineering (SEAGS)
- Life Member, International Association of Low Land Technology (IALT)
- Member, Vietnam Association of Geophysicists (VAG); Vietnam Association of Engineering Geology and Environment (VAEGE); Vietnam Society of Soil Mechanics and Geotechnical Engineering (VSSMGE); Vietnam Association of Hydrogeologists (VAH)

EDITORIAL BOARD MEMBER

- Cogent Geoscience, Taylor & Francis Online
- Petroleum and Petrochemical Engineering Journal, MedWin Publishers, USA
- Vietnam Journal of Earth Sciences
- Transport and Communications Science Journal (TCSJ), Viet Nam
- Guest Editor for Geotechnical Journal, Vietnam Geotechnical Society
- The special issue on Geophysical Monitoring and Surveys in Geotechnical Engineering Practice, the SEAGS-AGSSEA Geotechnical Engineering Journal, planned in 2021

TEACHING

Supervised 9 PhD students (the last three will graduate in May 2021), 103 full time master students, 71 professional master students, many of them are related to different earth systems in Asian countries and Viet Nam.

SELECTED PUBLICATIONS

Books

- **Giao P. H.** (2005), *Integrated Geoengineering for a Sustainable Infrastructure Development*, Proc. of the Intl' Symp. Hanoi Geoengineering 2007, 22-23 November 2007 Hanoi, Viet Nam, VNU Publishing House.
- **Giao P. H.** (2007), *New Challenges in Geosystem Engineering and Exploration*, Proc. of the Intl' Symp. Hanoi Geoengineering 2007, 22-23 November 2007 Hanoi, Viet Nam, VNU Publishing House.
- **Giao P. H.**, M. T. Nhuan and N. H. Minh (2010), *Urban Geoengineering, Earth Resources and Sustainability in the Context of Climate Change*, Proc. of the Intl' Symp. Hanoi Geoengineering 2007, 22-23 November 2010 Hanoi, Viet Nam, VNU Publishing House.
- **Giao P. H.**, M. T. Nhuan and D. V. Luyen (2013), "*Natural Resources Engineering & Disaster Mitigation for Infrastructure Development*", Proc. of the Intl' Symp. Hanoi Geoengineering 2013, 17-19 October, 2013, Viet Nam, VNU Publishing House.
- Hien D. H. and **Giao P. H.** (2010), *A Geotechnical-Geophysical Study of the Red River Delta Clay*, Lambert Academic Publishing GmbH & Co., Germany, 153p.

Selected Recent Journal/Conference Articles

Dr. Giao has published *more than 150 papers in high-impact factor journal and international conference/symposium papers*. Many of them that are related to the deltaic areas and the oil and gas fields in the continental shelf of Viet Nam as seen at:

Research gate: https://www.researchgate.net/profile/P_Giao

Google Scholar: <https://scholar.google.com/citations?user=2WS7EiAAAAAJ&hl=en>

- Nosheen S. & **P. H. Giao** (2017), Evaluation of Shale Gas Potential in the Lower Cretaceous Sembar Formation, the Southern Indus Basin, Pakistan, *Journal of Natural Gas Science and Engineering, Elsevier. Vol. 44 (2017)*, p. 162–176.
- Quan V. T. H. and **P. H. Giao** (2019), Geochemical evaluation of shale formations in the northern Song Hong basin, Vietnam, *Journal of Petroleum Exploration & Production Technology*, Springer.
- Avirut Puttiwongrak, **P. H. Giao**, Sakanann Vann (2020), An easily used mathematical model of porosity change with depth and geologic time in deep shale compaction, *International Journal of GEOMATE*, 19(73):108-115,
- Ruwantha Ratnayake and **Pham Huy Giao** (2020), Application of Deep Learning and Random Forest Algorithms in a Machine Learning-based Well Log Analysis for a Small Data Set of a Sand Zone, *PetroVietnam Journal*, ISBN-0866-854X

- Krit S. and **Pham Huy Giao** (2020), Abaqus-based numerical analysis of subsurface deformation due to groundwater level changes in the upper 100-m zone of the Bangkok aquifer system, *Acta Geotechnica*, September 2020.
- Chaiyaphruk Chaiyasart and **Pham Huy Giao** (2020), Integrated petrophysical analysis and petroleum system modeling to assess the effect of igneous intrusions on source rock maturity enhancement and hydrocarbon potential in the Wichian Buri sub-basin, Thailand, *Arabian Journal of Geoscience*.

International/Conference Papers/Presentation

- **Giao P. H.**, B. D. Trung & N. H. Minh (2011), Reservoir in Fractured Granite Basement (FGB), Unconventional or Conventional? IPTC 15465, Presentation at *International Petroleum Technology Conference IPTC, 7-9 February, 2012* (moved from 15-17 November 2011 due to flood), Bangkok, Thailand.
- **Giao P. H.** and N. H. Chuong (2013), *Characterization of A Thick Deltaic Clay Deposit For Port Development At The Cai Mep–Thi Vai Site, Southern Vietnam*, pp. 793-800, Proc. 18th Southeast Asian Geotechnical Conference (18SEAGC) & Inaugural AGSSEA Conference (1AGSSEA), Ed. by C. F. Leung, S. H. Goh and R. F. Shen, Research Publishing, Singapore.
- N. V. Trieu and **P. H. Giao** (2014), *Rose Diagrams for Design of Borehole Orientation in Fractured Granite Basement*, Proc. Intl' EAGE/FESM Joint Regional Conference Petrophysics Meets Geoscience "From Nano Pores to Mega Structures", European Association of Geoscientists and Engineers (EAGE), 17-18 February 2014, Kuala Lumpur, Malaysia.
- **P. H. Giao** (2015), Lithological Zoning Using the Vp/Vs Log Curves, Proc. of The 21st Formation Evaluation Symposium of Japan (JFES 2015), 13-14 October, Chiba, Japan.
- **Giao P. H.**, R. Maneejan and D. H. Hien (2016), Possible Applications of a Multi-layered Seismic Refraction Solution in Correction and Analysis of Sonic Log Data, *Proc. of The 22nd Formation Evaluation Symposium of Japan (JFES 2016)*, 29-30 September, 2016, Chiba, Japan.
- **P. H. Giao** and K. Sandunil (2018), Development of A Deep Learning Model To Estimate Porosity Of A Fractured Granite Basement Reservoir, *80th EAGE Annual Conference*, Copenhagen, Denmark, 11-15 June, 2018.
- Nontapod T., **P. H. Giao** and A. Puttiwongrak. (2019), Geophysical Investigation of Seawater Intrusion at a Coastal Site in Phuket, Thailand, *Proc. of the EAGE-GSM Conference on Near-Surface Geophysics*, Kuala Lumpur, Malaysia, April 2019.
- Nguyen Dinh Cuong and **P. H. Giao** (2019), Long-Term Settlement Analysis of the PVD-Improved Soft Clay Deposit Underlying the Dinh Vu Industrial Zone, *Proceedings of Geotech Hanoi 2019*, In book: *Geotechnics for Sustainable Infrastructure Development*, Springer.
- **P. H. Giao**, Pham Hong Trang, and Mai Thi Huyen Trang (2019), Revisit of Rock Physics Template (RPT) Construction for Petrophysical Characterization of a Gas Sand in the Nam Con Son (NCS) Basin, Vietnam, *Proc. the EAGE-VPI conference on Reservoir Geoscience*, 2-3 Dec. 2019, Hanoi, Viet Nam.
- Pham Hong Trang and **P. H. Giao** (2019), Applicability of effective medium modeling (EMM) to estimate gas hydrate (GH) saturation/concentration, *Proc. the EAGE-VPI conference on Reservoir Geoscience*, 2-3 Dec. 2019, Hanoi, Viet Nam.

Glumov, Ivan F. (Russian Federation; nominated by: Russian Federation)

PERSONAL INFORMATION

Date of birth 11 September 1936,
Place of birth Kaluga, USSR/Russia
Language skills Russian: mother tongue
English: fluent

ACADEMIC QUALIFICATION

1988 Doctor of Technical Science (geophysics). Lomonosov Moscow State University, Faculty of Geology
1972 PhD in Maritime Geodesy and Hydrography. Moscow State University of Geodesy and Cartography

CURRENT POSITIONS

2015 - 2019 Member of the Board «Sovkomflot» OJSC (Russia's shipping company in maritime transportation)
2012-present Vice-Chairman, Member of the Commission on the Limits of the Continental Shelf
2009-present Scientific consultant of the Russian Federation Project on the Limits of the Continental Shelf with respect to the Arctic Ocean
2005-present Member of the Board «Severneftegaz» OJSC (Russia's hydrocarbon offshore exploration company)
2004-present Adviser to the Minister of Natural Resources and Environment of the Russian Federation

PROFESSIONAL EXPERIENCE

2002 - October 2004 Deputy Minister of Natural Resources and Environment of the Russian Federation, responsible for priority functions of the Ministry in connection with the mineral resources of the World Oceans
1999 - 2001 State-Secretary/Deputy Minister of Natural Resources of the Russian Federation
1992 - 1999 Head of Department for Scientific and Maritime issues, Ministry of Natural Resources of the Russian Federation
1988 - 1991 Head of the Maritime Geological Service, Ministry of Geology of the USSR
1982 - 1988 Director-General of the Southern Scientific Production Association for Maritime Geological Prospecting (Yuzhmorgeologiya), Director of Research in Maritime Geophysics Institute, Ministry of Geology of the USSR
1959 - 1970 Senior hydrographer, chief geophysist, Chief of Cruise on maritime expeditions of the Ministry of Geology of the USSR

MARINE SURVEY EXPERIENCE

Mr. Ivan Glumov has over 80 months of seagoing experience on geophysical and geological cruises. He was chief hydrographer, chief geophysist and Chief of Cruise for more than 25 cruises related to:

- Geophysical exploration for oil and gas in Caspian Sea, Black Sea, Arctic Seas, continental shelf of Egypt, India, Bulgaria, Angola;
- Scientific geophysical and geological survey in Pacific Ocean for the study of the manganese nodules and cobalt crusts and in Atlantic Ocean for the study of the polymetallic sulphides;
- Scientific hydrographical, geophysical and geological survey on Arctic Ocean to collect data for development of the Commission on the Limits of the Continental Shelf submissions.

MAIN PROFESSIONAL ACTIVITIES RELATED TO THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

- | | |
|-----------------------|--|
| 2012 - present | Vice-Chairman, Member of the Commission on the Limits of the Continental Shelf |
| 2001 - 2003 | Head of the Russian delegation to the Commission on the Limits of the Continental Shelf |
| 2000 - 2003 | Head of the Russian delegations in negotiations with Kazakhstan and Azerbaijan on the delimitation of seabed in Caspian Sea |
| 1996 - 2006 | Member of the Legal and Technical Commission of the International Seabed Authority |
| 1995 - 2004 | Member, Deputy Head, Head of the Russian delegations to sessions of the International Seabed Authority |
| 1984 - 1995 | Member of Soviet, and subsequently Russian, delegations to sessions of the Preparatory Commission for the United Nations International Seabed Authority |
| 1980 - 1984 | Member of the Soviet delegation in negotiations with France, Japan and the United States of America on the resolution of Seabed Area disputes in Pacific Ocean |

RESEARCH INTEREST

- Legal, scientific and technical issues related to delimitation of the continental shelf
- Legal, scientific and technical issues related to the activity in the Area for the research, exploration and exploitation of the mineral resources according to Part XI of the UN Convention of the Law of the Sea
- Scientific and technical issues related to geophysical research on the continental shelf for oil and gas
- Processing and interpretation of 2D-3D marine geophysical research for oil and gas
- Modern deep sea and marine geophysical technologies.

PUBLICATIONS

Author of more than 125 scientific publications, including five monographs:

- Wide-angle deep seismic profiling of the sea floor. In two parts. M.: Nauka, 2001, 554 p. (published in Russia)
- Regional Geology and Oil and Gas Content of Caspian Sea, M.: NEDRA, 2004, 324 p. (published in Russia)

- Regional Geology and Oil and Gas Content of Caspian Sea, 2007, 242 p. (published in China)
- Inhabited submersibles. St. Petersburg, Gidrometeoizdat, 2002, 278 p. (published in Russia)
- Regional Geology and the Prospects of the Oil and Gas content of the Black Sea's deep-water valley and Contiguous Offshore Area. In two parts. 2014, 334 p. (published in Russia)

OTHER SCIENTIFIC ACTIVITIES

- Member of the Council of experts of the Government of the Russian Federation. Expert assessment of projects on the development of oil and gas on the continental shelf of the Russian Federation, including the Sakhalin 1, 2, 3, Prirazlomnoe and Shtokman, and "Blue Stream" projects.
- Member of the Marine Board of the Government of the Russian Federation. Head of Section on the development of maritime mineral and energy resources.
- Drafting of international legal documents related to the implementation of the United Nations Convention on the Law of the Sea, and the Federal Acts on the regime of continental shelf of the Russian Federation, on the Exclusive Economic Zone of the Russian Federation, on internal waters, territorial sea and contiguous zone of the Russian Federation, and on mineral resources, thereof.

HONORARY TITLES

- Honored Geologist of Russia
- Honored Scientist of Russia
- Holder of State awards of the USSR, the Council of Ministers of the USSR and the Government of the Russian Federation in the fields of science and technology
- Academician of the Russian Academy of Natural Sciences

Han, Hyun-Chul (Republic of Korea; nominated by: Republic of Korea)

Year of Birth: 1956

Place of Birth: Seoul, Korea

Languages: Korean, English

ACADEMIC QUALIFICATIONS

1993 Ph.D., Geophysics Department, Texas A&M University, College Station, USA
(Geophysical constraints on the origin of the Shatsky Plateau)

1983 M.Sc., Department of Geology, Yonsei University, Korea
(Tectonics of the eastern part of the Jeju Island)

1980 B.Sc. Geology, Yonsei University, Korea

RESEARCH INTERESTS AND EXPERIENCE IN INTERNATIONAL ORGANIZATIONS

Dr. Han's research interests are focused on (a) tectonic problems through data modeling, (b) basin analysis using deep seismic reflection data, and (c) geo-hazard factors using shallow seismic reflection data. He has abundant experience in seagoing research projects and participated as a chief scientist in many research expeditions, including 25 surveys. As a member of the National Committee on the Extension of the Outer Limits of the Continental Shelf since 2000, he was involved in preparing the preliminary and partial submissions of the Korean government concerning the continental shelf in the East China Sea to the Commission on the Limits of the Continental Shelf.

In 2006, Dr. Han was appointed as a member of the Sub-Committee on the Undersea Feature Names (SCUFN) under the IHO-IOC. While serving as a member, he proposed a GIS-based system for reviewing naming proposals. The GIS-based review system can significantly reduce the time needed for the review and enables reviews without physical meetings. Dr. Han has served as the chair of the SCUFN since 2018. As the chair of this Sub-Committee, he proposed drawing up guidelines for a consistent decision-making process.

CAREER SUMMARY

Research Scientist

2016.09 – Present	Distinguished Research Scientist, Korea Institute of Geosciences and Mineral Resources (KIGAM), Daejeon, Korea
2011.10 – 2013.10	Executive Director, Petroleum and Marine Research Division, KIGAM, Daejeon, Korea
2009.08 – Present	Tenured Research Scientist, KIGAM, Daejeon, Korea
2002.01 – 2009.08	Principal Research Scientist, KIGAM, Daejeon, Korea
2000.03 – 2004.02	Adjunct Professor, Department of Geology, Chungnam University, Daejeon, Korea
1993.10 – 2001.12	Senior Research Scientist, Petroleum and Marine Research Division, KIGAM, Daejeon, Korea
1989.08 – 1993.04	Research Associate, Ocean Drilling Program, College Station, Texas, USA
1980.11 – 1985.08	Research Scientist, Marine Geophysical Exploration Department, KIGAM, Daejeon, Korea

International Organization Activities

- 2019.01 – Present Chairman, Sub-Committee on the Undersea Feature Names (SCUFN), IHO-IOC
- 2006.06 – 2018.12 Member, Sub-Committee on the Undersea Feature Names (SCUFN), IHO-IOC

Public Sector Advisory Activities

- 2012.08 – 2014.08 Science Advisor, Ministry of Trade, Industry and Energy
- 2010.01 – Present Member, National Naming Committee
- 2009.01 – 2017.01 Board Member, Korea Hydrography and Research Association
- 2009.03 – 2013.02 Member, Ocean and Fisheries Development Committee
- 2008.03 – 2013.02 Science Advisor, Ministry of Foreign Affairs
- 2006.11 – 2013.02 Science Advisor, Ministry of Oceans and Fisheries

PROFESSIONAL ASSOCIATIONS

- 2012.06 – 2016.05 Vice-Chair, Hydrographic Society of Korea
- 2010.01 – 2011.12 Vice Chair, The Korean Society of Oceanography

AWARDS

- The KIGAM Best Researcher of the Year of 2019
- Bronze Medal for the contribution to Korean Ocean Science, Korean government, 2008
- Prime Minister Award in recognition of marine geophysics research of Korea, Korean government, 2001
- Minister of Science and Technology Award for excellent research, Korean government, 1997
- Lamar Hayes Scholarship, Texas A&M, 1986 - 1987

PRINCIPAL ACTIVITIES RELEVANT TO CONTINENTAL SHELF DELINEATION

- 2006 – 2012: Principal research scientist with the Korea Institute of Geoscience and Mineral Resources, responsible for conducting extended continental shelf mapping and contributing to the Korea Extended Continental Shelf task force
- 2000 – 2006: Project manager overseeing the scientific planning, data collection, and analysis of Korea's extended continental shelf submissions

OTHER RESEARCH ACTIVITIES AS A PROJECT MANAGER (AFTER 2010)

- 2016 – 2020: Project manager for tectonics of the East China Sea Shelf Basin
- 2013 – 2015: Project manager for tectonics on the Yellow Sea Basin

2010 – 2012: Project manager for coastal geo-hazard factor analysis around the Korean Peninsular

SEA-GOING EXPERIENCE AS A CHIEF SCIENTIST

25 expeditions since 1980

SELECTED RELEVANT PUBLICATIONS – SCI(E)

- Lee C.-Y., Kwon Y.K., Yeo J.M., Kwon Y.J., and **Han H.-C.**, 2021. U-Pb ages of detrital zircons in lower Paleozoic quartzites of the Taebaeksan Basin, eastern Sino-Korean Block: sediment provenance response to relative sea-level changes. *International Geology Review* (in press)
- Lee C.-Y., Shinn Y.J., **Han H.-C.**, and Ryu I.-C., 2019. Structural evolution of two-stage rifting in the northern East China Sea Shelf Basin. *Geological Journal*, 54, 2229-2240.
- Han H.-C.**, Lee Y.S., Lee J.-M., and Lim C., 2019. Origin and causes of complex magnetic anomalies of Dokdo and neighboring guyots. *Physics of the Earth and Planetary Interiors*, 290, 44-556.
- Han H.-C.**, Lee Y.S., Hwang J.S., Lee S.-G., Yoon Y.H., and Stagpoole V., 2015. Geophysical characteristics of the Hupijiao Rise and their implication to Miocene volcanism in the northeastern part of the East China Sea. *Marine Geology*, 363, 143-145.
- Pigott J.D., Kang M.H., and **Han H.-C.**, 2013. First order seismic attributes for clastic seismic facies interpretation: Examples from the East China Sea. *J. Asian Earth Sciences*, 66, 34-54.
- Cukur D., Horozal S., Lee G.W., Kim D.C., and **Han H.-C.**, 2012. Timing of trap formation and petroleum generation in the northern East China Sea Shelf Basin. *Marine Petroleum Geology*, 36, 154-163.
- Gungor A., Lee G.H., Kim H.-J., **Han H.-C.**, Kang, M.H., Kim J, and Sunwoo D., 2012. Structural characteristics of the northern Okinawa Trough and adjacent areas from regional seismic reflection data: Geologic and tectonic implications. *Tectonophysics*, 522-523, 198-207.
- Hwang J.S., **Han H.-C.**, Han S.-C., Kim K.-O., Kim J., Kang M.H., and Kim C.-H., 2012. Gravity and geoid model in South Korea and its vicinity by spherical cap harmonic analysis. *J. Geodynamics*, 53, 27-33.
- Lee Y. S., **Han H.-C.**, Hwang J.H., Kee W.S., and Kim B.C., 2011. Evidence for significant clockwise rotation of the Korean Peninsula during Cretaceous. *Gondwana Res.*, 20, 904-918.
- Cukur D., Horozal S., Lee G.H., Kim D.C., **Han H.-C.**, and Kang M.H., 2011. Structural evolution of the northern East China Sea Shelf Basin interpreted from cross-section restoration. *Marine Geophys. Res.*, 32, 363-381.
- Cukur D., Horozal S., Kim D.C., and **Han H.-C.**, 2011. Seismic stratigraphy and structural analysis of the northern East China Sea Shelf Basin interpreted from multi-channel seismic reflection data and cross-section restoration. *Marine Petrol., Geol.*, 28, 1,003-1,022.

- Cukur D., Horozal S., Kim D.C., Lee G.H., **Han H.-C.**, and Knag M.H., 2010. The distribution and characteristics of the igneous complex in the northern East China Sea Shelf Basin and their implications for hydrocarbon potential. *Marine Geophys. Res.*, 31, 299-313.
- Yoon Y., Lee G.H., Han S., Yoo D.G., **Han H.-C.**, Choi K., and Lee K., 2010. Cross-section restoration and one-dimensional basin modeling of the Central Subbasin in the southern Kunsan Basin, Yellow Sea. *Mar. Petrol. Geol.*, 27, 1325-1339.
- Kang M.H., **Han H.-C.**, Yun H., Kong G.S., Kim K.O., and Lee Y.S., 2007. 3D gravity modeling for Anyongbok Seamount in the East Sea. *Marine Geophys. Res.*, 28, 257-269.
- Kim J.-H., Park M.-H., Tsunogai U., Cheong T.-J., Ryu B.-J., Lee Y.-J., **Han H.-C.**, Oh J.-H., and Chang H.-W., 2007. Geochemical characterization of the organic matter, pore water constituents and shallow methane gas in the eastern part of the Ulleung Basin, East Sea (Japan Sea). *Island Arc*, 16, 93-104.
- Kong G.S., Park S.-C., **Han H.-C.**, Chang J.H., and Mackensen, A., 2006. Late Quaternary paleoenvironmental changes in the southern Yellow Sea, Korea. *Quatern. Int.*, 144, 38-52.
- Yoo D.G., Lee C.W., Jin J.H., and **Han H.-C.**, 2002. Late Quaternary transgressive and highstand systems tracts in the northern East China Sea mid-shelf. *Marine Geology*, 187, 313-328.
- Kikawa E., McCabe R., Han J., Min K.D., Lee D., **Han H.-C.**, and Hwang J.H., 1994. Miocene paleomagnetic results from southeastern Korea. *Tectonophysics*, 233, 115-123.
- Sager W. and **Han H.-C.**, 1993. Rapid formation of the Shatsky Rise oceanic plateau inferred from its magnetic anomaly. *Nature*, 1993, 610-613.
- McCabe R., Celaya M., Cole J., **Han H.-C.**, Ohnstad T., Pajitrapapon V., and Thitipawarn, V., 1988. Extension Tectonics: The Neogene Opening of the North-South Trending Basins of Central Thailand. *J.G.R.*, 93, 11,899-11,910.
- PUBLISHED RESEARCH REPORTS (AS A CHIEF SCIENTIST)**
- Han H.-C.**, et.al, 2020. Sedimentary characteristics of the southwestern part of the Ieodo, the northeastern part of the East China Sea (in Korean with English abstract). KIGAM, pp. 198.
- Han H.-C.**, et al., 2019. Characteristics of the Ieodo basin I, the northeastern part of the East China Sea (in Korean with English abstract). KIGAM, pp. 188.
- Han H.-C.**, et al., 2018. Characteristics of the Ieodo basin II, the northeastern part of the East China Sea (in Korean with English abstract). KIGAM, pp. 207.
- Han H.-C.**, et.al, 2017. Tectonics of the southwestern part of the Ieodo, the northeastern part of the East China Sea (in Korean with English abstract). KIGAM, pp. 381.
- Han H.-C.**, et al., 2016. Tectonics of the Jeju Basin, the northeastern part of the East China Sea (in Korean with English abstract). KIGAM, pp. 391.

- Han H.-C.**, et al., 2015. Sedimentary characteristics of the Yellow Sea Basins, the central and southern part of the Yellow Sea (in Korean with English abstract). KIGAM, pp. 769.
- Han H.-C.**, et al., 2014. Sedimentary characteristics of the Kunsan Basin, the central part of the Yellow Sea (in Korean with English abstract). KIGAM, pp. 344.
- Han H.-C.**, et al., 2013. Characteristics of the Yellow Sea Basins (in Korean with English abstract). KIGAM, pp. 165.
- Han H.-C.**, et al., 2012. Coastal geo-hazard factor analysis on the Yeonggwang, the Yellow Sea (in Korean with English abstract). KIGAM, pp. 155.
- Han H.-C.**, et al., 2011. Tectonics on the Northern East China Sea (Northern Part of the Korea-Japan Joint Development Zone). KIGAM, pp. 72.
- Han H.-C.**, et al., 2011. Coastal geo-hazard factor analysis on the Buan area, the Yellow Sea (in Korean with English abstract). KIGAM, pp. 188.
- Han H.-C.**, et al., 2010. Tectonics of the Northern East China Sea (Western Part of the Korea-Japan Joint Development Zone). KIGAM, pp. 81.
- Han H.-C.**, et al., 2010. Coastal geo-hazard factor analysis on the Donghae area, the East Sea (in Korean with English abstract). KIGAM, pp. 183.
- Han H.-C.**, et al., 2009. Tectonic on the Northern East China Sea (Southwestern Part of the Jeju Island). KIGAM, pp. 72.
- Han H.-C.**, et al., 2009. Coastal geo-hazard factor analysis on the Uljin area, the East Sea (in Korean with English abstract). KIGAM, pp. 193.
- Han H.-C.**, et al., 2008. Tectonics on the Northern East China Sea Shelf Basin (Southern Part of the Jeju Island). KIGAM, pp. 87.
- Han H.-C.**, et al., 2008. Coastal geo-hazard factor analysis on the Youngduk area, the East Sea (in Korean with English abstract). KIGAM, pp. 185.
- Han H.-C.**, et al., 2007. Coastal geo-hazard factor analysis on the Busan area, the East Sea (in Korean with English abstract). KIGAM, pp. 223.
- Han H.-C.**, et al., 2006. Coastal geo-hazard factor analysis on the Ulsan area, the East Sea (in Korean with English abstract). KIGAM, pp. 194.
- Han H.-C.**, et al., 2005. Coastal geo-hazard factor analysis on the Pohang area, the East Sea (in Korean with English abstract). KIGAM, pp. 183.

Inniss, Helena (Trinidad and Tobago; nominated by: Trinidad and Tobago)

EMPLOYMENT: Executive Director/Consultant
Kronus Geological Services Ltd

EDUCATION:

MSc Energy Studies (Distinction) – Centre for Energy, Petroleum and Minerals and Policy, University of Dundee, Scotland

Coursework including: Law, Policy, Economics and Management Courses –

- International Law of Natural Resources (Dist) covered Law of the Sea issues,
- Transnational Law and Policy (Dist) covered the types of agreements and the history of development of international agreements relative to natural resources,
- International and Comparative Petroleum Law and Policy dealt with the different types of contracts with particular stress on Production Sharing Contracts, Joint Operating Agreements and Decommissioning,
- International Dispute Settlement – WTO and dispute settlement within WTO and other world trade bodies,
- Mineral and Petroleum Taxation (Dist),
- Marketing,
- Petroleum Policy and Economics (Dist) - published,
- Energy Economics – The Tools,
- Energy Economics – The Issues (Dist) –published – The paper asked the question: How does one measure the efficiency of state companies?
- Dissertation on sustainable development (Dist) requested publication (refused)

B.A. majoring in Geology and Geography – University of the West Indies, Mona Jamaica

EMPLOYMENT:

From 2016: Consultant included in the specialist pool for Oceans and Natural Resources Advisory Division of the Commonwealth Secretariat

From–To: 2011 to Present

Employer: Self Employed (co- owner of Kronus Geological Services Ltd)

Positions held: Executive Director, Energy Consultant

From–To: 2006 to 2011

Employer: Ministry of Energy and Energy Affairs
Trinidad and Tobago

Positions held: Director, Resource Management

From–To: 2003- 2006

Employer: Ministry of Energy and Energy Industries
Trinidad and Tobago

Positions held: Director of Minerals

From–To: 2000- 2003

Employer: Ministry of Energy and Energy Industries
Trinidad and Tobago

Positions held: Senior Geologist

From–To: 1981- 2000

Employer: Ministry of Energy and Energy Industries
Trinidad and Tobago

Positions held: Geologist

DUTIES PERFORMED

Appraisal of exploration prospects submitted by all petroleum companies operating in Trinidad and Tobago.

Resource Evaluation – Quantification of Petroleum Resources

Acreege/Resource Management which includes:

Planning and Coordination of the Ministry's Competitive Bid Rounds for grant of acreage for petroleum exploration

Promotion and marketing of areas to be leased/contracted for oil exploration

Revision of the Production Sharing Contract to reflect the reality of Company's Operations

Negotiation of Production Sharing Contracts for oil and gas exploration.

Contract Management which includes:

Monitoring of companies exploration and development work to ensure alignment with the PSC and Licences – approval of exploration and appraisal wells, company's commercialization procedures and development plans,

Geological Research projects (all reports proprietary)

Acting in the capacity of Senior Geologist, Quarries Department with responsibility for supervising the work of the staff, initiating resource evaluation programmes, being involved in attempts to restructure the industry.

Administration and coordination of the work of the Geology and Geophysics Department during extended periods of acting as Director of Geology and Geophysics.

Project Planning and Management

Membership on the Board of Directors of Petrotrin

As Director of Minerals – Coordination of the work of the Minerals Division which oversees the Quarry Industry in Trinidad and Tobago. Responsible for the formulation of Policy and Law for the industry.

As Director, Resource Management – Coordination of the work of the Division with responsibility for Upstream Exploration and Development and Acreege Management. Policy formulation and recommendations for the petroleum industry.

From-To: 1980 – 1981

Employer: Geodata Consultants

Positions held: Geologist

DUTIES: Sampling and testing of soil samples for engineering strength for major construction projects, bridges etc

SUMMARY CONSULTING EXPERIENCE:

Name of project	Provision of Consultancy Services to the Ministry of Energy and Energy Industries
Year	2012
Location	Trinidad and Tobago
Client	GORTT, Ministry of Energy and Energy Affairs
Main project features	Commercialisation of Cross- Border Petroleum/ Natural Gas Assets between Trinidad and Tobago and Venezuela, specifically Loran/Manatee and Coquina/Mannakin fields. Training and mentoring of staff tasked with the completion of the project

Positions held	Project Coordinator/Lead
Name of project	Provision of Upstream Petroleum Advice to the Conseil Général de la Guyane Française
Year	2013
Location	French Guyane
Client	Conseil Général de la Guyane Française
Main project features	Provision of Advice to the Conseil and the population of French Guiana on the economic, social and environmental aspects related to the development of the Petroleum industry. Undertook several presentations: one to the University, several throughout the country and to the Conseil Général de la Guyane Française. Held meetings with the Conseil on the possible ways to ensure local content.
Positions held	Subject Matter Expert
Name of project	Development of the Upstream Grenada Petroleum Industry
Year	2012-2013
Location	Grenada
Client	Gov't of Grenada, Ministry of Finance and Energy
Main project features	To develop and implement an offshore exploration and production programme for hydrocarbons offshore Grenada
Positions held	Project Coordinator/Team Leader/Upstream Energy Subject Matter Consultant/Advisor to the Minister
Name of project	Expert Witness in an Arbitration between Consolidated Energy and CLICO
Year	2014
Location	Trinidad and Tobago, UK
Client	CLICO
Main project features	Preparation of witness statements for the Respondents in the matter of an arbitration under the ICC rules between: Consolidated Energy Limited – Claimant and Respondents: Colonial Life Insurance Company (Trinidad) Limited, CL Financial Limited and Methanol Holdings (Trinidad) Limited. Appeared and was questioned as an Expert Witness before the Arbitral Tribunal in London
Position held	Expert Witness
Name of Project	Coordinator CLCS project to amend Trinidad and Tobago's submission
Year	2017 - present
Client	Ministry of Energy and Energy Industries, Trinidad and Tobago

PROFESSIONAL SKILLS:

Interpretation of Electric Logs.
Seismic Interpretation
Understanding and use of Paleontology,
Sequence Stratigraphic principles,
Sedimentology and Geochemistry as they relate to basin dynamics and oil exploration
Understanding and use reservoir engineering and drilling principles.
Understanding and knowledge of the laws and general principles by which the petroleum industry is governed
Knowledge and Understanding of Production Sharing Contracts and the Exploration and Production Licences
Petroleum Contract Negotiations
Economic evaluation of fiscal regimes and terms
Project Planning and Management
Marketing
Computer Literate- Ability to use all Microsoft Programmes including MS Project, Graphic Programmes – Photoshop and Corel Draw. Work Station Skills
Ability to communicate and interact with all levels of personnel and peers on a professional level.

RELEVANT PROJECTS

Planned and managed the Competitive Bid Rounds 1995,96,97,99 2001, 2005/2006, 2009, 2011 and 2012 which is the mechanism used by the Government of Trinidad and Tobago to invite bids for petroleum exploration. Responsible for the crafting of policies governing the round promotion of the round, revision of the Production Sharing Contract, putting together the terms and conditions. I was also an integral part of the team evaluating the bids and negotiating the resulting contracts.

Planned the Trinidad Ultradeep survey. Designed the areal extent and geometry of the survey, formulated the terms under which the survey would be acquired, promoted the survey at international fora. I was largely responsible for drafting of the ITB document and the Memorandum of Understanding which governed the conduct of the survey. The survey was completed and is being used to plan the long - term future of the upstream energy business in Trinidad and Tobago.

Member of the Board of Directors of The Petroleum Company of Trinidad and Tobago for one and a half years from February 2002, a part of a decision making entity which affects a billion dollar company. I was on the Tender's Committee, which approved tenders for goods and services integral to the running of the Company and the Operations Committee which approved major projects to be undertaken by the company.

Khalid, Muhammad (Pakistan; nominated by: Pakistan)

Name: Commodore Muhammad Khalid SI (M)
Date of Birth: 06/03/1974
Nationality: Pakistan
Language : English & Urdu

ACADEMIC BACKGROUND

- B.Sc.(Honors) in Naval Sciences
- Pakistan Naval Engineering College for Advance Studies
- Professional Courses at Naval Training Establishment
- Masters in War Studies (Maritime)

OCEAN SCIENCES PROFESSIONAL QUALIFICATIONS

- MS Physical Oceanography from Naval Postgraduate School Monterey - US
- Post Graduate Diploma in Hydrographic Surveying from Plymouth University-UK
- Advance Hydrographic Survey Course (Cat A) – UK
- Cat B course in Hydrographic Surveying (Port & Coastal Management) from International Maritime Academy, Trieste ITALY
- Exclusive Economic Zone Management Course – UK
- Basic Officers Hydrographic and Surveying Course – Pakistan

APPOINTMENTS AND DISTINGUISHED POSTS

2018 – July 2021 Hydrographer Pakistan Navy & Coordinator NAVAREA-IX
2016-2017 Commanding Officer Survey Vessel and Commander Auxiliary Squadron (COMAUXRON-21)
2013 - 2014 Executive Officer Survey Vessel
2010 Senior Surveying Officer onboard Survey Vessel
2008- 2009 Staff Officer (Hydrography) at Pakistan Navy Hydrographic Department

PROFESSIONAL ASSOCIATIONS

Member – National Maritime Forums

- Member of National Oceanographic Commission
- Member of National Committee of Geodesy and Geophysics
- Member of the Board of Governors of National Institute of Oceanography (NIO)
- Member of the Committee on Earth Observations Programme, SUPARCO
- Member of Central and Zonal Light Houses Advisory Committee
- Technical Member on UNCLOS and Maritime to the Ministry of Defence Pakistan
- Member Pakistan Technical Committee on Maritime Boundary Delimitation

Member – Pakistan International Representation

- Coordinator NAVAREA-IX
- International Hydrographic Organization (IHO)
- North Indian Ocean Hydrographic Commission (NIOHC)
- ROPME Sea Area Hydrographic Commission (RSAHC)

OCEAN RELATED ACTIVITIES AND NATIONAL RESPONSIBILITIES

- Responsible for the timely availability of International Nautical Charts Series/ associated Navigation Publications of Pakistan under IHO and Government directives
- As coordinator NAVAREA IX, responsible for the prompt promulgation of Maritime Safety Information (MSI) and radio navigation warnings in North Indian Ocean, Persian Gulf and Red Sea

- Advisor to Federal Government in demarcation of maritime zones, boundaries and Pakistan Baseline affairs
- Assisting Federal Govt. in hydrographic surveys of areas under the legal jurisdiction of Pakistan through planning and execution of Hydrographic surveys
- Responsible for establishment of Geodetic Network along Pakistan coast and promulgation of Chart Datum
- Conduct of Hydrographic and Oceanographic research surveys and studies of Pakistani waters for tides, tidal streams, and currents, nature of seabed, wave motion, ocean climatology and submarine conditions
- Render assistance in Physical, Geological and Oceanographic research
- Assisting Federal Govt. in carrying out surveys within the Exclusive Economic Zone for exploration and exploitation of natural resources (both living and non-living) and assisting of national scientists
- Location and marking of wrecks and navigational hazards for the safety of ships

MAJOR SURVEYS/RESEARCH ACTIVITIES

1998-2004	Remained part of all hydrographic and physical oceanographic surveys of deep offshore waters, coastal waters, internal waters and Creeks area of Pakistan
2008-2009	Forecasted and planned coastal and offshore hydrographic and oceanographic surveys
2010	In charge of survey team which took first ever riverine Hydrographic survey of River Indus in Pakistan
2013-2017	Executed various hydrographic and physical oceanographic surveys of deep offshore waters, coastal waters, internal waters and Creeks of Pakistan in the capacity of Executive Officer and Commanding Officer of Survey Vessel

UNCLOS RELATED WORK

- Member Technical Committee Pakistan Extension of Continental Shelf Project
- Technical member in Hydrographic, Geodetic, Maritime Boundary, and Baseline matters in Pakistan
- Advisor to Federal Government in matters related to Pakistan Continental Shelf
- Advisor to Federal Government with regard to scientific surveys in Pakistan Maritime Zones
- Remained part of various UNCLOS related seminars

PROFESSIONAL ACTIVITIES

- Coordinated conduct of Pakistan-China joint scientific cruises having multi-disciplinary research activities (Seismic, bathymetric, oceanographic etc)
- Headed team to re-establish and extend geodetic network along Pakistan coast
- Headed Pakistan's delegation as Member IOC Executive Council at UNESCO HQ Paris, France
- Chaired ROPME Sea Area Hydrographic Commission Meeting at Islamabad- Pakistan
- Represented Pakistan at North Indian Ocean Hydrographic Commission (NIOHC) meeting in Muscat – Oman

PUBLICATIONS

- Characterization of the Vertical Structure of Tidal Currents in Golden Gate (San Francisco) inlet published in Dec 2012 at NPS website (<https://calhoun.nps.edu>)
- Exploration prospects of oil and gas in the Northwestern Part of the Offshore Indus Basin. Pakistan China Geology,3(4), 633- 642 (<https://doi.org/10.31035/cg2020051>)

Loukili, Miloud (Morocco; nominated by: Morocco)

Born in Ahfir (Oujda) in 1953

EXPERTISE & SKILLS

International law

- Law of the Sea and Maritime Delimitation Law
- Diplomatic law
- International dispute resolution law
- International Organizations Law
- International Environmental Law

International Relations

- Geopolitics and Maritime geostrategy
- Euro-Mediterranean Partnerships
- Moroccan-Sub-Saharan Africa Relations
- Middle East crisis

FUNCTIONS

- Since 1975** **Professor**, Faculty of Legal, Economic and Social Sciences, Rabat-Agdal, Mohammed V University
- 2010 – 2015** **Consultant**, Cabinet of the Minister of Agriculture and Maritime Fisheries, Rabat
- 2008 – 2009** **Head of the Department of Public Law and Political Science** (*ad interim*), Faculty of Legal, Economic and Social Sciences, Rabat-Agdal, Mohammed V University
- 2002 – 2003** **Director of Merchant Marine**, Ministry of Equipment and Transport, Casablanca
- 1990 – 2002** **Director of the Higher Institute of Maritime Studies (ISEM)**, Casablanca

COURSES TAUGHT (selected 2007 - 2022)

- Since 2007** **Law of the Sea**, Faculty of Legal, Economic and Social Sciences, Rabat-Agdal, Mohammed V University, lecture, Master
- Since 2007** **International Environmental Law, Faculty of Legal, Economic and Social Sciences**, Rabat-Agdal, Mohammed V University, Bachelor
- Since 2010** **Law of the Sea**, course at the Moroccan Academy of Diplomatic Studies (AMED), Rabat, Ministry of Foreign Affairs and Cooperation
- Since 2011** **International Humanitarian Law**, Faculty of Legal, Economic and Social Sciences, Rabat-Agdal, Mohammed V University, lecture, Honor Bachelor in Political Science
- 2012 – 2013** **Major current international issues** course at the Royal Institute of Territorial Administration (IRAT), Kenitra, Ministry of the Interior
- Since 2012** **Geopolitics and Geostrategy of the Sea**, Faculty of Legal, Economic and Social Sciences, Rabat-Agdal, Mohammed V University, lecture, Honors Bachelor in Political Science
- 2008 – 2012** **Geostrategy of the Sea**, course at the Royal Institute of Territorial Administration (IRAT), Kenitra, Ministry of the Interior

Nov 2019 **Law of the Sea - "The Legal Regime of Maritime Spaces"**, course at the External Session of The Hague Academy of International Law, Rabat

RESPONSIBILITIES & PUBLICATIONS

- 2021 **"Towards the completion of Moroccan maritime sovereignty"**, article in magazine "Marine et Océans", special issue **"Le Maroc et le mer"**, 2021
- 2018 Consultant of the Economic, Social and Environmental Council on the blue economy in Morocco,
- 2018 Rabat Morocco **"The Law of the Sea: Challenges and Perspectives for Morocco"**, Publication of the Konrad Adenauer Foundation
- 2015 **"Morocco facing the call of the abyss"**, article in the Revue des Forces Armées Royales, Rabat, Morocco
- 2015 Publication in *Attawaçol*, Journal of the Moroccan Diplomatic Club, of the article **"Pour l'extension du plateau continental marin du Royaume"**, Rabat, Morocco
- 2014 **"Morocco, peacemaker in the world"**, article in the Revue des Forces Armées Royales (FAR), Rabat, Morocco
- 2014 Consultant to the Economic and Social Council for **the draft law on the coastline**, Rabat, Morocco
- Since 2013 Scientific co-president of the **Forum de la Mer**, El Jadida, Morocco
- Since 2010 Associate Member of **the Royal Institute for Strategic Studies (IRES)**, Rabat, Morocco
- 2009 Co-editing of the collective work **"Dynamiques électorales à l'heure des changements géopolitiques"**, proceedings of the scientific meeting jointly organized by the Faculty of Legal, Economic and Social Sciences, Rabat-Agdal, Mohammed V University and the Friedrich Ebert Foundation, Rabat, Morocco
- 2009 Member of the Scientific Council of the **Revue Africaine des Affaires Maritimes et des Transports**, University of Nantes, France
- 2009 Member of the Group of Legal Experts on **the Legal Regime of the Mediterranean High Seas**, International Union for Conservation of Nature (IUCN)
- 2003 Member of the Moroccan Delegation to the meeting of the Working Group on **Maritime Delimitation in the Atlantic Ocean between Morocco and Spain**, Madrid, Spain
- 2002 Member *intuitu personae* of the Group of Experts created by the Prime Minister on **the restructuring of the maritime sector**, Rabat, Morocco
- 2002 – 2003 Member of the Moroccan delegation to the **Moroccan-Egyptian and Moroccan-Tunisian joint maritime meetings and commissions**
- 2001 Member of the United Nations Educational Organization (UNESCO) Group of Experts on the **Law of the Sea**, Paris, France
- 1999 – 2001 Member of the **Board of Governors of the World Maritime University**, Malmö, Sweden
- 1995 – 2004 Member of the **jury of the Hassan II Prize for the Environment**, Rabat, Morocco
- 1991 Representative of Morocco to the Panel of Experts on **High Seas Fisheries**, United Nations, New York, United States
- 1990 Member of the Scientific Council of **the Yearbook of the Mediterranean** published by GERM (Groupement d'Etudes et de Recherches sur la Méditerranée), Rabat, Morocco

- 1989** "The United Nations and Outer Space", published as part of the proceedings of the International Colloquium on "New Spaces and International Law", organized by the University of Oran, Algeria
- 1987** Organizer and auditor of the External Session of The Hague Academy of International Law, on the theme "**Maritime Delimitation**", Rabat, Morocco
- 1984 – 1988** Member of the Moroccan-Spanish legal group on **the Euro-African Fixed Link project through the Strait of Gibraltar**
- 1981 – 2008** Secretary General of the Moroccan Association for International Studies and Research (**AMERI**), Rabat, Morocco. Since 2008, President of AMERI
- 1980** Member of the drafting group of the Regional Convention on **Land-Based Pollution in the Mediterranean**, UNEP, Geneva, Switzerland
- 1979 – 1981** United Nations Environment Programme (UNEP) **marine environment** consultant
- 1977** **Rapporteur of the Arab Group at the III United Nations Conference on the Law of the the Sea**, New York, USA
- 1977** Member of the **Arab Group of Experts on the Law of the Sea**, Arab League, Cairo, Egypt
- 1976 – 1990** Member of the Official Moroccan Delegation to **the Third United Nations Conference on the Law of the Sea** (New York, USA and Geneva, Switzerland) and to the **Preparatory Commission for the Seabed Authority and the Law of the Sea Tribunal** (Kingston, Jamaica)

LANGUAGES

Arabic
 French
 English

Madon, Mazlan bin (Malaysia; nominated by: Malaysia)

CURRENT POSITION

Advisor, Malaysian Continental Shelf Project, National Security Council, Malaysia
Member, Commission on the Limits of the Continental Shelf (2012-2017 and 2017-2022)

PERSONAL DATA

Year of Birth: 1961
Place of Birth: Johor, Malaysia

EDUCATION

- 1996 – Doctor of Philosophy: Earth Sciences (tectonics and basin analysis), University of Oxford, United Kingdom
- 1992 – Master of Science: Geology (sedimentology), University of Malaya, Malaysia
- 1984 – Bachelor of Science (Hons.) in Geology, University of Southampton, United Kingdom

PROFESSIONAL PROFILE

Dr Madon is a geologist with 33 years of previous working experience in the petroleum industry, primarily in a research environment, specializing in regional geological studies, basin analysis, sedimentology, tectonics, structural geology, and reservoir geological studies.

His research on sedimentary basins and petroleum systems includes exploration and resource assessments for PETRONAS, Malaysia's national petroleum company, in its domestic and international ventures in Southeast Asia, Central Asia, Middle East, and Africa.

From 2007 to 2017, he was the “Custodian” or Chief Geoscientist, the highest technical position in PETRONAS.

Dr Madon has participated in various international conferences and authored many technical papers on geology, sedimentology, and petroleum geology in national and international journals. He is the main author in PETRONAS' publication on “Petroleum Geology and Resources of Malaysia” published in 1999, which is a major source of reference for petroleum geologists in the country.

Dr Madon has also served as a panelist on the Industry Advisory Panels of several universities in Malaysia – University Malaya (2010), University Teknologi Petronas (2011), and Universiti Malaysia Terengganu (2016). He was adjunct lecturer, supervisor and examiner for undergraduate and postgraduate geoscience programmes at various universities, including University Teknologi Petronas (2005/6), University of Science Malaysia (2005/6), and University of Malaya (2005). He was appointed as Adjunct Professor at the Geology Department, University of Malaya, in 2020.

In 1987, Dr Madon participated as an onboard geoscientist on the RV SONNE in the BGR cruise SO-49 in the South China Sea, exploring the Dangerous Grounds and NW Borneo Trough. In 2008-2009, he was involved in the Malaysian Continental Shelf Project as a geological expert tasked to review and provide geological and geophysical inputs in the drafting of the joint submission by Malaysia and Vietnam to the Commission on the Limits of the Continental Shelf (CLCS) in 2009. He has been an Advisor to the Malaysian Continental Shelf Project since 2017.

In 2013, Dr Madon was elected as Fellow of the Academy of Sciences Malaysia in recognition of his contributions to the development of geological sciences in the country. In April 2017, he was among the 101 “accomplished and distinguished” petroleum geologists honoured by the

American Association of Petroleum Geologists in its special publication “The Heritage of the Petroleum Geologist”. In November 2017, he received an honorary doctor of science degree from Universiti Malaysia Terengganu for his contributions to marine geosciences.

AS MEMBER OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF (CLCS)

Dr Madon served as member of the CLCS for the terms 2012-2017 and 2017-2022. During his terms of office, he was member of subcommissions for the consideration of submissions made by:

- The Cook Islands, concerning the Manihiki Plateau
- Argentina
- Argentina – partial revised submission
- Mauritius, in the region of Rodrigues Island (as Chair)
- Russian Federation – partial revised submission in respect of the Okhotsk Sea
- Russian Federation – partial revised submission in respect of the Arctic Ocean (as Chair);
- Brazil – partial revised submission in respect of the Brazilian Southern Region
- Kenya
- Portugal

PROFESSIONAL SOCIETY ACTIVITIES

1. Geological Society of Malaysia (GSM)

- President (2013/14 to 2016/2017)
- Vice President (2010/11 to 2012/13)
- Assistant Secretary (1998/99)
- Council Member (1991/92, 1998/99, 2009/10 to 2020/2021)
- Chair of Stratigraphy and Sedimentology Working Group (1991/92)
- Editorial Advisory Board member (1993-1999)
- Editorial Committee member (2019-present)

2. Institute of Geology Malaysia (IGM)

- Council Member (1997/98, 1998/99)
- Chairman of Oil & Gas Technical Committee (1997/98, 1998/99).
- Fellow of IGM (2021).

3. American Association of Petroleum Geologists (AAPG)

- Active Member
- Elected Delegate for Asia Pacific to the AAPG House of Delegates (2014/15)

AWARDS

- 2013 – PETRONAS “Exemplary Line Trainer Award” for Geoscience
- 2013 – PETRONAS Geoscience “Special Recognition Award” for being elected as member of the Commission on the Limits of the Continental Shelf
- 2011 – PETRONAS “Best Line Trainer- Role Model” Award for Geoscience
- 2013 – Fellow of the Academy of Sciences Malaysia
- 2017 – American Association of Petroleum Geologists (AAPG) Honoree in “The Heritage of the Petroleum Geologist”
- 2017 – Honorary Doctor of Science (DSc), Universiti Malaysia Terengganu
- 2021 – Fellow of the Institute of Geology of Malaysia

PUBLICATIONS

- Main author and co-editor of book, “The Petroleum Geology and Resources of Malaysia”, published in 1999, by PETRONAS. (Contributed 14 out of 27 chapters).
- Ngah, K., Madon, M., and Tjia, H.D., 1996. Role of pre-Tertiary basement faults in the formation of Malay and Penyu Basins, offshore Peninsular Malaysia. In: Hall, R. & Blundell, D.J., eds., *Tectonic Evolution of Southeast Asia*. Geol. Soc. London Spec. Publ. No., 62, 281-289.
- Madon, M., Azlina Anuar and Wong, R., 1997. Structural evolution, maturation history and hydrocarbon potential of the Penyu Basin, offshore Peninsular Malaysia. In: Howes, J.V.C and Noble, R.A, eds., *Proc. IPA Petroleum Systems of SE Asia and Australasia*, Jakarta 21-23 May 1997, Indonesian Pet. Assoc., Jakarta, 403-424.
- Madon, M., 1997. The kinematics of extension and inversion in the Malay Basin, offshore Peninsular Malaysia. *Geol. Soc. Malaysia Bull.*, 41, 127-138.
- Madon, M. and Watts, A.B., 1998. Gravity anomalies, subsidence history, and the tectonic evolution of the Malay and Penyu Basins. *Basin Research*, 10, 375-392.
- Madon, M., Jiu-Shan Yang, Abolins, P., Redzuan Abu Hassan, Azmi M. Yakzan & Saiful Bahari Zainal, 2006. Petroleum systems of the Northern Malay Basin. *Geol. Soc. Malaysia Bull.*, 49, 125-134.
- Madon, M., 2007. Overpressure development in rift basins: an example from the Malay Basin, offshore Peninsular Malaysia. *Petroleum Geoscience*, vol. 13, pp. 169-180.
- Madon, M. and Abdul Hadi Abd Rahman, 2007. Penecontemporaneous deformation in the Nyalau Formation (Oligo-Miocene), central Sarawak. *Geol. Soc. Malaysia Bull.*, 53, 67-73.
- Madon, M., 2010. Submarine mass-transport deposits in the Semantan Formation (Middle-Upper Triassic), central Peninsular Malaysia. *Geol. Soc. Malaysia Bull.* 56, 15-26.
- Madon, M., Kim, C.L. and Wong, R., 2013. The structure and stratigraphy of deepwater Sarawak, Malaysia: implications for tectonic evolution. *Jour. of Asian Earth Sci.*, 76, 312-333.
- Madon, M., 2017. A brief review of gravity and magnetic data for Malaysia. *Warta Geologi*, vol. 43, no. 2, April-June 2017, 41-49.
- Madon, M., 2017. The continental shelf – five decades of progress (1966-2016). *Geol. Soc. Malaysia Bull.*, 63, 145-156.
- Lunt, P. and Madon, M., 2017. A review of the Sarawak Cycles: history and modern application. *Geol. Soc. Malaysia Bull.*, 63, 77-101.
- Madon, M., 2019. Images of the deep seafloor in the MH370 search area and the vastness of the oceans. *Warta Geologi*, vol. 45, No. 2, April-June 2019, pp. 52-55.
- Madon, M., Jong, J., Kessler, F.L., Murphy, C., Your, L., Mursyidah Bt A Hamid, and Nurfadhila Bt M Sharef, 2019. Overview of the structural framework and hydrocarbon plays in the Penyu Basin, offshore Peninsular Malaysia. *Geol. Soc. Malaysia Bull.*, 68, 1-23.
- Madon, M., Kessler, F.L., Jong, J. and Mohd Khairil Azrafy Amin, 2020. “Fractured basement” play in the Sabah Basin? – the Crocker and Kudat formations as hydrocarbon reservoirs and their risk factors. *Geol. Soc. Malaysia Bull.*, 69, 157-171.
- Madon, M., 2020. Exploration and exploitation of non-living natural resources on the continental shelf beyond 200 nautical miles: a status review. *Geol. Soc. Malaysia Bull.*, 70, 17 - 28.
- Madon, M., 2021. Deep-sea trace fossils in the West Crocker Formation, Sabah (Malaysia), and their palaeoenvironmental significance. *Geol. Soc. Malaysia Bull.*, 71, 23 – 46.

- Madon, M. & Jong, J., 2021. Geothermal gradient and heat flow maps of offshore Malaysia: some updates and observations. *Geol. Soc. Malaysia Bull.*, 71, 159-183.
- Madon, M., 2021. Five decades of petroleum exploration and discovery in the Malay Basin (1968-2018) and remaining potential. *Geol. Soc. Malaysia Bull.*, 72, 63-88.
- Madon, M., Jong, J., Kessler, F.L. & Scherer, M., 2021. Suppression of vitrinite reflectance in the Malay and Penyu basins, offshore Peninsular Malaysia: A review of available data and potential implications. *Geol. Soc. Malaysia Bull.*, 72, 123-136.

CONFERENCE PRESENTATIONS/ABSTRACTS

- Madon, M., 1993. Structural evolution of Penyu Basin, offshore Peninsular Malaysia. *Geol. Soc. London Conf. "Tectonic evolution of SE Asia"*, London, 7-8 Dec 1993.
- Madon, M., Azlina Anuar and Wong, R., 1997. Structural evolution, maturation history and hydrocarbon potential of the Penyu Basin, offshore Peninsular Malaysia. *IPA Symposium on Petroleum Systems of SE Asia and Australasia*, Jakarta 21-23 May 1997, Indonesian Pet. Assoc., Jakarta.
- Madon, M., 2005. Overpressure development in rift basins: an example from the Malay Basin, offshore Peninsular Malaysia. *International Conference "Return to Rifts — the next wave! Fresh Insights into the Petroleum Geology of Global Rift Basins*, 5-7 April 2005, Geological Society of London, Burlington House.
- Madon, M., Kim Cheng Ly, and R. Wong, 2007. The structure and stratigraphy of deepwater Sarawak: implications for the tectonic evolution of the NW Borneo continental margin. *AAPG Annual Conv.*, Long Beach, Ca., 1-4 April, 2007.
- Madon, M., Hasnol Hady Ismail, and Zainol Affendi Abu Bakar, 2008. Turbidites and mass transport deposits in the Semantan Formation (Middle-Upper Triassic), central Peninsular Malaysia. *AAPG Annual Conv.*, San Antonio, Tx., April 20-23, 2008.
- Madon, M., Abolins, P. & Abu Hassan, R., 2009. The Northern Malay Basin: Petroleum Systems and Remaining Potential. *AAPG Annual Conv.*, Denver, Co., June 7-10.
- Madon, M., 2013. Geology and seabed resources in the South China Sea: a Malaysian perspective. Seminar on "What's to be done towards the development of natural resources n the continental shelf for the future" by Japanese Ocean Policy Research Foundation, Tokyo, 10 January 2013.
- Madon, M., 2017. Official documents of the Commission: development and evolution. *Open Meeting of the 20th Anniversary of the Commission on the Limits of the Continental Shelf*, United Nations Headquarters, New York, 10 March 2017.
- Madon, M., 2017. Exploration and exploitation of natural resources on the continental shelf beyond 200 nautical miles - a status update. *4th International Symposium on the Law of the Sea: "20th Anniversary of the Commission on the Limits of the Continental Shelf: Achievements and Challenges"*, December 14, 2017, Tokyo, Japan.
- Madon, M., 2019. The geology and morphology of the "continental margin" in extended continental shelves. *2019 Global Ocean Regime Conference, "Global Ocean Governance and the Contributions of International Organisations"*, Ministry of Ocean and Fisheries and Korea Maritime Institute, 9-10 May, Seoul, Korea.

Mahanjane, Estevão Stefane (Mozambique; nominated by: Mozambique)

PERSONAL INFORMATION

Date of Birth: **07/03/1974**
Gender: **MALE**

EDUCATION

- June 2014 **Gottfried Wilhelm Leibniz Universität Hannover, deutschland**
Ph.D program in Applied Geophysics (Geosciences) at the Institute of Geology, coordinated by Bundesanstalt für Geowissenschaften und Rohstoffe (BGR)
- December 2002 **University of Cape Town, South Africa**
Post-graduate program in petroleum exploration, geophysical exploration and reservoir modelling

SKILLS

- Multilingual [English, German, Portuguese, Spanish]
- Energetic
- Teaching, coaching & training
- Survey planning & data acquisition
- Database management
- Data analytics
- SEO
- Digital marketing
- Design
- Software tools and platforms
- Advanced drilling technology
- Well logging & petrophysics
- Petrel-Geomodeller
- Forward modeling and data inversion
- 2d/3d geological modeling
- Integrated geophysical data
- Data processing software: PROMAX
- Creative writing technical reports
- Copy editing and proofreading
- Integrity
- Project planning and development
- Effective communication
- Open-mindedness/agiles mindset
- A keen eye for details
- Teamwork
- Creativity
- Problem-solving
- Critical thinking
- Time management/ organisation
- Handling multiple priorities

- Confidence and self-motivation
- Contract negotiation
- Willingness to learn
- Independent work
- International cooperation

WORK EXPERIENCE:

UNITED NATIONS CONVENTION ON THE LAW OF THE SEA (UNCLOS)

From: **15/06/2012** To: **15/06/2023**

MEMBER OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF

Name of employer: **UNITED NATIONS**

Type of business: **EXPERT IN MISSION**

DESCRIPTION OF DUTIES

- Chair of the Subcommission to consider the India Submission
- Chair of the Subcommission to consider the Nigeria Submission
- Chair of the Subcommission to consider the Côte d'Ivoire Submission
- Chair of Confidentiality Committee of the Commission
- Vice-Chair of the Subcommission to consider the Iceland Submission
- Member of the Training and Capacity Building Committee
- Member of the Subcommission to Ghana; Pakistan; OJP; Tonga; Palau; France and South-Africa Submissions
- Write reports in comply with the publishing and quality standards of the United Nations
- Moderator/negotiation with State representatives (Government)

SUMMARY OF ACHIEVEMENTS:

- Strengthen international cooperation between the United Nations and Governments
- Experience in management, implementation and quality control of international cooperation
- Conceiving national and international Research projects
- Issued reports of Recommendations to coastal States
- Contribution significantly to the training of scientists and lawyers on the continental shelf programs
- Provided technical and scientific assistance to coastal States in the preparation of their submissions
- Contributed to enforcement of rules concerning confidentiality, as chair of the standing committee on confidentiality, took all measures to ensure the integrity of the Commission

OIL INDUSTRY

From: **01/06/2001** To: **PRESENT**

CHIEF GEOSCIENTIST

Name of employer: **NATIONAL PETROLEUM INSTITUTE**

Type of business: **OIL INDUSTRY**

DESCRIPTION OF DUTIES:

- Analyzed thousands of 2D/3D marine seismic data, high-resolution seismic data, and existing well data to optimize hydrocarbon potential and build data package for the most ever successful international bidding rounds;
- Collaborating with other teams to build several 2D/3D geological and depositional models and prospect generation in the Rovuma Delta in deep-water-and-fold-belt system;
- Gas Chromatography analysis, Rock Eval pyrolysis analysis;
- Integrated geophysical studies, geophysical modeling to generate data input for 3D reservoir model;
- Analysis and review of action plans for drilling programs, 2D/3D seismic data collection,

emergency plan, projects development phase, local content, social awareness, Health, Safety and Environment;

- Marketing, licensing and negotiations for petroleum exploration and production;
- Participate in the successful drilling campaigns;
- Evaluating technical bidding rounds and negotiations with awarded companies;
- Oil and gas market analysis and value chain management; Environmental Impact Assessments (EIA);
- Drafting and management of multi-sectorial policies and regulations in the Ministry of Mineral resources and Energy;
- Drafting technical and scientific work programs, and optimized marketing efforts;
- Training, supervision, mentor, and coordinating multiple in-house projects and schedules for 4 teams of geologists, geophysicists, reservoir engineers, petrophysicists to ensure potential assessment;
- Advising the board of directors in the matter related to scientific nature leading for internationally accepted good practice;
- Reporting and documentation, oral presentations reporting work progress and recommendations to the company management and Government authorities.

SUMMARY OF ACHIEVEMENTS:

- Experience in project management, implementation and quality control
 - investment over than U\$100 billion for the hydrocarbon exploration in Mozambique
 - Leading to discovery of ~190 trillion cubic feet of natural gas
 - Resulting in investment of thousands of billions of U\$ dollars
 - Leading to a 50% increase attracting the open acreages
 - Leading to increase of more than 5 trillion cubic feet of natural gas reserve in the onshore Temane gas field, Mozambique
 - Keep high professional standard in the oil exploration & production
 - Assuring the quality and management of the national repository DATABASE
- Negotiation skills

TEACHING, COACHING & TRAINING

From: **01/02/2007** To: **PRESENT**

RESEARCHER AND LECTURER

DESCRIPTION OF DUTIES:

- Teaching petroleum geology, geophysics, geostatistics, geomathematics, petroleum engineering, geochemistry, Earth sciences, Environmental sciences, scientific aspects of the Continental shelf (Article 76 of UNCLOS) and UNCLOS related subjects
- Supervision of undergraduate thesis, tutor in international seminars, external examiner for graduate, master and PhD thesis;
- Teaching master programs in (i) Petroleum Engineering; (ii) Economics & Management of Oil and Gas (Fac. Economy)
- Collection, processing, interpretation and presentation of data;
- Independent researcher
- Field work, laboratory analysis
- Co-chief scientist of the international joint cruises;
- Scientist on board of French and Germany academic and research institutions;
- Projects planner for scientific cruises;
- Published widely on subjects on geosciences, academic journal and peer reviewed books; as well as short communications in the international conferences.
- International training programs for scientists and lawyers on matters related to the United Nations Convention on the Law of the Sea:
 - The Third International Symposium on Scientific and Legal Aspects of the Regimes of the Continental Shelf and the Area, Beijing, 2012

- The Fourth International Symposium on Scientific and Legal Aspects of the Regimes of the Continental Shelf and the Area, Xiamen, 2014
 - Blue Week Summit Lisbon-Portugal, June 2015
 - The University of Faroe Islands (Tórshavn) - the Summer Academy on the Continental Shelf (SACS), June 2015
 - The Fifth International Symposium on Scientific and Legal Aspects of the Regimes of the Continental Shelf and the Area, Nanjing 2016
 - African Institute of International Law (Tanzania) and the University of Faroe Islands - the Summer Academy on the Continental Shelf (SACS), Arusha, April 2018
 - The Sixth International Symposium on Scientific and Legal Aspects of the Regimes of the Continental Shelf and the Area, Wuzhen 2018
 - African Institute of International Law (Tanzania) and the University of Faroe Islands - the Summer Academy on the Continental Shelf (SACS), Arusha, September 2019
 - Jindal Global Law University (India), The scientific aspects of the continental shelf, October 2020
 - Xiamen University (China), Virtual High-Level Lectures Series on International Law of the Sea, April 2021
 - Wuhan University (China), Massive Open Online Courses on International Law of the Sea and Global Governance, October 2021
- Implementation of the United Nations Convention on the Law of the Sea (UNCLOS 82)

Moreira, Domingos de Carvalho Viana (Angola; nominated by: Angola)

Age: 57 years old; Place of Birth: Luanda-Republic of Angola

EDUCATIONAL QUALIFICATIONS: Basic education in Luanda.

Bachelor of Geological Engineering: Academy of Mines Berg-Akademie Freiberg- Federal Republic of Germany.

Degree in Geophysics – Agostinho Neto University (UAN) Luanda/Angola;

International Course in Applied Hydrology under the UNICEF Lisbon Project.

Masters (MSc), Geosciences in Natural Resources and Environment. Area of Concentration: (Oil and Gas)–UAN;

Advanced Studies, Physical Oceanography at the Institute of Sea Studies – Admiral Paulo Moreira (IEMAPM) in Cabo Frio-Brazil.

Advanced Studies, Underwater Mountains and Hotspots by UFF-Brasil.

Advanced Studies, Sedimentary Basins and Sedimentary Processes by the State University of Rio de Janeiro (UERJ) Department of Oceanography.

Doctor (PhD), in Marine Geology and Geophysics: Ocean and Earth Dynamics Program at the Fluminense Federal University (UFF) Rio de Janeiro/Brazil. Area of Concentration: Geology, Geophysics and Oceanography.

PROFESSIONAL EXPERIENCE

- Technical Coordinator of the National Underground Water Company - Hidrominas (Ministry of Geology and Mines) and of the UNICEF Project - Geological and Geophysical Studies for the Supply of Underground Water to the semiarid areas of southern Angola (Namibe, Huila and Cunene).
- Technician at the National Institute of Geology/Ministry of Geology and Mines.
- Teacher of Mathematics and Physics at the Telecommunications Institute (ITEL).
- Collaborator at UAN in the disciplines of Applied Mathematics and Introduction to Geophysics.
- Coordinator of the Geosciences area of the Interministerial Commission for the Delimitation and Demarcation of Maritime Spaces in Angola (CIDDEMA).
- Training Course in Luanda on the Scientific and Technical Guidelines of the United Nations Continental Shelf Boundary Commission conducted by Assistants of the Division for Ocean Affairs and the Law of the Sea (DOALOS) and members of the Nations Continental Shelf Boundary Commission United Nations (CLPC), under the United Nations Convention on the Law of the Sea (UNCLOS), 2011.
- Course on the Delimitation and Demarcation of Maritime Spaces Experience of Portugal, held in Lisbon and taught by the Members of the Structure of the Mission for Maritime Affairs (EMAM) -Portugal, 2012.
- Course on Delimitation and Litigation, Demarcation and Maintenance of Borders held by the University of Duhram-England, 2012.
- Member of the technical team that prepared the Survey for Geophysical and Geological Surveys for the Angola Continental Shelf Extension Project (PEPCA).
- Participant in the Geophysical and Geological Surveys Made by the Ocean Ships Endeavor-Gardline Hydro and Princess/CGG-VERITAS.

- Member of the CIDDEMA Team who was in Paris to monitor the Processing and quality validation of the Geological and Geophysical Data acquired under the PEPCA.
- Member of the Technical team on maritime borders with Namibia.
- Member of the Angola-Gabon team in the talks on the Overlap of Borders area in the submission proposals of the two countries.
- Member of the team for the acquisition of Topo Hydrographic Data, assembly and installation of tide gauges in the main seaports in Angola.
- Member of the technical team on Geodesy works in the parameters of Transformation of Datum CAMACUPA to WGS84 throughout Angola, 2014.
- Member of the Angolan Delegation that presented the Angola Submission made to the Commission on the Limits of the Continental Shelf at the United Nations in New York, 2015.
- Technical Coordinator of the Interministerial Commission for the Delimitation and Demarcation of Maritime Spaces in Angola (CIDDEMA).
- Member of the United Nations Commission on the Limits of the Continental Shelf (CLCS) since 2017 (Experience in evaluating submissions from Brazil-South Margin, France-S.Paul and Amsterdam, Kenya, Spain-Galicia, Brazil Equatorial Margin).

Mosher, David Cole (Canada; nominated by: Australia, Canada, New Zealand)

Citizenship: Canada

Language: English (maternal), French (moderate)

EMPLOYMENT HISTORY:

2000-2021 Senior Research Scientist (RS-5)
Geological Survey of Canada – Atlantic Division,
Natural Resources Canada, Bedford Institute of Oceanography, 1 Challenger Dr., Box 1006,
Dartmouth, NS, Canada, B2Y 4A2

2017-Present Commissioner
Commission on the Limits of the Continental Shelf, Division of Oceans and Law of the Sea
(DOALOS), United Nations, New York, NY

2017-Present Professor (on leave)
University of New Hampshire,
Dept. Earth Sciences and Center for Coastal and Ocean Mapping, Jere Chase Ocean Engineering
Lab, 24 Colovos Rd., Durham, NH, USA 03824.

2015-2017 Professor
University of New Hampshire,
Dept. Earth Sciences and Center for Coastal and Ocean Mapping, Jere Chase Ocean Engineering
Lab, 24 Colovos Rd., Durham, NH, USA 03824.

2012-2015 Program Manager (REM-2)
Geological Survey of Canada – Atlantic Division,
Natural Resources Canada, Bedford Institute of Oceanography, 1 Challenger Dr., Box 1006,
Dartmouth, NS, Canada, B2Y 4A2

2000-present Adjunct Professor
Dalhousie University, Halifax, NS (Ocean. and Earth Sci.)

1993-2000 Research Scientist
Geological Survey of Canada - Pacific Division, Dept. of Natural Resources Canada, Box 6000,
9860 West Saanich Rd., Sidney, B.C., Canada, V8L 4B2

Adjunct Professor
School of Earth and Ocean Sciences, Univ of Victoria

EDUCATION:

1988-1993 PhD., Oceanography Dept., Dalhousie Univ., Halifax, N.S., B3H 4J1.
Thesis: Seismic Stratigraphy of the Ontong Java Plateau: Its Paleooceanographic
Significance.

1984-1987 MSc., Dept. of Earth Sciences, Memorial University of Newfoundland, St. John's,
Newfoundland, A1B 3X5.

1978-1983 B.Sc.(H), Geology, Acadia Univ., Wolfville, Nova Scotia, B0P 1X0.

EXECUTIVE POSITIONS IN EXTERNAL ORGANIZATIONS:

2019-present Associate editor, Journal of Marine Geology

- 2018 co-Chair, VIIIth International Conference on Submarine Mass Movements and Their Consequences, Victoria, British Columbia. May 7-9th.
- 2017 Convener, Special Session, Extended Continental Shelf Mapping: a wealth of new continental margin understanding. European Geosciences Union Annual Assembly 2017, Vienna Austria, April 24th.
- 2015-present, Executive council, UNESCO/IGCP Project 640, S4SLIDE, Assessing Geohazards, Environmental Implications and Economic Significance of Subaqueous Landslides across the World's Continental Margins
- 2007-present, External expert reviewer, German/DFG IODP Priority Program
- 2012-2015 ECORD representative, International Ocean Discovery Program, Science Evaluation Panel
- 2010-2015 Co-Chair, UNESCO/IGCP Project 585 (E-MARSHALL)
Earth's continental margins: assessing the geohazard from submarine landslides
- 2007-2011 Vice-President, President, and Past President, Atlantic Geoscience Society
- 2003-2015 Canadian Consortium for Ocean Drilling committee member (founding)
- 2001-2012 Canadian Merit Scholarship Foundation (LORAN), Nova Scotia Selection Committee Chair, 2004 to 2012). National Selection Committee, 2008 & 2010
- 2006 Alexander Graham Bell Foundation Environmental Centre inaugural Board of Directors
- 2002-2006 Petroleum Research- Atlantic Canada, Research Selection Committee
- 2002-2012 Bedford Institute of Oceanography Seminar Committee co-chair
- 2004-2006 Atlantic Energy Roundtable, Seismic subcommittee
- 1998-2002 President, Marine Geosciences Division (GAC)
- 1997-2002 Associate Editor, Journal for Environmental and Engineering Geophysics

EXTERNAL GRANTS AND FUNDING (PRINCIPAL INVESTIGATOR ONLY):

- 2010-2014 NSERC Discovery Grant: Continental margin sedimentation: evolution of the seismic sequence stratigraphic model, Mosher, \$21,000 per annum
- 2011-2013 Panel on Energy Research and Development, Frontier Oil and Gas Portfolio (Gas Hydrates). Gas hydrate as an unconventional source of gas on Canada's East Coast \$160,000.
- 2008-2011 Panel on Energy Research and Development, Pipelines POL. Engineering Evaluation of Shallow Marine Sediment Foundation Conditions through Analysis of Acoustic Scattering and In Situ Measurement, Courtney and Mosher, \$70,000/year
- 2007-2011 Panel on Energy Research and Development, Offshore Environmental Factors POL. Constraints to offshore hydrocarbon development in deep water off eastern Canada. \$107K per annum
- 2007-2010 Offshore Energy Technical Research Association – Reservoir distribution and characterization: Shelf to slope linked depositional systems. Wach and Mosher, \$293,250.
- 2006-2007 ConocoPhillips-GSC Collaborative Agreement: Seafloor geology and regional geohazard assessment, Scotian Slope and Laurentian Subbasin, \$100,000.
- 2004-2007 NSERC Discovery Grant: Geophysical characterization and quantification of gas hydrates, Canadian East Coast margin, Mosher, \$20,000 per annum
- 2007-present Panel on Energy Research and Development, Offshore Environmental Factors POL. Offshore slope stability and Offshore Geotechnique, Mosher, \$197,000

2005-2007	Climate Change Technology Innovation Initiative: Development of the Harpoon Free Fall Cone Penetrometer Geotechnical Tool, Mosher, \$100,000
2005-2007	Climate Change Technology Innovation Initiative CCTII – Ocean Bottom Seismometer adaptation for marine gas hydrate research, Mosher, \$90,000.
2003-2005	Petroleum Research-Atlantic Canada: Harpoon Free Fall Cone Penetrometer Development and Field Verification, Christian, Furlong and Mosher, \$60K
2003-2005	Petroleum Research-Atlantic Canada: Deep-water seafloor rendering and data extraction for environmental and geohazard assessment: A comparison study of 3D seismic reflection and multibeam sonar surface renders and amplitude backscatter, Mosher and LaPierre, \$75,000.
2002	ChevronTexaco-GSC Collaborative Agreement: Seafloor geology and geohazard assessment, Scotian Slope, Mosher, \$30,000.
1999-2001	USGS-National Earthquake Hazard Reduction Plan - Seismic Hazards Investigation in Puget Sound (SHIPS): Analysis of Seismic Structure, Hyndman and Mosher, \$110,000.
1996-1998	USGS-National Earthquake Hazard Reduction Plan – Neotectonics of the Eastern Juan de Fuca Strait, Mosher, \$100,000.

ADDITIONAL TRAINING:

2015	DOALOS, UNCLOS Extended Continental Shelf Training Course
2009	5 weeks French Immersion; Univerité Sainte Anne
2005-2007	French Language Training (International Language Institute)
2003	Leading Scientific Teams (Canadian Centre for Management Development)
1997	Coastal Multibeam Hydrography (Ocean Mapping Group, UNB)
1996	Environmental Assessment (Geological Society of America)
1992.	Downhole geophysical logging (Ocean Drilling Program)

AWARDS

2021	National Oceanographic and Atmospheric Administration (NOAA) Certificate of Commendation, for contributions to the U.S. Extended Continental Shelf project, under UNCLOS
2019	NRCan Impact Award: Leadership in Innovation, for producing Canada’s Submission on the Arctic Ocean under UNCLOS.
2015	NRCan Sector Merit Award (for planning and execution of the 2015 Mission to the North Pole)
2014	Departmental Achievement Award (for preparation of the Atlantic submission to the Commission on the Limits of the Continental Shelf)
1989-1992	NSERC post-graduate scholarship
1983	Texaco Research Scholarship

INVITED PRESENTATIONS/KEYNOTE LECTURES

2021:

- Where Geology Meets Jurisprudence. Lecture to the UN Group of Friends of UNCLOS, on invitation from Ambassador Rae, Canadian Ambassador to the UN, December 15, 2021
- A River Beneath the Sea: mapping the Northwest Atlantic Mid-Ocean Channel. Lecture to the Geological Survey of Canada, Atlantic. December 4, 2021.
- Where Geology Meets Jurisprudence. Lecture at Christian Albrecht University, Kiel, Germany.
- A River Beneath the Sea: mapping the Northwest Atlantic Mid-Ocean Channel. Royal Holloway University, October 21, 2021
- Where Geology meets Jurisprudence: the role of geology in establishment of Canada’s extended continental shelf, University of New Brunswick Lecture, March 29, 2021
- Instructor: Division of Ocean Affairs and Law of the Sea course on Article 76 to South Pacific Nations consortium.

2020:

- Where Geology meets Jurisprudence: Canada's extended continental shelf mapping in the Atlantic. Atlantic Geoscience Society invited lecture, September 8, 2020.
- Contourites in Canada Basin: evidence of deep water circulation in the Arctic. Bedford Institute of Oceanography seminar series, invited lecture. May 29, 2020.

2019:

- Extended Continental Shelf: Geology meets Jurisprudence. Global Affairs Canada "Legal Adviser Presents" lecture series. Ottawa, Ont. June 27, 2019.
- Status of CLCS considerations. U.S. Task Force for extended continental shelf mapping, Vale, Colorado, May 2019.

2018:

- The Geologic Evolution of Canada Basin, Arctic Ocean. Second Institute of Oceanography, Hangzhou, China, May 31, 2018
- Understanding scientific aspects of Article 76, Law of the Sea Symposium, Wuzhen, China, May 27-June
- Marine Geohazards short course (instructor), May 10-11th, 2018, Victoria, BC, Canada

2017:

- Challenges with respect to Coastal State Submissions to the CLCS: Scientific Aspects in application of the General Rule. Fourth International Symposium on Law of the Sea, United Nations University, Tokyo, Japan, Dec. 16-19, 2017.
- U.S./Canada Collaboration in the Arctic ECS Program. As the Ice Goes: US and Canadian Cooperation in the Arctic, Bill Graham Centre for Contemporary International History (University of Toronto), The Polar Initiative (Woodrow Wilson Center, DC), and The Canadian International Council, 18 -19 April 2017

2016:

- Continental Margins of the Arctic Ocean: Implications for Law of the Sea. European Geosciences Union General Assembly 2016, Vienna, Austria, April 17-22.

2015:

- The role of submarine landslides in the Law of the Sea. International Symposium on Submarine Mass-movements and Their Consequences VII, November 2, Wellington, New Zealand

2014:

- A New Wave of Exploration of the Arctic Ocean. Nova Scotia Institute of Science, Halifax, Nova Scotia, December 5.

2012:

- A Tale of Two Icebreakers: geophysical surveying in the high Arctic. Arctic Technology Conference, Houston, TX. December 3rd.
- A margin-wide gas hydrate assessment along Canada's Atlantic Coast: Fuel for the Future? Bedford Institute of Oceanography Seminar Series, January, 2012, Dartmouth, Nova Scotia.

2011:

- Gas hydrate resources on Canada's East Coast: fact or fiction. The Society of Organic Petrology, Annual Meeting, July 31st -August 2nd, 2011, Halifax, Nova Scotia.
- Geologic Mapping of the Arctic Ocean. The Canadian Programme for an Extended Continental Shelf Submission. Nova Scotia Natural History Museum, Beyond the Last Billion Years Lecture Series, February 8th.
- Sedimentation in the western Arctic Ocean, Research Frontiers Special Session, Geological Association of Canada annual meeting, May 24-27, 2011, Ottawa, Ont.
- Earthquakes, Submarine Landslides and Tsunamis. International Oceans Institute, June, 2011, Halifax, Nova Scotia.

2010:

- Gas Hydrate: Fuel for the Future. Canadian Offshore Resources Exhibit (CORE) and Conference, October 25-27, 2010, Halifax, Nova Scotia.
- Gas Hydrate along Canada's East Coast Margin. C-CORE workshop on Gas Hydrate, March 23-24, 2010, St. John's, Newfoundland.
- Reservoir distribution and characterization: continental slope depositional systems along the Scotian margin. Nova Scotia Research and Development Forum, Halifax, May 26-28, 2010.

2009:

- The Canadian Programme for an Extended Continental Shelf Submission; Canada Basin, Western Arctic. ArcticNet annual Scientific Meeting, Dec, 8-11, Victoria, BC.
- It's a 2-way Street: bathymetric charting for geoscience and geoscience for bathymetric charting. World Hydrography Day, Canadian Hydrographic Association, June 21, Halifax, Sept, 18, Victoria.

2008:

- Submarine mass-movements in Canada: geohazards with far reaching implications. Comptes rendus de la 4e Conférence canadienne sur les géorisques: des causes à la gestion. 4th Canadian Conference on Geohazards: From Causes to Management. Presse de l'Université Laval, Québec, p 55-62. <http://cgrg.geog.uvic.ca/abstracts/MosherSubmarineOn.html>

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- Mosher, D.C.** and Boggild, K. 2021. Impact of bottom currents on deep water sedimentary processes of Canada Basin, Arctic Ocean. *Earth and Planetary Science Letters* 569, 11 pp. doi.org/10.1016/j.epsl.2021.117067
- Boggild, K. and **Mosher, D.C.**, 2021. Turbidity currents at polar latitudes: A case study of the NP-28 submarine channel in the Amundsen Basin, Arctic Ocean. *Marine Geology* 440, 16 pp. doi.org/10.1016/j.margeo.2021.106571
- Mosher, D.C.** and Yanez-Carrizo, G. 2021. The Elusive Continental Rise: insights from residual bathymetric analysis of the northwest Atlantic margin. *Earth-Science Reviews* 217: 20 pp. <https://doi.org/10.1016/j.earscirev.2021.103608>.
- Boggild, K., **Mosher, D.C.**, Travaglini, P., Gebhardt, C., Mayer, L. 2020. Mass wasting on Alpha Ridge in the Arctic Ocean: new insights from multibeam bathymetry and subbottom profiler data. Geological Society, London, Special Publications, 500. <https://doi.org/10.1144/SP500-2019-196>.
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- Schulten, I., Mosher, D.C., Krastel, S., Piper, D.J.W. and Keinast, M., 2019. Surficial Sediment Failures due to the 1929 Grand Banks Earthquake, St. Pierre Slope. In: Lintern, G., **Mosher, D.C.** et al. (eds), Subaqueous Mass Movements. Geological Society, London, Special Publications, 477: 583–596.
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- Mosher, D.C.** and Hutchinson, D.R., 2019. Canada Basin: Chapter 10. In: A. Piskarev, V. Poselov and V. Kaminsky (eds) “Geologic Structures of the Arctic Basin”, P. 295-325. Springer, Cham, https://doi.org/10.1007/978-3-319-77742-9_10.
- MacKillop, K., Fenton, G., **Mosher, D.C.**, Latour, V. and Mitchelmore, P. 2019. Assessing Submarine Slope Stability through deterministic and probabilistic approaches: a case study on the west-central Scotia Slope. *Geosciences* 9, 18 pp.
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- Campbell, D.C., **Mosher, D.C.**, Jenner, K., and Piper, D.J.W., 2001. Sediment failures on the southeast Canadian margin. Geological Association of Canada annual meeting (GAC/MAC) Program with Abstracts. May, 2001, St. John's.
- Bloomer, S., **Mosher, D.C.**, Preston, J. and Collins, W.C., 2001. Statistical approaches to sea floor and subbottom classification of acoustic data. Geological Association of Canada annual meeting (GAC/MAC) Program with Abstracts. May, 2001, St. John's.
- Barnhardt, W., Fisher, M., Gardner, J., Palsson, W., Greene, G., **Mosher, D.**, Baker, G., Dartnell, P., Gelfenbaum, G., and Sherwood, C., 2001. Geologic Mapping of Marine Benthic Habitats in Puget Sound, Washington. Puget Sound Research, 2001, conference proceedings with Abstracts. Bellevue, Washington, February, 2001.
- Bornhold, B.D., Collins, W.T., Harper, J.R., Ward, S.L., Thuringer, P., **Mosher, D.C.** and Christney, T. Multiparameter approaches to shallow marine habitat mapping Geological Association of Canada annual meeting (GAC/MAC). Program with Abstracts. May, 2001, St. John's.
- Piper, D.J.W., **Mosher, D.C.**, Jenner, K.A., Gauley, B. J., Morrison, M. L., Campbell, D. C., 2001. Failures on the Southeast Canadian Margin: The Canada-COSTA Focus. European

Union of Geosciences XI, Program with Abstracts, Strasbourg, Fr., April 8th-12th, p. 738-739.

Pre-2000

- Mosher, D.C.**, and Johnson, S.Y., 2000. Mapping the Quaternary under the eastern strait of Juan de Fuca: a digital atlas. Geological Society of America – Cordilleran Section meeting, May, 2000, Vancouver, Canada, Program with Abstracts, p. 49.
- Johnson, S.Y., Dadisman, S.V., **Mosher, D.C.**, Blakely, R. J., Childs, J. R., 2000. Late Quaternary tectonics of the Devils Mountain Fault and related structures, northern Puget lowland. Geological Society of America – Cordilleran Section meeting, May, 2000, Vancouver, Canada, Program with Abstracts, p. 23.
- Preston, J.M., Collins, W.T., **Mosher, D.C.**, and Poekert, R., 1999. Estimating geotechnical variables from acoustic classification. Oceans'99 extended abstracts, Seattle, Washington, Sept., 1999.
- Mosher, D.C.**, Johnson, S.Y., Dadisman, S.V., Hyndman, R.D., Fisher, M.A., and Scientific Personnel from SHIPS'98. 1999. Evidence for neotectonics in the marine record of the Pacific Northwest and southwestern British Columbia. Seismological Society of America annual Meeting, Seattle, WA., May, 1999.
- Johnson, S.Y., Dadisman, S.V., **Mosher, D.C.**, Blakely, R., and Childs, J.R., 1999. Neotectonics of the Devils Mountain fault and northern Whidbey Island fault, eastern Strait of Juan de Fuca and northern Puget Lowland, Washington. Seismological Society of America annual Meeting, Seattle, WA., May, 1999.
- Johnson, S.Y., Dadisman, S.V., **Mosher, D.C.**, Blakely, R., Childs, J.R., Wells, R.E., and Rhea, S.B. 1998. Neotectonics of the eastern Strait of Juan de Fuca region, northwestern Washington Strait and southwestern British Columbia. American Geophysical Union Annual Meeting, San Francisco, Dec., 1998.
- Mosher, D.C.**, and Moran, K., 1998. Seismic Stratigraphy of Saanich Inlet: ODP Leg 169S. American Geophysical Union Annual Meeting, San Francisco, Dec., 1998.
- Mosher, D.C.**, Walia, R., and Moran, K., 1998. Seismic stratigraphy of Saanich Inlet. Geological Association of Canada (GAC/MAC) Annual Meeting Program with Abstracts, Quebec, May, 1998.
- Simpkin, P., **Mosher, D.C.** and Walia, R., 1998 High resolution marine seismic reflection profiling: acquisition (special session on status and trends in the marine geosciences). Geological Association of Canada Annual Meeting Program with Abstracts, Quebec, May, 1998.
- Walia, R., **Mosher, D.C.**, and Simpkin, P. 1998. High resolution marine seismic reflection profiling: processing (special session on status and trends in the marine geosciences). Geological Association of Canada Annual Meeting Program with Abstracts, Quebec, May, 1998.
- Mosher, D.C.**, Simpkin, P., and Walia, R., 1998. High resolution marine seismic reflection profiling: Interpretation (special session on status and trends in the marine geosciences). Geological Association of Canada Annual Meeting Program with Abstracts, Quebec, May, 1998.
- Mosher, D.C.**, Currie, R.G., and Sullivan, D., 1998 Two years of Repetitive Sidescan Sonar Mosaics of The Point Grey Ocean Disposal Site, Vancouver, Canada. Puget Sound Research Conference, March, 1998, Seattle, WA.
- Mosher, D.C.**, Kung, R., Hewitt, A.T., and Hamilton, T.S. 1998. Geologic Mapping in the Eastern Juan de Fuca Strait. Puget Sound Research Conference, March, 1998, Seattle, WA.
- Mosher, D.C.**, Hewitt, A.T., and Hamilton, T.S., 1997c. Neotectonic Activity in the Eastern Juan de Fuca Strait: Quantitative Seismic Reflection Mapping. American Geophysical Union annual Meeting, December, 1997, San Francisco, program with abstracts.
- Mosher, D.C.**, and Currie, R.G., 1997 Ocean Disposal at the Point Grey Disposal Site: a test monitoring study using repetitive sidescan mosaicing. American Geophysical Union annual Meeting, December, 1997, San Francisco, program with abstracts.
- Moran, K.M., **Mosher, D.C.**, Bornhold, B.D., and Banks, S. 1997. A high resolution MST record for the Holocene, Leg 169S Saanich Inlet. American Geophysical Union annual mid-year meeting, Baltimore, program with abstracts.

- Mosher**, D.C. 1995. Environmental geological constraints in the offshore of the Fraser River Delta. Proceedings of the Pacific Division of the American Association for the Advancement of Science **14**, part 1, Vancouver, British Columbia, June 18, 1995, p. 52
- Mosher**, D.C., and Barrie, J.V., 1995. Constraints to development in the Offshore of the Fraser River Delta. Geological Association of Canada Annual Meeting, Victoria, May, 1995. p. A-73.
- Mosher**, D.C., Law, L.K., and Quinn, R., 1995. Marine Electromagnetic and seismic high resolution profiling: results from coastal British Columbia. Proceedings, Canadian Coastal Conference Proceedings, Halifax, October, 1995, p. 621-635.
- Moran, K.M., Gray, W.G.D., **Mosher**, D.C., Backman, J., and King, J., 1995. Physical properties and sedimentology of cores from the eastern and central Arctic Ocean. ICP V Program and Abstracts, 5th International conference on Paleoceanography, Oct. 10-14, 1995, Halifax, N.S., p. 166.
- Mosher**, D.C., 1994. Imaging sediment failures on the Fraser River Delta. EOS Transactions, American Geophysical Union 1994 fall meeting, **75**, No. 44, November, 1994/supplement, p. 319.
- Mosher**, D.C., Christian, H.A., and Barrie, J.V., 1994. Hazards to development in the offshore of the Fraser River Delta. Geological Society of America, 1994 Annual Meeting, Seattle, Washington, program with abstracts. p. A469.
- Gross, P., **Mosher**, D.C., and Parrott, D.R., 1994. MUSE Data Logger: a Macintosh-based sidescan and seismic high resolution digital acquisition system. EOS Transactions, American Geophysical Union 1994 fall meeting, **75**, No. 44, November, 1994/supplement, p. 319.
- Mosher**, D.C. and Mayer, L.A., 1992. Seismic stratigraphy of the Ontong Java Plateau: paleoceanographic significance. Fourth International Conference on Paleoceanography (ICP IV), Kiel, Germany, Sept. 21-25, 1992. Program with abstracts, p.206-207.
- Mosher**, D.C., 1992. Digital Colour Reflectance of late Quaternary central Arctic deep-sea sediments. Fourth International Conference on Paleoceanography (ICP IV), Kiel, Germany, Sept. 21-25, 1992. Program with abstracts, p.161.
- Kassens, H., **Mosher**, D.C., and Moran, K. 1992. Physical properties of late Quaternary central Arctic deep-sea sediments: paleoceanographic significance. Fourth International Conference on Paleoceanography (ICP IV), Kiel, Germany, Sept. 21-25, 1992. Program with abstracts, p.161.
- Mosher**, D.C., Mayer, L.A., Shipley, T., and scientific party of Ocean Drilling Program Leg 130, 1990. ODP Leg 130: The Ontong Java Plateau. Geological Association of Canada annual meeting, Vancouver, 1990, program with abstracts **15**, p. A92.
- Mosher**, D.C., Lewis, C.F.M., Moran, K., Sonnichsen, G.V., and Parrott, D.R., 1990. Borehole investigation of near-surface sediments on the northeastern Grand Banks of Newfoundland. Geological Association of Canada annual meeting, Vancouver, 1990, program with abstracts **15**, p. A91.
- Mosher**, D.C., Lewis, C.F.M., Lewis, J.F., Parrott, D.R., Fader, G.B.J., and Durling, P.W., 1988. Geology of near-surface Tertiary sediments on the northeastern Grand Banks of Newfoundland. Geological Association of Canada annual meeting, St. John's, 1988, program with abstracts **13**, p. A88.
- Mosher**, D.C., 1986. Late Quaternary sedimentation of the Verrill Canyon area of the Scotian Slope. Society of Economic Paleontologists and Mineralogists Annual Midyear Meeting contributed Abstracts, V.III, 26-28 September, Raleigh, North Carolina, p.81.

POST-DOCTORAL FELLOWS SUPERVISED OR CO-SUPERVISED

Dr. Franky Saint-Ange, Labrador Paleoceanography
 Dr. Ethymios Tripsanas, Orphan Basin Sedimentology
 Dr. Michael Riedel, Canadian Gas Hydrates

STUDENT THESES SUPERVISED/CO-SUPERVISED

PhD

Irena Schulten, PhD, (2019), Dalhousie University. Quantitative evaluation of the 1929 Grand Banks Landslide

John Evangelatos, PhD, (2018) Dalhousie University. The genesis and evolution of Makarov Basin, Arctic Ocean. 215 pp.

Angela Schlesinger, PhD (2011), University of Victoria, Variable Fluid Flow Along The Nova Scotian Slope - A Study Of Gas Hydrates With Ocean-Bottom Seismic Data

Calvin Campbell, PhD (2011), Dalhousie University, The Late Cretaceous and Cenozoic Geological History of the Outer Continental Margin off Nova Scotia, Canada: Insights Into Margin Evolution from a Mature Passive Margin, 286 pp.

Anthony Hewitt, PhD (2002), University New Hampshire, Seafloor geology, deglacial history and early post-glacial evolution of the eastern Juan de Fuca Strait.

MSc

Jane Hawken, MSc. (2017), Dalhousie University. The Flemish Pass gas hydrate BSR: characterization and evaluation.

Janette Cullen, (2014), Dalhousie University, Geophysical Character of the Mohican Channel Gas Hydrate Zone, Scotian Slope, Eastern Canada

Shawn Goss, MSc (2010), Dalhousie University, Cenozoic seismic stratigraphic analysis of the Surname margin, South America (An Equatorial analog)

Michael Giles, MSc (2010), Dalhousie University, Mass Transport Processes on the Southwestern Newfoundland Margin, Eastern Canada Mechanisms for Deep Water Sediment Transport

Virginia Brake, MSc (2009), Dalhousie University, Evolution of an Oligocene Canyon System on the Eastern Scotian Margin

Simon Newton, MSc (2006), Dalhousie University, Importance of mass transport complexes in the development of the central and western Quaternary Nile fan

Adam MacDonald, MSc (2006), Saint Mary's University, Cenozoic seismic stratigraphy of the central Nova Scotian continental margin: the interplay of erosion, deposition and salt tectonics

Mehdi Loloi, MEng (2004), Dalhousie University, Slope instability analysis of a part of Orphan Basin off Newfoundland.

Kent Simpson (incomplete), Dalhousie University, 3D Cenozoic architecture of the central Scotian Slope.

BSc

Will Orfei, BSc. (2017), University of New Hampshire. The Munson-Nygren Submarine Landslide, U.S. Atlantic margin.

Kai Boggild, BSc. (2016). Dalhousie University, Submarine Channels in the high Arctic Ocean.

Matt Abram, BSc. (2010), Dalhousie University, Gas hydrate distribution and volume at Sackville Spur

Michael Giles, BSc. (2007), Dalhousie University, Cenozoic stratigraphy and slope processes, southwestern Scotian Slope.

Shawn Goss, BSc. (2006), Dalhousie University, Quaternary stratigraphy of the Hamilton Spur: a sediment drift on the Labrador continental slope.

Maureen White, BSc. (2005), Dalhousie University, Late Cenozoic seismic stratigraphy of the Mohican Channel area, Scotian Slope.

Simon Newton, BSc. (2003), Dalhousie University, Quaternary and late Pliocene seismic stratigraphy of the central Scotian Slope.

Christopher LeBlanc, BSc. (2002), Dalhousie University, Central Scotian Slope stability: the possible role of gas hydrates.

RESEARCH EXPEDITIONS

Year	Cruise designation	Ship	Geographic Area	Duty
1982	82004	Dawson	Scotian Slope	Student/Watchkeep
1983	83012	Dawson	Scotian Slope	Student/Watchkeep
1984	84030	Hudson	Labrador Sea	Student/Watchkeep
1985	85001	Hudson	Laurentian Fan	Student/Watchkeep
1985	Ice Island	Ice Island	Arctic Ocean	Research Assist.
1986	86018	Hudson	Grand Banks of Newfoundland	Research Assist.
1987	Ice Island	Ice Island	Arctic Ocean	Research Assist.
1987	87027	Hudson	Labrador Sea	Research Assist.
1988	88400	Balder Challenger	Grand Banks	Research Assist.
1988	88401	M/V Pholas	Grand Banks	Research Assist.
1988	Roundabout 11	Thomas Washington	East. Eq. Pacific	Student/Watchkeep
1988	Ice Island	Ice Island	Arctic Ocean	Research Assist.
1989	Venture I	Thomas Washington	West. Eq. Pacific	Student/Watchkeep
1989	Ice Island	Ice Island	Arctic Ocean	Research Assist.
1990	ODP Leg 130	Joides Resolution	Ontong Java Plateau	Sedimentologist
1991	ARKTIS VIII	F/S Polarstern	Arctic/North Pole	Physical Properties
1993	93002	R.B. Young	St. Juan de Fuca	Marine EM
1993	93010	John P. Tully	Strait of Georgia	Chief Scientist
1994	94003	R.B. Young	St. of Georgia	Chief Scientist
1995	95001	John P. Tully	Strait of Georgia	Chief Scientist
1995	95003	M/V Revisor	Juan de Fuca	Chief Scientist
1995	95004	John P. Tully	Saanich Inlet	Chief Scientist
1996	96001	John P. Tully	Saanich Inlet	Chief Scientist
1996	96006	John P. Tully	Juan de Fuca	Chief Scientist
1997	97005	John P. Tully	Equipment Trials	Chief Scientist
1997	97007	John P. Tully	Juan de Fuca/St. Georgia	Chief Scientist
1997	97009	John P. Tully	St. Georgia	Chief Scientist
1998	SHIPS / 98002	John P. Tully / Thomas Thompson	Juan de Fuca / Puget Sound/ St. Georgia	Chief Scientist (Tully)
1998	98004	M/V Revisor	Victoria	Chief Scientist
1998	ODP Leg 169S	Joides Resolution	Saanich Inlet	Physical Properties Specialist
1999	99004	M/V Revisor	Gulf Islands`	Chief Scientist
2000	2000-040	Hudson	Scotian Slope	Chief Scientist
2001	2001-048A	Hudson	Scotian Slope	Chief Scientist
2002	2002-046	Hudson	Scotian Slope	Chief Scientist
2003	2003-033	Hudson	Scotian Slope	Co-Chief Scientist

2003	ODP Leg 207	Joides Resolution	Demerara Rise	Co-Chief Scientist
2004	2004-030	Hudson	S. Grand Banks Slope	Chief Scientist
2005	SEATOSS	The Performer	Sumatra	Geophysicist
2005	2005-033B	Hudson	Labrador Slope	Chief Scientist
2006	2006-046	Hudson	Scotian Slope	Chief Scientist
2007	2007-020	Hudson	Laurentian Fan	Chief Scientist
2008	2008-027	Hudson	Labrador Slope	Chief Scientist
2009	LSSL2009	Louis S. St-Laurent	Arctic Ocean	Chief Scientist
2010	LSSL2010	Louis S. St-Laurent	Arctic Ocean	Chief Scientist
2011	LSSL2011	Louis S. St-Laurent	Arctic Ocean	Chief Scientist
2014	LSSL2014	Louis S. St-Laurent &	Arctic Ocean/ North Pole	Chief Scientist
2016	NOAA	Ron Brown	Hawaii/Palmyra	2 nd Scientist
2016	AR01-07	Neil Armstrong	Norfolk/WHOI	scientist
2016	HLY16-03	USCGC Healy	Arctic Ocean/Beringian margin	scientist
2021	MSM102	FS Maria S. Merian	Labrador Sea	Co-Chief Scientist

Njuguna, Simon (Kenya; nominated by: Kenya)

PERSONAL DETAILS

Profession: Geologist, Environmental Geoscientist and a Planner
Nationality: Kenyan
Languages: English, Kiswahili (written and spoken)

COMPETENCE

Simon Njuguna is currently a sitting member of the Commission on the Limits of the Continental Shelf (CLCS) since his first election in 2012 and re-election in June 2017. He has served in ten subcommissions including being a chair to one and a vice chair to another.

He has a clear understanding of the United Nations Convention on the Law of the Sea (UNCLOS) and especially implementation of article 76 and the Statement of Understanding.

Has worked as a geoscientist for over 25 years, has vast practical experience in geological sciences and is a GIS specialist.

EDUCATIONAL BACKGROUND

Professional Training

September 2000 – September 2001, International Institute of Aero-surveys and Geosciences (the Netherlands), Professional Masters (PMSc) in Geo-information and Earth Observation Science

University Level

-October 1996 - November 1999 University of Nairobi, Masters of Arts in Physical Planning
-November 1990 to July 1995 University of Nairobi, First Class Honours Bachelor of Science degree in Geology

IMPLEMENTATION OF ARTICLE 76 OF UNCLOS TRAINING AND SYMPOSIA

Consideration of submissions by States on their respective limits of the continental shelf, in accordance with article 76 and Annex II (Statement of Understanding) of UNCLOS; related training and symposia.

a) Training

- In-house Training, Kenya Induction course to UNCLOS and Article 76 (year 2006)
- United Nations offices in Nairobi Parts 1 & 2 UNEP Shelf Programme, Desktop Preparation workshop for East African region
- UNEP Shelf Programme- Arendal, Norway
 - Technical Aspects of the interpretation of marine geophysical data (Jan –Feb 2008)
 - Technical data requirements and the documentation of submissions (Jan –Feb 2008)
- Geocap Software Training, Kenya Geocap Software main functionalities of the Shelf Module Sept 2007 (it is a major delineation software)

b) Symposia, Seminars, workshops and Meetings

- Buenos Aires Argentina- Law of the Sea, Resources of the sea bed, Aspects of economics and conservation (March 2006)
- Kingston, Jamaica - International Sea bed authority meeting (June 2006)

- Geocap Offices, Oslo, Norway Geocap training recap and feedback session (May 2007)
- Maputo, Mozambique Commonwealth Seminar for Coastal and Landlocked States of Africa on the Implementation of UNCLOS (May 2007)
- New York USA A member of the Kenyan delegation to the meeting of State Parties to UNCLOS for the 18th, 19th and 20th meetings
- New York USA Made the technical part of initial oral presentation for Kenya's Continental shelf Claim (September 2009)
- Buenos Aires Argentina- Sharing experiences on the delineation of the outer limits of Continental shelf (October 2011)
- Various venues in China A series of 3 symposia entitled "scientific and legal Aspects of the Regimes of Continental Shelf and the Area. (2013-2016)

RELEVANT TEACHING

Online lectures in Wuhan (November 2021) and Xiamen universities (April 2021) as well as in-person lectures on delineation of the continental shelf in the following institutions: Summer Academy on the Continental Shelf programme organized by the University of Faroe Islands (the Kingdom of Denmark) and the African Institute of International Law (2018 and 2019) (Tanzania) as well as in the University of Nairobi (Kenya) (2010). Previously, he was a part time Lecturer in Kenyatta University-Kenya (2006-2007) in Environmental Planning and Management.

EMPLOYMENT RECORD

a) April 2015 to date

Deputy Director-Maritime Division, Kenya International Boundaries Office, Presidency and Cabinet Affairs Office of the President

b) February 2006 March 2015

Taskforce on Delineation of Kenya's Continental Shelf, Presidency and Cabinet Affairs Office

c) May 2006 to March 2015

Senior Assistant Director-Ministry of Higher Education Science and Technology Directorate of Research Development and Management

d) March 1997 to February 2006

Geologist-Ministry of Environment and Natural Resources, Mines and Geological Department

e) September 2002 to September 2003

Part-time Lecturer- Kenyatta University, Department of Environmental Planning and Management

f) December 1995 to June 1996

Geologist, Assistant hydro-geologist, Groundwater Survey Kenya Limited

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

- Geological society of Kenya - Professional member,
- Geologists Registration Board of Kenya - Registered Geologist,
- National Environmental Management Authority of Kenya - Registered Lead expert EIA/EA

AWARDS AND HONOURS

Accorded, on 12th Dec 2008, the honour and style of The Order of Grand Warrior of Kenya (OGW) by the Head of State for devotion and Commitment to service of the Nation

SOME OF THE RELEVANT COMPILED REPORTS (UNPUBLISHED)

Under the Continental Shelf of Kenya Programme;

- Submission on the Continental shelf of Kenya beyond 200nm to the Commission on the Limits of Continental Shelf of the United Nations
- Delineation of Kenya's Outer Continental Shelf Beyond 200nm; Data acquisition report
- Delineation of Kenya's Outer Continental Shelf Beyond 200nm; the Desktop study
- Delineation of Kenya's Outer Continental Shelf Beyond 200nm; Test of Appurtenance

Randriamiarantsoa, Tolojanahary (Madagascar; nominated by: Madagascar)

Date of birth: July 01, 1981 in Antananarivo
Nationality: Malagasy

HIGHER EDUCATION

- 2011 to 2012: Postgraduate Degree at the Antananarivo Polytechnic School
- 2003 to 2005: Master's Degree of Science and Technique in Applied Geophysics University of Antananarivo, Faculty of Sciences, Department of Physics
- 1999 to 2003: Mathematics, Second year Degree, at the University of Antananarivo, Faculty of Sciences, Department of Mathematics
- 1999: Scientific A-level

PROFESSIONAL EXPERIENCES:

January 2014 up to now: Head of Data Bank Department of the Hydrocarbon Division at OMNIS (Office des Mines Nationales et des Industries Stratégiques)

July 2006 to December 2013: OMNIS Geophysicist at the Hydrocarbon Division, in charge of designer and developer of the database management system.

June 2007 up to now: Member of the Task force for the delineation of the Madagascar Extended Continental Shelf beyond 200nM, contribution in the preparation of the submission file Madagascar 2011.

TRAINING:

February 2007 and January 2011: Training on the technical guideline of the extension of continental shelf with GRID-ARENDAL in NORWAY.

2007: Field trip training on depositional Karoo sediment in Deep water with ExxonMobil expert in South Africa.

August 2007: Preliminary training on the desktop study of the continental shelf of Madagascar at Grid-Arendal, Norway.

2008: Training on Petroleum Technical Drilling With RKK expert, Antananarivo.

February 2009: Workshop on the development of the OMNIS petroleum database, in Stavanger, Norway.

SEMINAR:

September 2006: Oil for Development Seminar by Petrad at OMNIS Antananarivo Madagascar

September 2008: Second Seminar for Petroleum on Data Management for East African country, in Bagamoyo Tanzania.

August 2011: Contribution in the presentation of the submission file of the Malagasy continental shelf to the CLPC (Commission on the Limits of the Continental Shelf) at the UN headquarters in New York.

SOFTWARE:

Geocap: comfortable use of the software (Interpretation and application on the delimitation of the outer limits of the Malagasy continental shelf beyond 200 M).

Kingdom and Petrel: Geological and geophysical interpretation of geological OMNIS data.

ArcGIS and Access: Software mastering (Elaboration of the OMNIS database).

LANGUAGES:

Outstanding French, Fluent English

Roest, Walter R. (Netherlands; nominated by: France)

Languages: Dutch (mother tongue), French, English, German (intermediate), Spanish (elementary)

PRESENT POSITION

Geophysicist, Senior Research Scientist

Organisation: Ifremer, UMR Geo-Ocean (Brest University, Ifremer, CNRS, UBS)

ACADEMIC QUALIFICATIONS

M.Sc. Experimental Physics, 1982, University of Utrecht, The Netherlands

M.Sc. Geophysics, 1983, University of Utrecht, The Netherlands

Ph.D. Marine Geophysics, 1987, Vening Meinesz Laboratorium, University of Utrecht, The Netherlands IHEST (*Institut des Hautes Etudes pour la Science et la Technologie*), Promotion 2012

CAREER SUMMARY

2009-2013 In charge of geosciences and deep ecosystems, Direction of Science Strategy, Ifremer
2003-2012 Manager, French national program EXTRAPLAC continental shelf under the UN Convention on the Law of the Sea (UNCLOS)
2003-2009 Head, Marine Geosciences Department, Ifremer
2001 Interim Director, Continental Geosciences, Geological Survey of Canada (GSC)
2000-2001 Acting Chief Scientist of the GSC
1999-2000 In Charge of the Geoscience Knowledge Sector, GSC
1997-1999 Head, Crustal Geophysics Sub-Division, GSC
1995-2004 Adjunct Professor, Ottawa University / Ottawa Carleton Geoscience Center
1993-1994 Interim head, Geophysical applications laboratory, GSC
1990-2002 Research Scientist, GSC
1987-1990 Post-Doc, NSERC, Bedford Institute of Oceanography, GSC

OTHER FUNCTIONS

- Member and Vice-President of the Commission on the Limits of the Continental Shelf (2012-2017)
- Member Science Committee Université de Bretagne occidentale, Brest (2010-2014)
- Co-organizer of the European Project DS3F Conference, Sitges, Espagne, mars 2012
- Member, Management Committee, RESIF, Réseau Sismologique français (2011- 2013)
- Member of the French National Commission for Marine Geosciences (2003 - 2008)
- Member, Scientific Committee of the program CNRS / INSU Dyeti (2003 - 2007)
- Member, Organizing Committee, American Geophysical Union, Chapman Conference, Perth, Australia, on the link between geodynamic and exploration, August 2001
- Member, Board of Directors, Ottawa-Carleton Geoscience Centre (1999 - 2002)
- Member, Board of Directors, GEOTOP, University of Quebec in Montreal (1998 - 2002)
- Associate Editor, Can. J. Earth Sci. (1996 - 2002)
- Member, NSERC Grant Selection Committee 08, Earth Sciences (1994/1995)

- Member, Lithoprobe, Grants Committee Earth Sciences (1993/4 and 1995/6)
- Member, Technical Program Committee for the Annual Meeting, Society of Exploration Geophysicists, Los Angeles (1994)
- Regular review of manuscripts for international journals, including J. Geophys. Res., Mar. Geophys. Res., Geology, Tectonophysics, Geophys. J. Int., Earth Sci. Rev., and proposals for funding agencies, NSERC, NSF, FCAR,

MEMBERSHIP OF PROFESSIONAL ASSOCIATION

Member American Geophysical Union, Geological Society of France

MAIN PROFESSIONAL ACTIVITIES RELATED TO THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

Since 2003, as scientific and technical manager of the French national program for the extension of the continental shelf (EXTRAPLAC), Dr. Roest has conducted the scientific and technical activities necessary for the acquisition of data, the elaboration of submissions, and the presentation of the submissions before the CLPC in New York. Between 2006 and 2012, he appeared as a member of the French delegation before the plenary session of the Commission and before the various sub-commissions established to examine the French submissions. To date, this collective effort has resulted in seven recommendations concerning respectively for the Bay of Biscay, French Guiana, New Caledonia, the Kerguelen Islands, the West Indies, Reunion Island and St. Paul. From 2012 to 2017, Dr. Roest was a member of the Commission and one of its vice-chairs. During this period, he chaired four sub-commissions.

MARINE SURVEY EXPERIENCE

During his career, Dr Roest has accumulated several years of seagoing survey experience on geophysical cruises, since 1979. Most recently, he was (co-)chief scientist on (international) scientific cruises in the Atlantic, Pacific and Indian Oceans, many of which were dedicated to the delineation of the outer limits of the continental shelf:

- Kergueplac 1, R/V Marion Dufresne 2, 2004
- Noucaplac 1, R/V L'Atalante (with New Zealand, Australia), 2004
- Del Cano Rise, R/V Marion Dufresne 2 (with South Africa), 2005
- Kergueplac 2, R/V Marion Dufresne 2, 2005
- Indian Ocean, Confidential cruise, R/V Le Suroit, 2006
- Europlac, R/V Marion Dufresne 2, Mozambique Channel, 2007
- Discovery Ridge 2010 Crozetplac, R/V Marion Dufresne 2 (with South Africa), 2010
- Wallisplac, R/V L'Atalante (with Tuvalu and SOPAC), 2010
- SPMPlac, R/V Le Suroit, Atlantic Ocean, Saint-Pierre-et-Miquelon, 2011
- Polyplac2, R/V L'Atalante, Pacific Ocean, 2015
- Tecta, R/V L'Atalante, Pacific Ocean, 2015

PARTICIPATION IN RECENT CONFERENCES ON THE LAW OF THE SEA

- 2012: 3rd International Symposium on Scientific and Legal Aspects of Regimes Governing the Continental Shelf and the International Zone, Beijing, China
- 2013: American Geophysical Union, Fall meeting, session on the scientific valuation of data acquired within the framework of the extension of the continental shelf
- 2013: Instructor, DOALOS UN Training course, on the continental shelf, Guayaquil, Ecuador

- 2014: 4th International Symposium on Scientific and Legal Aspects of Continental Shelf and International Area Regimes, Xiamen, China
- 2014: Conference on the Global Ocean Regime - East China Sea: How to Build Confidence and Promote Cooperation, Seoul, Korea
- 2014: International conference on the results of scientific studies for the extension of the continental shelf, National Taiwan University, Taipei, Taiwan,
- 2015: Second International Workshop on Legal Aspects of the Establishment of the Outer Limits of the Continental Shelf, Tokyo, Japan
- 2015: The challenges of the new oceanic order: a legal perspective, Blue Week, Lisbon, Portugal. 2015: SACS Lecturer, Summer Academy on the Continental Shelf, Torshavn, Faroe Islands
- 2016: 5th International Symposium on Scientific and Legal Aspects of Continental Shelf and International Area Regimes, Nanjing, China
- 2016: Third International Workshop on Legal Aspects of the Establishment of the Outer Limits of the Continental Shelf, Tokyo, Japan
- 2017: 4th Himalayan, Arctic and Antarctic Science and Geopolitics Conference, focusing on climate change, New Dehli, India
- 2018: Iceland-KMI Conference on New Knowledge and Developments in the Law of the Sea, Reykjavik, Iceland 2019: 10th ABLOS conference: Opportunities and challenges of governance of the ocean planet, Monaco

WORK EXPERIENCE IN RECENT INTERNATIONAL COLLABORATIONS WITHIN THE FRAMEWORK OF UNCLOS

- Australia: Data and interpretation exchanges related to the continental shelf extension in the area of the Kerguelen Plateau, and the South Fiji Basin
- Brazil: Collaboration in order to coordinate the continental shelf extension in the area of the Amazon Fan at the boundary between Brazil and French Guiana
- United Kingdom, Ireland and Spain: Joint submission for the Bay of Biscay (Submitted to the CLCS in May 2006, recommendations received in 2009)
- Mozambique: Exchange of data and knowledge in the area of the Mozambique Channel
- New Zealand: Joint cruise and interpretation in support of the continental shelf extension of both states in the area of the Three Kings Ridge and the Loyalty Ridge
- Tokelau (New Zealand) and Tuvalu: Joint submission for the area of Tuvalu, Wallis-et-Futuna and Tokelau (Submitted in 2012)
- South Africa: Joint submission for the Crozet Archipelago and the Prince Edward Islands (Submitted in 2009)

RESEARCH INTERESTS

- Scientific and technical questions related to the outer limits of the continental shelf and seafloor mapping
- Nature and evolution of continental margins, sedimentary basins and their potential resources
- Interpretation methods for potential fields
- Geodynamics and plate tectonics

PUBLICATIONS, ABSTRACTS, CONFERENCES AND SEMINARIES

Dr Roest has published or co-published over 80 peer-reviewed articles, more than one hundred reports and over 240 abstracts in national and international journals and other publications. He also wrote, and / or participated in the development of, a large number of interpretations and established many maps, open-file reports and papers on various issues relating to continental margins and their potential resources. In particular, he made significant contributions to the understanding of continental margins as the scientific and technical manager of EXTRAPLAC, the French national program designed to determine the outer limits of continental shelf under the UN Convention on the Law of the Sea. He has participated in more than 120 conferences and seminars, nationally and internationally.

Citation index

Source:	Web of science
Number of peer-reviewed papers:	85
Number of citations:	5260
Index H:	30

RECENT PUBLICATIONS IN PEER-REVIEWED JOURNALS

85. Loncke L, Mercier de L'épinay, M, Basile, C, Maillard, A, Roest, WR, De Clarens, P, Patriat, M, Gaullier, V, Klingelhofer, F, Graindorge, D. and Sapin, F, 2022. Compared structure and evolution of the conjugate Demerara and Guinea transform marginal plateaus, *Tectonophysics*, 822, <https://doi.org/10.1016/j.tecto.2021.229112>
84. Basile C, Loncke L, Roest W, Graindorge D, Klingelhofer F, Museur Thoma, Heuret A, Lesourd-Laux T, Vetel W, 2022. Initiation of transform continental margins: the Cretaceous margins of the Demerara plateau. *Geol. Soc., London, Spec. Publ.* <https://doi.org/10.1144/SP524-2021-118>
83. Etienne S., Le Roy P., Tournadour E., Roest W.R., Jorry S., Collot J., Patriat M., Largeau M.A., Roger J., Clerc C., Dechnick B., Sanborn K.L., Lepareur F., Horowitz J., Webster J.M., Gaillot A., 2021. Large-scale margin collapses along a partly drowned, isolated carbonate platform (Lansdowne Bank, SW Pacific Ocean), *Mar. Geol.*, 436, 106477, <https://doi.org/10.1016/j.margeo.2021.106477>
82. Biari Y., Klingelhofer F., Franke D., Funck T., Loncke L., Sibuet J.-C., Basile C., Austin J.A., Rigoti C.A., Sahabi M., Benabdellouahed M., Roest W.R., 2021. Structure and evolution of the Atlantic passive margins: a review of existing rifting models from wide-angle seismic data and kinematic reconstruction. *Mar. Petr. Geol.*, <https://doi.org/10.1016/j.marpetgeo.2021.104898>
81. Tallobre C., L. Loncke, L. Droz, T. Marsset, M. Uusöue, W.R. Roest, A.-S. Fanget, M.-A. Bassetti, P. Giresse, G. Bayon, 2021 in press. Echo-facies interpretation of Pleistocene to Holocene contourites on the Demerara plateau and abyssal plain, *Interpretations*, 9, no. 2, SB48–SB65, <https://doi.org/10.1190/INT-2020-0159.1>.
80. C. Padron, F. Klingelhofer, B. Marcaillou, J.-F. Lebrun, S. Lallemand, C. Garroq, M. Laigle, W.R. Roest, M.-O. Beslier, L. Schenini, D. David Graindorge, A. Gay, F. Audemard, P. Münch, GARANTI cruise team, 2020. Deep structure of the Grenada Basin from wide-angle seismic, bathymetric and gravity data, *J. Geophys. Res., Solid Earth*, <https://doi.org/10.1029/2020JB020472>
79. Aiken, C, R. Wessels, M-H Cormier, F. Klingelhofer, A. Battani, F. Rolandone, W. Roest, D. Boisson, K. Guerrier, R. Momplaisir and N. Ellouz-Zimmerman, 2020. Haiti-Drill: an amphibious drilling project workshop, *Sci. Dril.*, 28, 49–62, Publisher's official version: <https://doi.org/10.5194/sd-28-49-2020>, Open Access version: <https://archimer.ifremer.fr/doc/00662/77402/>
78. Museur T., D. Graindorge, F. Klingelhofer, WR Roest, C. Basile, L. Loncke, F. Sapin, 2020. Deep structure of the Demerara Plateau: From a volcanic margin to a Transform Marginal Plateau, *Tectonophysics*, <https://doi.org/10.1016/j.tecto.2020.228645>
77. Collot J., M. Patriat, R. Sutherland, S. Williams, D. Cluzel, M. Seton, B. Pelletier, W. R. Roest, S. Etienne, A. Bordenave and P. Maurizot, 2020. Geodynamics of the SW Pacific: a brief review and relations with New Caledonian geology, in Maurizot, P. and Mortimer, N. (eds) 2020. *New Caledonia: Geology, Geodynamic Evolution and Mineral Resources*. *Geol. Soc., London, Memoirs*, 51, 13–26, <https://doi.org/10.1144/M51-2018->, Open Access version : <https://archimer.ifremer.fr/doc/00643/75543/>
76. Fanget AS, Loncke L., Pattier F., Marsset T., Roest W., Tallobre C., Durrieu de Madron X., Hernandez Molina J., 2020. The Demerara marginal plateau (Central Atlantic Ocean) : a case study of the onset and evolution of a Cartographie - traitement et compilation de données bathymétriques sur la dorsale Atlantique Nord centrale contourite despoitional system on a marginal plateau, *Marine and Petroleum Geology*, 114, (16p.). <https://doi.org/10.1016/j.marpetgeo.2019.104195>
75. Marsac Francis, Galletti Florence, Ternon Jean-Francois, Romanov Evgeny V., Demarcq Herve, Corbari Laure, Bouchet Philippe, Roest Walter, Jorry Stephan, Olu Karine, Loncke Lies, Roberts Michael J., Ménard Frédéric, 2020. Seamounts, plateaus and governance issues in the southwest Indian Ocean, with emphasis on fisheries management and marine

- conservation, using the Walters Shoal as a case study for implementing a protection framework. *Deep Sea Research Part II: Topical Studies in Oceanography*.
<https://doi.org/10.1016/j.dsr2.2019.104715>
74. Loncke L., Roest W.R., Klingelhoefer F., Basile C., Graindorge D., Heuret A., Marcaillou B., Musier T., Fanget A.-S., Mercier De Lépinay M., 2020. Transform marginal plateaus. *Earth-Science Reviews*, 203. <https://doi.org/10.1016/j.earscirev.2019.102940>
73. Pattier F., Etienne S., Collot J, Patriat Martin, Tournadour Elsa, Roest Walter, Rouillard P., 2019. Neogene- Quaternary architecture and sedimentary processes on an isolated carbonate-fed deep-water basin (Fairway Basin, Southwest Pacific). *Marine Geology*, 413, 27-47. <https://doi.org/10.1016/j.margeo.2019.04.003>
72. Pinheiro Joao Marcelo, Schnurle Philippe, Evain Mikael, Afilhado A., Gallais Flora, Klingelhoefer Frauke, Loureiro Afonso, Fuck R., Soares J., Cupertino J. A., Viana A., Rabineau Marina, Baltzer Agnes, Benabdellouahed Massinissa, Dias N., Moulin Maryline, Aslanian Daniel, Morvan Laetitia, Maze Jean-Pierre, Pierre Delphine, Pitel-Roudaut Mathilde, Rio I, Alves D., Barros Junior P., Biari Youssef, Corela C., Crozon Jacques, Duarte J. L., Ducatel Cecile, Falcao C., Fernagu Philippe, Le Piver David, Mokeddem Zohra, Pelleau Pascal, Rigoti C., Roest Walter, Roudaut Mickael, 2018. Lithospheric structuration onshore-offshore of the Sergipe-Alagoas passive margin, NE Brazil, based on wide-angle seismic data. *Journal of South American Earth Sciences*, 88, 649-672. Publisher's official version: <https://doi.org/10.1016/j.jsames.2018.09.015>, Open Access version: <https://archimer.ifremer.fr/doc/00461/57263/>
71. Patriat Martin, Collot Julien, Etienne Samuel, Poli Sara, Clerc Camille, Mortimer Nick, Pattier France, Juan Caroline, Roest Walter (2018). New Caledonia obducted Peridotite Nappe: offshore extent and implications for obduction and post-obduction processes. *Tectonics*, 37(4), 1077-1096. Publisher's official version: <https://doi.org/10.1002/2017TC004722>, Open Access version: <https://archimer.ifremer.fr/doc/00431/54242/>
70. Mercier De Lépinay Marion, Loncke Lies, Basile Christophe, Roest Walter, Patriat Martin, Maillard Agnes, De Clarens Philippe, 2016. Transform continental margins – Part 2: A worldwide review. *Tectonophysics*, 693(Part.A), 96-115. Publisher's official version: <https://doi.org/10.1016/j.tecto.2016.05.038>, Open Access version: <https://archimer.ifremer.fr/doc/00343/45372/>
69. Pichot, T, Lafuerza, S, Patriat, M, Roest, W, 2016. Pleistocene mass transport deposits off the Barbados Accretionary Prism (Lesser Antilles), in: Lamarche, G et al., Eds, 7th International Symposium on Submarine Mass Movements and Their Consequences, Wellington New Zealand, Novembre 2015, *Advances in Natural and Technological Hazards Research*, 41, 321-329.
68. Loncke L., Maillard A., Basile C., Roest Walter, Bayon Germain, Gaullier V., Pattier France, Mercier De Lépinay Marion, Grall Celine, Droz L., Marsset Tania, Giresse P., Caprais Jean-Claude, Cathalot Cecile, Graindorge D., Heuret A., Lebrun J. F., Bermell Sylvain, Marcaillou B., Sotin C., Hebert B., Patriat Martin, Bassetti M. A., Tallobre Cedric, Buscail R., Durrieu De Madron X., Bourrin F., 2016. Structure of the Demerara passive- transform margin and associated sedimentary processes. Initial results from the IGUANES cruise, in Nemcok, M., Rybar, S., Sinha, S. T., Hermeston, S. A. & Ledvenyiova, L. (eds), *Transform Margins: Development, Controls and Petroleum Systems*. Geological Society, London, Special Publications, 431(1), 179-197. Publisher's official version: <https://doi.org/10.1144/SP431.7>, Open Access version: <https://archimer.ifremer.fr/doc/00428/53942/>
67. Pattier France, Loncke L., Imbert Patrice, Gaullier V., Basile C., Maillard Alexandre, Roest Walter, Patriat Martin, Vendeville B. C., Marsset Tania, Bayon Germain, Cathalot Cecile, Caprais Jean-Claude, Bermell Sylvain, Sotin Christine, Hebert Bertil, Mercier De Lépinay Marion, Lebrun J. F., Marcaillou B., Heuret A., Droz Laurence, Graindorge David, Poetisi E., Berrenstein H., 2015. Origin of an enigmatic regional Mio-Pliocene unconformity on the Demerara plateau. *Marine Geology*, 365, 21-35. Publisher's official version: <https://doi.org/10.1016/j.margeo.2015.04.001>, Open Access version : <https://archimer.ifremer.fr/doc/00271/38193/>
66. Pattier, F, Loncke, L; Gaullier, V; Basile, C; Maillard, A; Imbert, P; Roest, WR; Vendeville, BC; Patriat, M; Loubrieu, B, 2013. Mass-transport deposits and fluid venting in a transform margin setting, the eastern Demerara Plateau (French Guiana), *Mar. Petrol. Geol.*, 46, 287-303, DOI: 10.1016/j.marpetgeo.2013.06.010.

65. Basile C, Maillard A, Patriat M, Gaullier V, Loncke L, Roest, W., Mercier de Lépinay M, Pattier F, 2013. Structure and evolution of the Demerara Plateau, offshore French Guiana: Rifting, tectonic inversion and post-rift tilting at transform–divergent margins intersection, *Tectonophysics*, 591, 16-29, DOI: 10.1016/j.tecto.2012.01.010.
64. Pichot T, Patriat M, Westbrook GK, Nalpas T, Gutscher, M-A, Roest, WR, Deville E, Moulin M, Aslanian D, Rabineau M, 2012. Tectonostratigraphic evolution of the Barracuda Ridge and Tiburon Rise as recorded by Cenozoic stratigraphy, east of the Barbados accretionary wedge, *Marine Geology*, 303, 154-171, DOI: 10.1016/j.margeo.2012.02.001.

Sivaramakrishnan, Rajan (India; nominated by: India)

Former Director, National Centre for Polar and Ocean Research (erstwhile NCAOR)

PERSONAL

Born May 25, 1955, Trivandrum, India

EDUCATION

1995 Ph. D (Geology & Geophysics)
University of Hawaii, Honolulu, Hawaii, USA

1977 M. Sc. (Geology)
University of Kerala, Trivandrum, India

MEMBER, COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF (CLCS)

2007-12

2012-14 Re-elected for another five-year term 2012-17, but resigned in February 2014 consequent on becoming Director at NCAOR, Goa

During my tenure at the Commission, I also served as:

- Chairman of the Sub-commission to examine the submission for an extended continental shelf made by Barbados
- Chairman of the Sub-commission to examine the submission for an extended continental shelf made by Suriname
- Vice-Chairman of the Sub-commission to examine the submission for an extended continental shelf made by Uruguay
- Member of the Sub-Commission to examine the submission for an extended shelf made by New Zealand & Australia and the partial submission by Mexico.
- Chairman of the Sub-Commission to examine the submission for an extended continental shelf made by Denmark for the area N of Faroe islands
- Vice-Chairman of the Standing Committee of the Commission on provision of Scientific and Technical Advice to Coastal States.
- Vice-Chairman of the Editorial Committee of the CLCS to consider the amendments to the Rules of procedure.

PROFESSIONAL EXPERIENCE RELATED CONTINENTAL SHELF STUDIES

1999-2012 **PROJECT DIRECTOR**, Indian Continental Shelf project: A lead role in all the facets of management and implementation of the project comprising (a) a comprehensive desktop study of the various scientific and technical issues involved in obtaining the requisite data for defining the outer limits of the Indian continental shelf, (b) planning the various aspects of data collection, processing, synthesis and interpretation, (c) initiation, co-ordination and execution of a major multi-institutional national endeavor of marine geological/geophysical surveys in the Project area, including budgeting and scheduling (d) data synthesis and documentation as per the guidelines of the CLCS, and (e) establishment of a fully-functional state-of-the-art marine geophysical data archival and processing Centre at the erstwhile National Centre for Antarctic and Ocean Research, Goa

2008 Myanmar continental shelf programme: As a part of the Government of India's initiative at providing scientific and technical guidance to the scientists from the

- Union of Myanmar- (a) Carried out a comprehensive desktop study pertaining to the delineation of the outer limits of the continental shelf of Myanmar beyond 200 M, based on public domain data; (b) co-ordinated the task of bathymetric data interpretation and documentation; and (c) took a lead role in finalizing the technical documents pertaining to the seismic data processing and interpretation.
- Oct 2005 Organised a five-day training workshop on “Delineation of the outer limits of the continental shelf” for scientists and officials from the Union of Myanmar, in Goa.
- April 2005 Organised a five-day training workshop on “Delineation of the outer limits of the continental shelf” for scientists from Sri Lanka, in Goa
- Post-retirement, I continue to be involved in the continental shelf studies by providing advice and guidance to the Indian Continental Shelf Project as regards matters related to maritime zonation, article 76 and India’s submission to the CLCS for an extended shelf.

PAPERS PRESENTED (OF RELEVANCE TO CONTINENTAL SHELF STUDIES)

- Nov. 2021 Sivaramakrishnan Rajan., 2021, “UNCLOS in the Polar regions”: Invited talk at the 2021 Global Ocean Regime Conference “Technological Innovation and the Role of the Law of the Sea”, hosted by the Korea Maritime Institute: Seoul, South Korea
- Sept. 2020 Sivaramakrishnan Rajan., 2020, “Natural Resources of the continental shelf beyond 200 M: the Scientific and legal challenges of their sustainable management under the Law of the Sea”: Invited talk at the 2020 Global Ocean Regime Conference “The Role of the Law of the Sea and Recent Developments in Global Ocean Governance”, hosted by the Korea Maritime Institute: Busan, South Korea
- Jan. 2017 Rajan, S., 2017, “Blue Economy: Policy framework and Governance Structure”. Invited talk at the 104 Indian Science Congress: S V University Tirupati, India
- Mar. 2015 Rajan, S., 2015, “A Shelf, the Shelf and the Law of the Sea”: Invited talk at the 4th National Conference of the Ocean Society of India (OSICON 2015), National Institute of Oceanography, Goa, India March 2015 Rajan, S., 2015, "Maritime space, non-living resources of the deep ocean floor & new regimes for the oceans: some updates": plenary lecture at the World Ocean Science Congress (WOSC): Kochi, India
- Feb. 2015 Rajan, S., 2015, “*Maritime space, non-living resources of the deep ocean floor & new regimes for the oceans: some updates*”: plenary lecture at the World Ocean Science Congress (WOSC): Kochi, India
- Dec. 2013 Rajan, S., 2013, “India’s scientific and strategic interests in the deep ocean Floor exploration”: Invited lecture to the officers of the 26th Naval Higher Command Course: Naval War College, INS Mandovi, 05 December 2013.
- Nov. 2009 Rajan, S., Ashlesha Saxena, and Mukesh Adelkar, 2009, “Geospatial management and Law of the Sea: The Indian Experience”: Joint International Workshop of ISPRS WG IV/1, WG VIII/1 and WG IV/3 on Geospatial Data, Cyber Infrastructure and Real Time service with special emphasis on Disaster Management: INCOIS, Hyderabad, India
- Sept. 2009 Rajan, S., 2009, “Exploring for extended continental shelves beyond 200 Nautical miles”: Invited presentation at the National Conference on Earth System Processes and Disaster Management: Goa, India

- July 2007 Rajan, S., 2007, “UNCLOS III, article 76 and the CLCS- The scientist as a lawyer?”, Presentation at the International Seminar on Law of the Sea: Indian Society of International Law, New Delhi Dec 2007 Rajan, S., 2007, “The Geology and Geophysics of the Continental Shelf Programme”: Invited lecture to the officer-trainees of the Naval Hydrographic School: INS Gomantak, Goa 12th July 2007
- Feb. 2007 Rajan, S., 2007, “UNCLOS 1982- Exploring for continental shelves beyond 200 nautical miles”: Invited talk at the Seminar on “India’s EEZ and continental shelf- its exploration, exploitation and conservation”: Indian Maritime Foundation, Pune
- Aug. 2006 Rajan, S., 2006, “Indian Continental Shelf Programme-the scientific and technical aspects”: Invited talk to the officer-trainees of the Naval Hydrographic School, INS Gomantak, Goa, 3rd August 2006.
- Nov. 2005 Rajan, S., and N. Vijayalaxmi., 2005, “Ocean Governance in a post-UNCLOS world-the South Asian perspective”: Invited talk at the 14th EWC/EWCA South Asia Regional Conference: New Delhi
- Sept. 2005 Vijayalaxmi S. N., and S. Rajan., 2005, “Extending the Indian Continental Shelf- a preliminary study through CARIS LOTS: Presentation at the CARIS 2005 - 10th International User Group Conference and Educational Session: Halifax, Canada
- Mar. 2004 Praveen Vohat, Dhananjai Pandey, John Kurian, U. K. Singh, Vijayalaxmi, N., S. Rajan and P. C. Pandey., 2004, “*Role of marine geophysical data in delineating Indian Legal Continental Shelf*”: International Hydrographic Seminar HYDRO-IND 2004: Mumbai.
- Jan. 2004 Vijayalaxmi, S. N., Rajan, S., Dhananjai Pandey and John Kurian., 2004, “Determination of Foot of the Continental Slope for Delineating the outer limits of the Continental shelf through CARIS LOTS”: VI Convention of Mineralogical Society of India & International Seminar on Earth Resources Management: Kuvempu University, Shimoga, India
- Apr. 2002 Rajan, S., 2002, “The Legal Continental Shelf from a geological perspective”: Invited paper at the International Seminar on “Sedimentation and Tectonics in Space and Time”: Dept. of Civil Engineering, SDM College of Engineering, Dharwar, India
- Feb. 2002 Rajan, S., Pandey. P. C., and Subba Raju, L. V., 2000, “Delineation of the outer limits of the Indian Continental Shelf-Some Scientific and Technical Observations”: 26th Annual Convention and Seminar on Exploration Geophysics: Association of Exploration Geophysicists, Goa, India

PROFESSIONAL POSITIONS HELD

- 2018-16 Consultant and Coordinator, Joint Project Office (India-Node) International Indian Ocean Expedition-2 (IIOE-2)
Indian National Centre for Ocean Information Services, Hyderabad, India
- 2015-12 Director National Centre for Polar and Ocean Research (formerly NCAOR), Goa, India
- 2012-1998 Scientist and Project Director (Indian Continental Shelf Project)
National Centre for Polar and Ocean Research (formerly NCAOR), Goa, India

- 1997-84 Geologist
Marine Wing, Geological Survey of India, Cochin, India
- 1984-79 Geologist
Engineering Geology Division, Geological Survey of India, Jaipur, India

HONORS & AWARDS

- 2014 Dr. H. N. Siddique Memorial Lecture and Gold medal of the IGU for the year 2014. “UNCLOS: Defining, delineating and delimiting the limits of the continental shelves”, Kurukshetra University, India, November 20, 2014
- 2014 Alternate Head of the Indian Delegation to the XXXIII SCAR Delegates' Meeting, Auckland, New Zealand, 1-3 September 2014
- 2014 Head of the Indian Delegation to the XXXVII Antarctic Treaty Consultative Meeting, Brasilia, Brazil, 28 April to 7 May
- 2013 Head of the Indian Delegation to the XIV Asian Forum for Polar Sciences, Penang, Malaysia, 10-11 October
- 2012 Head of the Indian Delegation to the XXXVI Antarctic Treaty Consultative Meeting, Brussels, 19 - 29 May
- 2012 Recipient of the National Geoscience Award 2010 of the Ministry of Mines, Government of India, in recognition of contribution in the field of Oceanography & Marine Geology
- 1993-94 J. Watumull Merit Scholarship for the Most Outstanding graduate student in the Dept. of Geology and Geophysics, University of Hawaii
- 1990-94 East-West Center fellowship for doctoral research at the University of Hawaii
- 1975-77 Government of India National Merit Scholarship for academic excellence
- 1972-75 Kerala University Award and Merit Scholarship for academic excellence

PARTICIPATION IN INTERNATIONAL PROGRAMS PERTAINING TO CONTINENTAL SHELF STUDIES:

- March 2006 International Symposium on the “Scientific and Technical aspects of the establishment of the Outer limits of the Continental shelf” organized by the Ministry of Foreign Affairs of Japan and the United Nations University, Tokyo
- May 2005 Training course on “The outer limits of the continental shelf beyond 200 Nautical miles and for preparation of a submission of a coastal State to the Commission on the Limits of the Continental Shelf”, organized by the Division for Ocean Affairs and the Law of the Sea, United Nations Secretariat. Colombo, Sri Lanka.
- June 2003 Conference on Legal and Scientific Aspects of Continental Shelf Limits, Reykjavik, Iceland.

MEMBERSHIP IN ACADEMICS / SOCIETIES / PROFESSIONAL BODIES

- a. Life-Member, The Indian Geological Congress
- b. Member, Indian Geophysical Union and Member, Executive Committee (2014-16)
- c. Associate Editor, Journal of the Geological Society of India (from 2018 and continuing)
- d. Co-Chair, Working Group on Operational Coordination, International Indian Ocean Expedition 2 (IIOE-2)

PROFESSIONAL EXPERIENCE AS A GEOSCIENTIST

Complementing the Indian continental shelf Project, I have been associated with the following major geoscientific programs of the Government of India, both as proponent and a Project Leader:

- Geophysical studies aimed at understanding the plate tectonic evolutionary history of the Southwestern continental margin of India and adjoining ocean basins.
- Geological and structural characterization of the Andaman subduction zone
- Study of seafloor hydrothermal systems along mid-ocean ridges with special reference to the study of hydrothermal sulphide mineralisation on the Central and Southwest Indian Ridges

PROFESSIONAL EXPERIENCE PERTAINING TO POLAR SCIENCES

- Participated in the XXIII Indian Scientific Expedition to Antarctica (2003-04) as a member of the Scientific Task Force for identification of a suitable site for the establishment of a new Indian Antarctic Base. Undertook reconnaissance traverses in the Vestfold Hills, Rauer Islands and the Larsemann Ranges in the Prydz Bay area, East Antarctica and identified a site suitable for the establishment of the Indian Research Base in the Larsemann Hills.
- INDIAN ARCTIC PROGRAMME: As the nodal officer in charge of the Indian Arctic Programme (2007-2012), took a lead role in the planning, co-ordination and implementation of all scientific and logistics activities related to the Indian Scientific endeavors in the Arctic.
 - Principal investigator of a long-term program of monitoring the physical, chemical and biological characteristics of the Kongsfjorden system at Ny-Ålesund in the Arctic on a seasonal to annual-scale, for climate change studies (2008-12).

TEACHING AND RESEARCH EXPERIENCE

1994-95 Teaching Assistant, Department of Geology & Geophysics, University of Hawaii

1978-79 Lecturer, Department of Geology, University of Kerala, India

SCIENTIFIC PUBLICATIONS DURING THE PAST TEN YEARS (2012-22)

Kurian, J. P., Rajan, S., Agarwal, D. K., Linsy, P. (2022). Indian Ocean Ridge System and Seafloor Hydrothermal Activity. Journal of Geological Society of India. (February 2022), 98:000-000. <https://doi.org/10.1007/s12594-022-xxxx>.

Rajan, S. (2021). Late Quaternary Climatic History of the Indian Subcontinent: A Review of the Data Sources on the Land and the Sea: (In) Khare, N (Ed.), Quaternary Climate Change over Indian Subcontinent. Florida, CRC Press, pp. 1-20.

Susanth, S., Kurian, P. J., Bijesh, C. M., Twinkle, D., Tyagi, A., Rajan, S. (2021). Controls on the evolution of submarine canyons in steep continental slopes; geomorphological insights from Palar Basin, southeastern margin of India. Geo-Marine Letters, 41, 14. <https://doi.org/10.1007/s00367-021-00685-9>

Ravindra, R., Rajan, S. (2020). Advances in Antarctic geoscience studies: Indian contributions. Episodes, 43 (1), 563-574.

- Singh N., Rajan, S., Choudhary, S., Krishnaiah, C., Peter, M. (2018). Diisopropylnaphthalene in the surface sediments of an Arctic fjord: environmental significance. *Polar Science*, 18, 142-146.
- Singh. N., Rajan, S., Choudhary, S., Krishnaiah, C. (2018). Spatial distribution and environmental assessment of heavy metals in the surface sediments of Kongsfjorden, Svalbard. *Czech Polar Reports*, 8 (1), 1-23.
- Rajan, S (2018). The Legal Continental Shelf: Geosciences at sea with UNCLOS. *Journal of Geological Society India*, 92: 131-133, DOI: 10.1007/s12594-018-0970-2
- Rajan, S. (2018). Abrupt Climate Shifts Over the Past 10,000+ Years: An Arctic-Antarctic-Asian Imbroglio? (In) Goel, P. S., Ravindra, R., and Chattopadhyay (Eds.), *Science and Geopolitics of The White World: Arctic-Antarctic-Himalaya*. Switzerland: Springer Nature, pp. 83-91.
- Venkatesan, R., Krishnan, K. P., Muthiah, M. A., Kesavakumar, B., David, T Divya., Atmanand, M. A., Rajan, S., Ravichandran, M. (2016). Indian moored observatory in the Arctic for long-term in situ data collection. *The International Journal of Ocean and Climate Systems*, 7(2): 55–61.
- Rajan, S., Krishnan, K. P. (2016). India's Scientific endeavours in the Arctic: (In) Sakhuj, V., and Narula, K (Eds.), *Asia and the Arctic: Narratives, Perspectives and Policies*. Singapore: Springer Geology, 43-48.
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- Krishnan, K.P., Sinha, R.K., Rajan, S. (2014). Pelagic nitrification and denitrification rates in an Arctic fjord during early spring. *Annals of Microbiology*, 64(1), 365-376.
- Tiwari, M., Krishnan, K. P., Rajan, S. (2013). Oxygen isotope-salinity relationship in Kongsfjorden: Implications to freshwater variability: (In) *Proceedings of the 11th Ny- Ålsund Science Managers Committee (NySMAC) Seminar during 9-11 October 2013, National Research Council of Italy*.
- Tiwari, M., Nagoji, S.S., Kartik, T., Drishya, G., Parvathy, R.K., Rajan, S. (2013). Oxygen Isotope - Salinity Relationships of discrete oceanic regions from India to Antarctica vis-à-vis Surface Hydrological Processes. *Journal of Marine Systems*, 113-114, 88–93.
- Yatheesh, V., Kurian, J., Bhattacharya, G.C., Rajan, S. (2013). Morphotectonic architecture of an India-Madagascar breakup related anomalous submarine terrace complex on the southwest continental margin of India. *Marine and Petroleum Geology Journal*, 46, 304-318.

Gallagher, S.J., Exon, N., Pandey, D., Rajan, S., Coffin, M., Takai, K. (2012). New Frontiers in Scientific Drilling of the Indian Ocean. *Scientific Drilling*, 14, 60-63.

Ray, Dwijesh., Rajan, S., Rasik Ravindra. (2012). Role of subducting component and sub-arc mantle in arc petrogenesis: Andaman volcanic arc. *Current Science*, 102, 605-609.

Taiar, Azzedine (Algeria; nominated by: Algeria)

Graduate in Geodetic Sciences: Master of Business Administration From Robert Gordon University (RGU)
/ABERDEEN – UK

Date of birth: 25/07/1963

Place: Koléa

CORE TRAINING

Obtained the BACCALAUREATE Mathematics Series, 1982

Degree: State Engineer in Geodesy, 1987

Specialty: Geographic Information System (GIS) and Remote Sensing.

Establishment: National Centre for Space Technology (CNTS), former name ENSG/MDN

ADDITIONAL TRAININGS

1988- Training at IGN France on SPOT satellite image processing and Geographic Analysis with integration of 3D Digital Terrain Models. Application to South-West Algeria

1992- Training at ESA/ESRIN (European Space Agency-Frascati-Italy) on the use of satellites equipped with ERS radars, SAR (radar) imaging theory and data application.

1995- ERNEST & YOUNG training/ Corporate financial management

1996- Management training at ESSEC/France

2000- English courses organized by the CPE/SONATRACH

2005- Preparation of English courses according to IELTS standards

2009- Obtained an MBA: Master of Business Administration from Robert Gordon University (RGU)
/ABERDEEN - UK

Modules covered during the training:

- Operations Management
- Project Management
- Strategic Management
- Knowledge Management
- Change Management
- International Finance Management
- International Business Management
- Human Resource Management
- Accounting & Finance Decision Making
- Marketing Management
- Business Economics
- Consultancy Project

POSITIONS HELD

2021 to date - Member of the scientific council of ASAL (Algerian Space Agency)

2004 to date - Member of the interministerial committee in charge of the delimitation of the Algerian maritime borders in the Western Mediterranean Sea.

2019 to present- Chair of the Technical Subcommittee on Maritime Boundary Delimitation Technical Issues

2020 to date - Member of the joint Algerian-Italian negotiating committee for the delimitation of the maritime borders.

2014 to present- Member of the ALNAFT executive committee

2014 to present- Director of the BDN division of ALNAFT

PROFESSIONAL EXPERIENCE

Career outside SONATRACH:

1987-1991
Cartographic Engineer
INCT (ministry of national defense)

1991-1993
Engineer Researcher
INCT (ministry of national defense)

2007-2014
Data Capture Director
National Data Bank/ALNAFT

2013-2015
Project Manager
National Data Bank/ALNAFT

Career within SONATRACH:

1993-1994
Cartographic Engineer
Exploration Division

1994-2005
Head of departement Cartography
Exploration Division

2005-2007
Senior manager
Exploration Division

2007-2009
Seconded as Director
ALNAFT agency

MAJOR ACHIEVEMENTS:

1987 to 1991: **Photogrammetry:** In charge of the quality control of the products resulting from the restitution and the ortho photography.

Spatial Geodesy: In charge of the adaptation of the software (Geodop) developed by the DMA (American Defense Mapping) on the equipment of the INCT/MDN, as well as the calculation of the 310 DOPPLER POINTS, distributed over the whole African continent, they were observed by the TRANSIT satellites and constitute the ADOS network

1991 to 1993 Remote sensing: Responsible for the design and development of research programs of satellite image processing in relation to the projects of the INCT. This in the framework of a scientific research convention linking the INCT/MDN and the University of HOUARI BOUMEDIENE USTHB.

GIS and Spatial Mapping: participation in projects of mapping by satellite imagery realized in collaboration with IGN France namely:

*Mapping at 1/200 000 using LANDSAT satellite imagery; GHARDAIA map application.

*Mapping at 1/200 000 BY USE OF SPOT SATELLITES IMAGES;
application map of TIREK region of south-west Algeria.
*Mapping at 1:50,000 by using satellite images SPOT; map application of
GHARDAIA.

Remote sensing: Responsible for the design and development of research programs of satellite image processing in relation to the projects of the INCT. This in the framework of a scientific research convention linking the INCT/MDN and the University of HOUARI BOUMEDIENE USTHB.

* Participation in the field work within the framework of the project Cartography and geographical analysis by mixing of the multi-sources data; application to the region Abiod Sidi Echeikh. This in collaboration with the CNRS, Dept. Physical Geography of the University of Paris VI, USTHB.
* Design and implementation of a computerized spatial mapping system (Analysis of the technical offers related to the international call for tenders launched by the INCT, presentation of the result to the technical committee and to the committee of judgment of the financial offers CJO/MDN.

From 11/10/1993 to 01/06/1994 Computerization of the card production process, as well as the implementation of a management and archiving system for E&P data on cards and films.

From 01/06/1994 to 23/05/2005 Responsible for the introduction of geographic and cartographic data management systems related to E&P activities.

Specifically, the department has put in place:

1. A dynamic Mapping Solution based on GIS technologies
2. A multidisciplinary team of Cartographic Engineers, Geologists and Geophysicists who have received appropriate training in the use of modern GIS tools.
3. Procedures and means for the provision of E&P packages within the framework of research and promotion contracts in the Mining Domain.

OTHERS:

- 1994 Member of the organizing committee of the symposium on the Berkine basin.
- 1995 Member of the organizing committee of the WEC (well evaluation conference).
- 1996 Member of the JST2 organizing committee (scientific and technical days)
- 1996 - 1999 Contribution to the creation of the CNIG. (National Council of Geographic Information), created by presidential decree in 1996.
- 1999 - 2006 Participation in the work of the CNIG as an alternate member:
Contribution to the project North African Geodetic Reference System NAFREF.
Contribution to the definition of a Geographic Information System of reference on the State of cartography.
Contribution to the definition of standards and specifications of geographic and cartographic information and data.
- 2004 Member of the organizing committee of the seminar on the contribution of the space tool to the energy and mining sector jointly organized by the Ministry of Energy and Mines "MEM" and the Algerian Space Agency "ASAL".

- 2005 President of the space applications group for mining and petroleum activities (ASAL).
- 2005, 2006 Member of the drafting committee of the specifications and then member of the evaluation committee of the technical offers related to the Data Bank created within the Ministry of Energy and Mines.

PUBLICATIONS:

- 1987 Results of the spatio-mapping test at 1/ 200 000 and 1/50 000 of the Ghardaïa region using Landsat and Spot images.
- 1988 Integrated geodetic network based on ADOS spatial geodetic data calculation. This publication was the subject of a communication in Ouagadougou.
- 1989 Mixing of Landsat TM data and aerial photographs for the establishment of 1/200 000 maps in the In Salah region.
- 1999 The contribution of Geographic Information Systems for the management of petroleum data presented and published in the framework of the study days organized by the National Council of Geographic Information.
- 2004 Geographic information systems (GIS) for petroleum activities.

Tang, Yong (China; nominated by: China)

PERSONAL INFORMATION

Year of Birth 1974

Academic expertise Marine Geophysics

Working Languages Chinese, English

ACADEMIC QUALIFICATIONS

2013 Ph.D, Marine Geology, China University of Geosciences

2000 M.Sc., Marine Geology, Ocean University of China

1997 B.Sc., Marine Geophysics, Ocean University of China

PROFESSIONAL EXPERIENCE

- 2021-Present Director of Research Center of Exclusive Economic Zone and Continental Shelf, Second Institute of Oceanography, Ministry of Natural Resources
- 2021-Present Visiting Researcher, Institute of Ocean & Natural Resources Law, Southwest University of Political Science & Law
- 2020-Present Professor, School of Oceanography, Shanghai Jiao Tong University Visiting Professor, Southwest University of Political Science & Law
- 2019-Present Adjunct Professor, Ocean University of China and Zhejiang University
- 2019-Present Member of Commission on the Limits of Continental Shelf.
Member of Subcommission to Consider of the joint submission made by France and South Africa.
Member of Subcommission to Consider the submission made by Nigeria.
Member of Subcommission to Consider the submission made by Sri Lanka (2019.1-3).
Vice-Chair of Subcommission to Consider the submission made by Palau.
Vice-Chair of Subcommission to Consider the submission made by India.
- 2018-2020 Deputy Director of Research Center of Exclusive Economic Zone and Continental Shelf, Second Institute of Oceanography, Ministry of Natural Resources
- 2017-Present Adjunct Professor, College of Marine Science and Technology, China University of Geosciences
- July 2016 Chief Scientist, China-Seychelles Joint Cruise on Continental Margin
- June 2016 Chief Scientist, China-Mozambique Joint Cruise on Continental Margin
- 2014- 2015 Visiting Scholar, Bedford Institute of Oceanography, Canada
- August 2012 Chief Scientist, China-Nigeria Joint Cruise in the Western Nigerian Continental Margin
- 2010-2018 Organizing and participating 1st-6th International Symposium on Scientific and Legal Aspects of the Regimes of the Continental Shelf and the Area
- 2009-Present Professor, Second Institute of Oceanography, State Oceanic Administration (SOA)

2008-2013	Member of Expert Group on Submission by the People's Republic of China Concerning the Outer Limits of the Continental Shelf beyond 200 Nautical Miles in Part of the East China Sea
2003-Present	Member of Expert Group on Outer Continental Shelf Project in China
2004-2009	Associate Professor, Second Institute of Oceanography, SOA
2002-2004	Assistant Professor, Second Institute of Oceanography, SOA
2000-2002	Research Assistant, Second Institute of Oceanography, SOA

SELECTED PROJECT LEADER

2021-2022	China-Mozambique Continental Shelf Cooperation Project
2020-2022	Ocean Biodiversity Observation and Assessment Project
2020-2023	Seychelles Marine Spatial Planning Cooperation Research
2020-2021	Global Change and Air-Sea Interaction Project
2018-2021	National Key R&D Program of China
2017-2018	China-Canada Marine Science Cooperation Project
2017-2018	Deep Sea Seismic Research System Project, Ministry of Science and Technology of China
2015-Present	China-Seychelles Marine Science Cooperation Project
2015-Present	China-Mozambique Marine Science Cooperation Project
2014-Present	China-Africa Continental Shelf Cooperation Project
2015-2018	The National Natural Science Foundation of China
2015-2016	China-Mozambique and China-Seychelles Continental Margin Joint Research Project
2012-2013	China-Nigeria Joint Research in the Western Nigerian Continental Shelf Project
2012-2013	The Framework Plan for International Cooperation for the South China Sea and its Adjacent Oceans Project
2010-2015	The Fundamental Research Funds for the Central Public Welfare Institutes Project
2006-2009	The National High Technology R&D Program of China

PARTICIPATION IN SOME KEY PROJECTS

2019-2023	The State Key Program of National Natural Science Foundation of China
2019-2022	Mozambique Marine Spatial Planning and Technical Support Research
2012-2016	Public science and technology research funds projects of oceans: Computer-aided Decision Making System for Delimitation of Outer Continental Shelf and International Seabed Resources
2008-2011	Public science and technology research funds projects of oceans: Research on Delimitation of Continental Shelf and EEZ
2003-2012	Chinese Ocean Mineral Resources Exploration and Research Expedition Project

PUBLICATIONS & MONOGRAPHS

1. Li Mingbi, Li Jiabiao, Fang Yinxia, **Tang Yong**, Ding Weiwei, *Geological Features of the Continental Margin and the Delimitation of the Outer Continental Shelf beyond 200 Nautical Miles* (China Ocean Press, 2015) (in Chinese).
2. Wu Ziyin, Yang Fanlin, **Tang Yong**, *High-Resolution Seafloor Survey and Application*, 2020, SCIENCE PRESS Beijing.
3. Lyu Wenzheng, Mao Bin, **Tang Yong**, (translate), *United Nations Convention on the Law of the Sea 1982 VII*, (China Ocean Press, 2021) (in Chinese).
4. Lyu Wenzheng, Mao Bin, **Tang Yong** (translate), *United Nations Convention on the Law of the Sea 1982 I*, (China Ocean Press, 2019) (in Chinese).
5. Fang Yinxia, Yin Jie, **Tang Yong**, (eds. and translate), *Selections of the Submission Executive Summaries for the Delimitation of the Continental Shelf beyond 200 Nautical Miles* (China Ocean Press, 2018) (in Chinese).

6. Li Mingbi, **Tang Yong**, Fang Yinxia et al. (eds. and translate), *Selections of the Submission Executive Summaries and Preliminary Information for the Delimitation of the Continental Shelf beyond 200 Nautical Miles* (China Ocean Press, 2015) (in Chinese).
7. Lyu Wenzheng et al. (eds. and translate), *Outer Limits of the Continental Shelf: Interface of Law and Science*, Chapter 12 (China Ocean Press, 2012) (in Chinese).

REPRESENTATIVE ACADEMIC ARTICLES

1. He Li, **Yong Tang**, Maryline Moulin, Daniel Aslanian, *, Mikael Evain, Philippe Schnurle, Ang'elique Leprêtre, Jiabiao Li,* Seismic evidence for crustal architecture and stratigraphy of the Limpopo Corridor: New insights into the evolution of the sheared margin offshore southern Mozambique, *Marine Geology* 435(2021)106468.
2. Nelta David, **Yong Tang**, Chunfeng Li, Jiabiao Li, Mahanjane Estevao Stefane, He Li, Yinxia Fang, The Crustal Nature of the Northern Mozambique Ridge, SW Indian Ocean, Matsinhe. *Acta Oceanologica Sinica*, Vol.40(7):170-182.2021.
3. Ya Gao, Dorrik Stow, **Yong Tang**, Xie Xinong, David Piper Seismic stratigraphy and deep-water sedimentary evolution of the southern Mozambique margin: Central Terrace and Mozambique Fracture Zone, *Marine Geology*, Vol.427, 2020, 106187.
4. Gao Ya, **Tang Yong**, Xie Xinong, The Tectonic evolution and Sedimentary-filling characteristics of Mozambique basin, *Marine Science*, 44(1): 157-164, 2020.
5. Jimoh Rasheed Olayinka, **Tang Yong**, Li Jiabiao, Awosika Larry Folajimi, Li He, Akinnigbaje Edward Akintoye, Adeleye Adedayo Oluwaseun, The architecture of the lower parts of submarine canyons on the western Nigerian continental margin, *Acta Oceanologica Sinica*, Vol.37(7): 28-40, 2018.
6. Su Zeguo, **Tang Yong**, Li He, Dong Yanhui, Fang Yinxia, Wang Weiyang, Zhu Zhimin, The geomorphological features and tectonic evolution in the Northern Seychelles Plateau, *Journal of Marine Sciences*, Vol.37(2): 16-27, 2019.
7. Li He, **Tang Yong**, Ding Weiwei, Fang Yinxia, Dong Chongzhi, Cheng Zihua, Gravity Inversion on Crust Structures of the Shikoku Basin, Philippine Sea, and Its Implication to the Evolution Process, *Earth Science*, Vol.43(3): 862-872, 2018.
8. **Tang Yong**, Hezhuan, Wu Zhaocai, Li Mingbi, The Geophysical characteristics of hydrothermal plumes at the Logatchev Vent Field, Mid-Atlantic Ridge, *Acta Oceanologica Sinica*, Vol.34(1): 120-126, 2012.
9. **Tang Yong**, Li Mingbi, Fang Yinxia, He Min, Wu Zhaocai, Ding Weiwei, Characteristics of Lower Slope Basin in Northern Continental Margin of South China Sea, *Earth Science-Journal of China University of Geosciences*, Vol.36(5): 869-876, 2011.
10. **Tang Yong**, Li Mingbi, Li Jiabiao, Wu Zhaocai, The geomorphological features and continuity of the Kyushu-Palau Ridge (KPR), *Acta Oceanol. Sin.*, Vol.30(5): 114-124, 2011.
11. **Tang Yong**, Jin Xianglong, Li Mingbi, Research on Method of Total Field Reconstruction Using Marine Gradiometer Data, *Hydrographic Surveying and Charting*, Vol.8(1): 25-27, 2008.
12. **Tang Yong**, Jin Xianglong, Fang Yinxia, Characteristics of Gas Hydrate Stability Zone and Resource Evaluation in Okinawa Trough, *Marine Science Bulletin*, Vol.8(2): 40-48, 2006.
13. Shaoru Yin, Jiabiao Li, Weiwei Ding, Derek E. Sawyer, Ziyin Wu & **Yong Tang**, Sedimentary filling characteristics of the South China Sea oceanic basin, with links to tectonic activity during and after seafloor spreading, 2018, *International Geology Review*, doi=10.1080/00206814.2018.1522603.
14. Fang Yinxia, Yin Jie, **Tang Yong**, Li Jinrong, Progress and Analysis of Delimitation of the Continental Shelf beyond 200 Nautical Miles, *China Oceans Law Review*, Vol 2016, No.2
15. Wang Hui, Li Mingbi, Tang Yong, Fan Yinxia, Ding Weiwei, Fu Jie, Wang Cong, Yang Lili, Nie Cong, Logging sequence stratigraphy study of ODP hole 1148A logging based on wavelet transform, *Progress in Geophysics*, Vol.30(2):672-680, 2015.
16. Zhang Yan, Li Mingbi, Ding Weiwei, **Tang Yong**, Fang Yinxia, Hydrocarbon accumulation characteristics and controlling factors in east and westcontinental margins of Africa: Taking Ruvuma Basin and Niger Delta Basins examples, *Marine Geology Frontiers*, Vol.31(3): 33-42, 2015.
17. Zhang Xueting, Chen Ying, Tang Yong, Liu Jingbiao, In-situ calibration algorithm of intrinsic magnetism for seafloor three-component magnetometer, *Chinese Journal of Scientific Instrument*, Vol.35(7): 1497-1508, 2014.

18. Wang Hui, Li Mingbi, Tang Yong, Fang Yinxia, Ding Weiwei, Fu Jie, Wang Cong, The lithology prediction of ODP hole 1148A based on the wavelet neural network, *Progress in Geophysics*, Vol.29(1): 392-399, 2014.
19. Fu Jie, Li Mingbi, Tang Yong, Qiu Wenxian, Wang Hui, Post-rift subsidence anomaly and its mechanism in the Baiyun Sag, Pearl River Mouth Basin, *Journal of Marine Sciences*, Vol.31(1): 1-17, 2013.
20. Li Jiabiao, Fang Yinxia, Wu Ziyin, Tang Yong, Technologies and their application for the delimitation of the continental shelf beyond 200 nautical miles. *Progress in Geophysics*, Vol.28(2): 531-539, 2013.
21. Zhang Xueting, Tang Yong, Liu Jingbiao, Huang Kongyao, Design of three-component magnetometer for deep ocean near seafloor, *Journal of Tropical Oceanography*, Vol.28(4): 22-27, 2009.
22. Lin Changsong, Tang Yong, Tan Yonghua, Geodynamic mechanism of dextral strike slip of the western edge faults of the South China Sea, *Acta Oceanologica Sinica.*, Vol.31(1): 159-167, 2009.

SELECTED PATENTS

1. In-situ calibration methods for seafloor three-component magnetometer, Patent for invention, China
2. A method for determining the foot of continental slope in continental margin, Patent for invention, China
3. Analysis software at the foot of continental slope beyond 200 nautical miles, Software Copyright, China
4. Integrated Information System for Continental Shelf and EEZ Delimitation, Software Copyright, China
5. Computer-aided Decision Making System for Delimitation of Outer Continental Shelf and International Seabed Resources, Software Copyright, China
6. International Maritime Delimitation demonstration system

SELECTED AWARDS

- 2021 High-level leading talents in scientific&technological innovation of Ministry of Natural Resources, China.
- 2018 151 Talent Engineering, Zhejiang Province, China
- 2016 Distinguished Awards of China Association of Oceanic Engineering
- 2014 Science and Technology Award of Oceanic Engineering, China
- 2013 Advance Staff in Maritime Rights, State Oceanic Administration, China

TEACHING

Supervision of 9 M.Sc.,3 Ph.D and 4 B.Sc. Honours Students
 Supervision of 2 M.Sc. Marine Scholarship of China

Troisi, Ariel Hernán (Argentina; nominated by: Argentina)

PROFILE

He graduated in 1987 with a degree in Oceanography from the Technological Institute of Buenos Aires and later obtained a Master's degree in Politics and Management of Science and Technology at the University of Buenos Aires.

He joined the Argentine Navy in 1988, being assigned to the Naval Hydrographic Service. For more than three decades, he trained and developed as a professional throughout the ocean sciences value chain, from planning, surveying, quality control, to the generation of products and services, acquiring extensive experience in the field and at the laboratory. He currently serves as Technical Secretary, coordinating oceanographic, hydrographic, and cartographic activities

He has been involved in the preparation of the Argentine Submission on the Outer Limit of the Continental Shelf and serves, since November 2012, as Coordinator of the Technical Subcommittee of the National Commission on the Outer Limit of the Continental Shelf. He had active participation in the process of analysis and evaluation of the Argentine presentation by the Commission on the Limits of the Continental Shelf CLCS, leading an extensive and multidisciplinary team of ocean sciences experts.

In the international arena, he has extensive experience in issues related to the Intergovernmental Oceanographic Commission (IOC) of UNESCO, chairing multiple programs and activities including the International South Atlantic Buoy Program (ISABP), the International Oceanographic Data and Information Exchange Program (IODE) and the IOC Group of Experts on Capacity Development (GE-CD).

Between 2015 and 2019 he served as IOC Vice-chairperson for Latin America and the Caribbean, being in charge of the planning and strategy areas. Since July 2019 he has held the position of Chairperson of the IOC, with a mandate until July 2023. His participation has been instrumental in the design, preparation, and implementation of the United Nations Decade of Ocean Science for Sustainable Development 2021-2030.

He has participated in various United Nations processes on behalf of the IOC, including the Preparatory Committee meetings PrepCom 2 to 4 and the Intergovernmental Conferences on Marine Biodiversity in Areas Beyond National Jurisdiction IGC 1 to 3, the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, the 2015 Ocean Conference and the Conferences of the Parties CoP 25 and 26 to the United Nations Framework Convention on Climate Change.

PERSONAL INFORMATION

Date of birth: May 14th, 1963

Place of birth: Buenos Aires

EXPERIENCE

CURRENT POSITIONS

2012 – Present

Technical Coordinator, National Commission of the Outer Limit of the Continental Shelf – Argentina

2020 – Present

Technical Secretary, Servicio de Hidrografía Naval – Argentina

2019 – Present

Chairperson, Intergovernmental Oceanographic Commission IOC-UNESCO

2018 – Present
Chairperson, Group of Experts on Capacity developments GE-CD / IOC-UNESCO

2015 – Present
IHO Member State Expert on the Law of the Seas ABLOS

2009 – Present
Regional Coordinator Ocean Data and Information Network for Latin America and the Caribbean
ODINCARSA, IODE, IOC-UNESCO

PROFESSIONAL EXPERIENCE

2015 – 2020
Member Ocean Tracking Network Management Committee

2015 –2019
Vice chairperson, Intergovernmental Oceanographic Commission IOC-UNESCO

2012 – 2015
Member Scientific Committee. World Data System WDS-SC. International Science Council
ISC

2011 –2015
Chairperson, International Oceanographic Data and Information Exchange Program IODE. IOC-
UNESCO

2008 –2020
Head Oceanography, Servicio de Hidrografía Naval – Argentina

2006 –2019
National Focal Point to the Intergovernmental Oceanographic Commission IOC-UNESCO

2005 – 2020
National Coordinator and Steering Committee Member Argo Program

2005 – 2019
Member Steering Committee Regional Alliance in Oceanography for the Upper West and
Tropical Atlantic OCEATLAN

2004 – 2014
Chairperson International South Atlantic Buoy Program ISABP. Data Buoy Cooperation Panel
DBCP

2003 – 2010
Member Advisory Body of Experts on the Law of the Sea ABE-LOS. IOC-UNESCO

2001 – 2020
National Coordinator Ocean Data and Information Network for Latin America and the Caribbean
ODINCARSA, IODE, IOC-UNESCO

1999 –2020
Director National Oceanographic Data Center CEADO, Servicio de Hidrografía Naval –
Argentina

1999 –2008
Head Marine Physics Division, Servicio de Hidrografía Naval – Argentina

1999 – 2005
Regional Coordinator Southern Oceans IOC-IODE-SOC

1999 – 2005

Responsible South Atlantic Ocean Data Specialized Center (SOC – IOC-WMO Joint Technical Commission on Oceanography and Marine Meteorology)

1997 –1999

Head Operations, Oceanographic Research Vessel A.R.A. “PURTO DESEADO” – Argentina

1988 –1997

Marine Physics Division, Oceanography Department, Servicio de Hidrografía Naval – Argentina

EDUCATION

1987

Degree in Oceanography (Licence). Instituto Tecnológico de Buenos Aires

2003

Special General Staff Officer. Navy War College. Argentina

2013

Master's degree in Politics and Management of Science and Technology. Universidad de Buenos Aires

Knowledge areas

Natural Sciences. Oceanography. Hydrography. Data management. Access to knowledge. Science and Technology. Science Policy. Strategic Planning. Management.

Languages

Spanish (mother tongue)

English (Excellent oral and written proficiency)

French (Good oral and written proficiency)

MAJOR RESEARCH CRUISE EXPERIENCE

2007 – 2008 cDrake: Dynamics and Transport of the Antarctic Circumpolar Current in Drake Passage

2002 – 2010 Survey of the thermal structure of the upper layer of the ocean AX18, AX08, AX10

1999 Tectonic Evolution of the SW Atlantic Seismic Survey TESAC I

1998 Deception Island bathymetric survey

1997 Buenos Aires continental shelf survey

1996 Hidrovía Paraná-Paraguay pre-dredging evaluation

1994 Bottom reflectivity San Matías Gulf

1993 – 1997 Global Sea Level stations monitoring

1993 Continental shelf underwater sound propagation

1989 Hydrographic survey and pipeline positioning Hidra platforms

1988 Brazil-Malvinas convergence zone “Confluencia 88”

SELECTED PUBLICATIONS

- Ryabinin V, Barbière J, Haugan P, Kullenberg G, Smith N, McLean C, Troisi A, Fischer A, Aricò S, Aarup T, Pissierssens P, Visbeck M, Enevoldsen HO and Rigaud J (2019) The UN Decade of Ocean Science for Sustainable Development. *Front. Mar. Sci.* 6:470. doi: 10.3389/fmars.2019.00470
- Garcia, H.E., Troisi, A.H., Keeley, B., Reed, G., Pikula, L., Raymond, L., Enevoldsen, H. and Pissierssens, P. (2017). Oceanographic data and information management and exchange. In: IOC-UNESCO, Global Ocean Science Report—The current status of ocean science around the world. L. Valdés et al. (eds). Paris, UNESCO, pp. 126–145
- Riser, S. & Co-Authors (2016) “The Future of Real-time, Subsurface Observations of the Global Ocean: Continuing the Argo Array”, *Nature Climate Change* 6, 145–153 (2016) doi:10.1038/nclimate2872
- "Oceans and Society: Blue Planet", Edited by Samy Djavidnia, Victoria Cheung, Michael Ott and Sophie Seeyave. Cambridge Scholars Publishing, 2014. ISBN: 978-1-4438-5639-3." 2014. Capacity Building and marine information management. – Challenges of training and capacity development in data and marine information management in the XXIst Century. 175-182
- Reed, G., Rickards, L., Troisi, A., Providing quality-assessed oceanographic data and services to the international science community, September 2011, Conference: The First ICSU World Data System Conference: Kyoto, Japan,
- Speich, S & Co-Authors (2009) “A monitoring system for the South Atlantic as a component of the MOC”
http://www.pmel.noaa.gov/people/cronin/ARC/Speichetal_SAMOC_OO09.pdf
- Freeland, H. & Co-Authors (2010). "Argo - A Decade of Progress" in Proceedings of OceanObs'09: Sustained Ocean Observations and Information for Society (Vol. 2), Venice, Italy, 21-25 September 2009, Hall, J., Harrison, D.E. & Stammer, D., Eds., ESA Publication WPP-306, doi:10.5270/OceanObs09.cwp.32

TEACHING EXPERIENCE

- 2021 Professor Postgraduate Degree on Public Policies for Sustainable Development of the Ocean. Universidad Austral. Escuela de Gobierno
- 2009 – 2011 Professor Oceanography. Advanced Technical Degree on Marine and Coastal Environment. Universidad Tecnológica Nacional
- 2000 – 2014 Professor Antarctic Oceanography. Antarctic Navigation Course. Instituto Argentino de Navegación
- 2000 – 2008 Professor Oceanographic Operations. Oceanography Course for Naval Academy Officers. Servicio de Hidrografía Naval
- 1988 – 1996, 2000 – 2008 Professor Underwater Sound Propagation. Oceanography Course for Naval Academy Officers. Servicio de Hidrografía Naval
- 1991 Professor Oceanography. Naval Academy
- 1990 Associate Professor Oceanography. Naval Academy
- 1984 Assistant Professor Oceanography I. Instituto Tecnológico de Buenos Aires

AWARDS AND HONOURS

- 2016 Honorable Mention “Domingo Faustino Sarmiento”, House of Senate, Argentina
- 2015 IODE Achievement Award, International Oceanographic Data and Information Exchange Program IODE. IOC-UNESCO

PROFESSIONAL SOCIETIES

International Association for the Physical Sciences of the Oceans IAPSO

Yamazaki, Toshitsugu (Japan; nominated by: Japan)

Member of the Commission on the Limits of the Continental Shelf
Professor, Atmosphere and Ocean Research Institute, the University of Tokyo

Date of Birth: 20 March 1959

Place of Birth: Aichi, Japan

EDUCATION

Ph.D., Kyoto University, 1990 (Geology)

B.S., Kyoto University, 1981 (Geology)

CURRENT POSITIONS

2017 - present Member, Commission on the Limits of the Continental Shelf

2017 - present Visiting Researcher, National Institute of Advanced Industrial Science and Technology

2012- present Professor, Atmosphere and Ocean Research Institute, the University of Tokyo

PROFESSIONAL EXPERIENCE

2015-2019 Visiting Senior Scientist, Japan Agency for Marine-Earth Science and Technology

2006-2012 Guest Professor, University of Tsukuba

2002-2012 Group Leader, Institute of Geology and Geoinformation, National Institute of Advanced Industrial Science and Technology

2000-2001 Deputy Director, Research Planning Office, Geological Survey of Japan

1994-1995 Visiting Associate, California Institute of Technology

1992-1993 Senior Staff, Science and Technology Agency, Japan

1990-2000 Senior Researcher, Geological Survey of Japan

1981-1990 Researcher, Geological Survey of Japan

RESEARCH ACTIVITIES

My current research interests are mainly focused on: (1) reconstruction of the past geomagnetic field using marine sediments, (2) application of rock magnetism to marine geology and paleoceanography, (3) hotspot motion and mantle dynamics, and (4) origin and development of the Philippine Sea Plate. I have rich experience in seagoing research projects and have participated in 57 research cruises, including 10 led by me as Principal or Co-Principal Investigator. I have been involved in the promotion of the Integrated Ocean Drilling Program (IODP) as a co-chief scientist and member of various committees.

MAJOR RESEARCH CRUISE EXPERIMENT

May 2019 Philippine Sea by R/V Shinsei-maru (KS-19-8 cruise) (Chief Scientist)

Aug. 2014 Japan Sea by R/V Shinsei-maru (KS-14-13 cruise) (Chief Scientist)

Dec. 2010 - Feb. 2011 IODP Expedition 330: Louisville Seamount Trail by *D/V JOIDES Resolution* (Co-chief Scientist)

May to June 2008 IODP expedition 321: Pacific equatorial age transect by *D/V JOIDES Resolution*

Nov. to Dec. 2007 Central North Pacific by /V Yokosuka (YK07-16 cruise) (Chief Scientist)

Oct. 2005 Offshore of New Guinea R/V *Kairei* (Japan-Indonesia) (Chief Scientist)

Aug. to Sep. 2004 Southeast Pacific by R/V Yokosuka (YK04-08 cruise) (Chief Scientist)

Nov. to Dec. 2003 Mariana Trough by R/V *Kairei* (KR03-13 cruise) (Chief Scientist)

Jan. 2000	South and Central Pacific by R/V Kairei (KR99-12 cruise) (Chief Scientist)
Dec. 1998	Mariana Trough and Philippine Sea by R/V Kairei (KR98-12 cruise) (Chief Scientist)
Aug. to Oct. 1997	IODP Leg 175: Benguela Current, offshore of Africa by <i>D/V JOIDES Resolution</i>
Nov. to Dec. 1993	East Pacific Rise by <i>R/V Melville</i> (Japan-US)
July 1984	Japan Trench by <i>R/V Jean Charcot</i> (Japan-France)

PROFESSIONAL SERVICE EXPERIENCES

2015-2017	President, Society of Geomagnetism and Earth, Planetary and Space Sciences
2013-2016	Member, Editorial Board, Earth, Planets and Space
2012-2018	Councilor, Paleosciences Society
2009-2011	Member of IODP Science Planning Committee
2009-2011	Director of IODP Division, Japan Drilling Earth Science Consortium
2009-present	Councilor, Society of Geomagnetism and Earth, Planetary and Space Sciences
2008-2015	Member, Editorial Board, Island Arc
2006-present	Member of IUGG/IGA subcommittee, Earth and Planetary Science Committee, Science Council of Japan
2006-2011	Member of Review and Advisory Committee, University of Minnesota
2003-2007	Chair of Steering Committee, Earth Planets and Space
2003-2006	Member of IODP Science Steering and Evaluation Panel

PROFESSIONAL ASSOCIATION

The Society of Geomagnetism and Earth, Planetary and Space Sciences
 American Geophysical Union
 Paleosciences Society
 Geological Society of Japan
 Japan Society for Marine Surveys and Technology

RECENT SELECTED PUBLICATIONS

- Usui, Y., Yamazaki, T. (2021) Magnetostratigraphic evidence for postdepositional distortion of osmium isotopic records in pelagic clay and its implications for mineral flux estimates. *Earth Planets Space*, 73:2
- Yamazaki, T., Suzuki, Y., Kouduka, M., Kawamura, N. (2019) Dependence of bacterial magnetosome morphology on chemical conditions in deep-sea sediments. *Earth Planet. Sci. Lett.*, 513, 135-143.
- Yamazaki, T., and Yamamoto, Y. (2018) Relative paleointensity and inclination anomaly over the last 8 Myr obtained from the Integrated Ocean Drilling Program Site U1335 sediments in the eastern equatorial Pacific. *J. Geophys. Res. Solid Earth*, 123, 7305-7320.
- Shimano, T., and Yamazaki, T. (2016) Environmental rock magnetism of Cenozoic red clay in the South Pacific. *Geochem. Geophys. Geosyst.*, 17, 1296-1311.
- Horiuchi, K., Kamata, K., Maejima, S., Sasaki, S., Sasaki, N., Yamazaki, T., Fujita, S., Motoyama, H., and Matsuzaki, H. (2016) Multiple ¹⁰Be records revealing the history of cosmic-ray variations across the Iceland Basin excursion. *Earth Planet. Sci. Lett.*, 440, 105-114.
- Tauxe, L., and Yamazaki, T. (2015) Paleointensities, in *Treatise on Geophysics, 2nd edition, vol. 5*, Elsevier, pp. 461-509.
- Sasaki, T., Yamazaki, T., and Ishizuka, O. (2014) A revised spreading model of the West Philippine Basin. *Earth Planets Space*, 66:83.
- Yamazaki, T., and Yamamoto, Y. (2014) Paleointensity of the geomagnetic field in the Late Cretaceous and earliest Paleogene obtained from drill cores of the Louisville seamount trail. *Geochem. Geophys. Geosyst.*, 15, 2454-2466.

- Veloso, E.E., Hayman, N.W., Anma, R., Tominaga, M., Gonzalez, R.T., Yamazaki, T., and Astudillo, N. (2014) Magma flow directions in the sheeted dike complex at superfast spreading mid-ocean ridges: Insights from IODP Hole 1256D, Eastern Pacific. *Geochem. Geophys. Geosyst.*, 15, 1283-1295.
- Yamamoto, Y., Yamazaki, T., Acton, G., Richter, C., Guidry, E., and Ohneiser, C. (2014) Paleomagnetic study of IODP Sites U1331 and U1332 in the Equatorial Pacific - extending relative geomagnetic paleointensity observations through the Oligocene and into the Eocene. *Geophys. J. Int.*, 196, 694-711.
- Shimono, T., Yamazaki, T., and Inoue, S. (2014) Influence of sampling on magnetic susceptibility anisotropy of soft sediments: Comparison of gravity and piston cores. *Earth Planets Space*, 66:3.
- Yamazaki, T., Inoue, S., Shimono, T., Sakamoto, T., and Sakai, T. (2013) Sea-ice conditions in the Okhotsk Sea during the last 550 kyr deduced from environmental magnetism. *Geochem. Geophys. Geosyst.*, 14, 5026-5040.
- Yamazaki, T., and Shimono, T. (2013) Abundant bacterial magnetite occurrence in oxic red clay. *Geology*, 41, 1191-1194.
- Yamazaki, T., Yamamoto, Y., Acton, G., Guidry, E.P., and Richter, C. (2013) Rock-magnetic artifacts on long-term relative paleointensity variations in sediments. *Geochem. Geophys. Geosyst.*, 14, 29-43.
- Koppers, A.A.P., T. Yamazaki, J. Geldmacher, and the IODP Expedition 330 Scientific Party (2013) IODP Expedition 330: Drilling the Louisville Seamount Trail in the SW Pacific. *Scientific Drilling*, 15, 11-22.
- Ohneiser, C., G. Acton, J.E.T. Channell, G.S. Wilson, Y. Yamamoto, and T. Yamazaki (2013) A middle Miocene relative paleointensity record from the equatorial Pacific. *Earth Planet. Sci. Lett.*, 374, 227-238.
- Koppers, A.A.P., Yamazaki, T., Geldmacher, J., Gee, J.S., Pressling, N., Hoshi, H., and others (2012) Limited latitudinal mantle plume motion for the Louisville hotspot. *Nat. Geosci.*, 5, 911-917.
- Yamazaki, T., and Ikehara, M. (2012) Origin of magnetic mineral concentration variation in the Southern Ocean. *Paleoceanography*, 27, PA2206.
- Yamazaki, T. (2012) Paleoposition of Intertropical Convergence Zone in the eastern Pacific inferred from glacial-interglacial changes in terrigenous and biogenic magnetic mineral fractions. *Geology*, 40, 151-154.
- Yamazaki, T., and Solheid, P. (2011) Maghemite-to-magnetite reduction across the Fe-redox boundary in a sediment core from the Ontong-Java Plateau: influence on relative paleointensity estimation and environmental application. *Geophys. J. Int.*, 185, 1243-1254.
- Yamazaki, T., Takahashi, M., Iryu, Y., Sato, T., Oda, M., Takayanagi, H., Chiyonobu, S., Nishimura, A., Nakazawa, T., and Ooka, T. (2010) Philippine Sea Plate motion since Eocene estimated from paleomagnetism of seafloor drill cores and gravity cores. *Earth Planets Space*, 62, 495-502.
- Yamazaki, T., Seama, N., Okino, K., Kitada, K., Joshima, M., Oda, H., and Naka, J. (2003) Spreading process of the northern Mariana Trough: Rifting-spreading transition at 22N. *Geochem. Geophys. Geosyst.*, 4, 1075.
- Yamazaki, T., and Oda, H. (2002) Orbital influence on Earth's magnetic field: 100,000-year periodicity in inclination. *Science*, 295, 2435-2438.

Yáñez Carrizo, Gonzalo Alejandro (Chile; nominated by: Chile)

PERSONAL INFORMATION

Name: Gonzalo Alejandro Yáñez Carrizo;
Date of birth: 30-03-1959

Studies:

- Ph.D. Geophysics Columbia University, U.S.A. 1995
- M. Phil. Geophysics Columbia University, U.S.A. 1992
- Master in Geophysics, Universidad de Chile, Chile 1983

PROFESSIONAL EXPERIENCE

- 2010- : Pontificia Universidad Católica de Chile, Associated Profesor
- 2017-2022: Member of the Commission on the Limits of the Continental Shelf (CLCS)
 - Vice-chair Commission (2019-2022)
 - GRULAC representative (2019-2022)
 - Member of Committee on Confidentiality (2017-2022)
 - Chair sub-commission of Sri Lanka (2017-2022)
 - Vice-chair sub-commission of Spain (2019-2022)
 - Member sub-commission of Brazil (2017-2022)
 - Member sub-commission of France, La Reunion & Amsterdam (2017-2019)
- 2016-2020: GFDAS, UAV-Airborne Geophysics (Founder member)
- 2010-2020: Expert Consulting. Mining exploration companies (Codelco, Antofagasta Minerals, QPX, Barrick), SRK.
- 2004-2010: Geophysical Director, Codelco-Chile, Chief Geophysicist Codelco Chile, Líder of mining exploration projects in Chile, Brazil, Mexico, using geophysical tools (magnetic, gravity, IP-RES, magneto-telluric). Applied research projects (UAV airborne magnetic system, wide aperture seismic refraction, regional IP, natural seismicity for regional exploration).
- 2001-2003: Chief Geophysicist Codelco Chile, Líder of mining exploration projects in Chile, Brazil, Mexico, using geophysical tools (magnetic, gravity, IP-RES, magneto-telluric).
- 1997-2001: Project Manager, Geodatos, Chile. Exploration projects in mining, geothermal, groundwater, oil and gas, seismic risk, Chile, Brazil, Colombia, Mexico, Peru, using potential methods (magnetic (land-airborne) & gravity (land)), seismic, magneto-telluric, IP-RES, GPR.
- 1992-1996: Chief Geophysicist Sernageomin, Chile. Leader of Airborne Magnetic Chart, and Gravimetric Chart of Chile. Regional mining and oil exploration. Marine Geology.
- 1984-1991: Junior Geophysicist, Sernageomin, Chile. Developer of Airborne Magnetic Chart of Chile.

ACADEMIC EXPERIENCE

- Full time Associated Professor, Dpto. Ingeniería Estructural y Geotecnia, Pontificia Universidad Católica de Chile, 2010-, Lectures: General Geophysics, Exploration Geophysics, Seminars.
- Associated Professor Dpto. De Geofísica U. Chile 1984-2011 Lectures: Exploration Geophysics, Geophysical Prospecting I (Potential Methods), Geophysical Prospecting II (Electrical methods DC-EM), Geodynamics I, Geodynamics II, Seminars Topics (Inversion Methods, Mining Exploration, Geothermal Exploration, Fluid Mechanics in Earth Sciences, Gas Hydrates).
- 3 Ph.D comissions. (U. Chile (2), UBA (1)), more than 10 Master thesis in Geology and Geophyscis, U. Chile, 8 as a thesis director.
- Invited Professor PHD program UCN, Antofagasta 2004 Lecture: Mathematical methods for quantitative geological analysis.
- Invited Professor, Master in Mininig Exploration UBA, Buenos Aires, Argentina, 2004 Lecture: Introduction to Geophysical Exploration
- Associated professor Ph.D. program in Geology, Dpto. Geología U. Chile, 2004-2011
- Invited Professor Geophysical Program, Universidad de Concepción, Chile, 2007-2009 (professional lecture to first year students, advice in study program, and academic profiles).
- Intensive Course: Geophysical Exploration for Geological Resources, Sociedad Geológica de Chile, 2010
- Intensive Course: Geophysical Exploration for Geological Resources, Magister in exploration Universidad Católica del Norte, Antofagasta, Chile, 2013.
- Intensive Course: Geophysical Exploration for Geological Resources, Magister in exploration Universidad Católica del Norte, Antofagasta, Chile, 2015.
- Intensive Course: Geophysical Exploration for Geological Resources, Magister in exploration Universidad Católica del Norte, Antofagasta, Chile, 2017.

RESEARCH PROJECTS

FONDECYT:

- **1210526** Multivariate drought monitor system: biophysical modelling, remote sensing and hydroclimatic information for drought analysis and forecasting in agriculture (2021-2024), Co-investigator
- **1181392** Homogenization based Methods for Nondestructive Evaluation of Structural Integrity and for Geophysical Prospecting (2018-2020), Co-investigator
- **1170569** Decoding springs, groundwater and fractured-rocks connections at San Felipe-los Andes area (Aconcagua basin, central Chile) (2017-2019), Co-investigator
- **1141139** Nature and tectono-magmatic significance of transverse crustal structures in the Andes: selected case studies from the southern volcanic zone (2015-2018), Co-investigator
- **1061253**. Crustal seismicity and velocity structure in the principal cordillera of central Chile (33°34's): implications on andean geodynamic and seismic (2005-2007), Co-investigator.
- **1020972**. Flat slab to steep subduction change of Nazca plate in central Chile: geodynamic and seismotectonic implications. 2002-2004, Co-investigator
- **1000136**. Numerical modeling of ridge subduction with geological and geophysical constraints: the passive Juan Fernandez ridge and the active Chile rise collision with the South American plate during the late cenozoic, (2000-2002), pi.
- **1960008**. A continuous deep magnetotelluric (mt) study with remote reference over the melipilla anomaly zone (maz): coastal cordillera of central Chile (33-34°s), (1996-1997), pi.

- **1940196.** Tectonic framework of the miocene arc at 34°s: geophysical constraint of deep seated structures, (1994-1995), co-investigator.
- **1940431.** Volcanism associated to liquine-ofqui fault: key element to understand de most primitive magmas and the generation of strato-volcanos in the southern Andes, (1994-1995), Co-investigator
- **1930164.** Crustal thickness and the andean cordillera compensation ant its relationship with the segmentation of the convergent margin of South America: gravimetric transects (1993-1994), pi.

FONDEF:

- **D10E1027.** Seismic Hazard platform SIGAS: Technological transfer to Sernageomin throughout a case study in the San Antonio-Los Vilos seismotectonic segment (2016-2018), Director.
- **D10I1027.** Development of a seismic hazard platform for northern Chile and a proposal of sismoresistant code updating: analysys of the maule 2010 earthquake and characterization earthquakes in the Tal-Tal-Arica segment (2012-2015). Director.
- **D00I1104.** Submarine gas hydrates, a new source of energy for the 21th century, (2002-2004), Co-Investigator.
- **D00I1104.** UAV system for the mining exploration, (2006-2009) Co-Investigator.

FONTEC:

- 4WD Geophysical Motorcycle System, (1997-1998), PI.

BICENTENARIO PROGRAM PBCT-18

- **Anillo ACT-18.** Tectonomagmatic control of Giant Ore deposits in the subduction factory of the high chilean andes between 32°-36°s: a multidisciplinary approach, (2006-2009), PI.

FONDAP – CONICYT, PROGRAM

- **CEGA,** Andean Geothermal Center of Excellence N° **15090013**, (2011-2020), Director of Geophyscal line.
- **CIGIDEN,** National Research Center for Integrated Natural Disasters Management, Associated Research (2014-2020)

FONDEQUIP-CONICYT, PROGRAM

- **Sistema Geofísico Multi-parámetro,** EQM140015, 2014, PI.

NUCLEO MILENIO

- **Trazadores de Metales en Zonas de Subducción,** 2015-2020 (Investigador Senior)

FUNDACION CHILE GRANT:

- **GfDas – GeoMagDrone, Fundación Chile Grantt** (2016)

PUBLICATIONS (ISI)

1. Parra, J.C., G. Yañez. Provincias Magnéticas del Chile Central Revista Geológica de Chile, 15, 2, 1-32, 1988.
2. Yañez, G., J. LaBrecque. 3-D Magnetic modelling at intermediate wavelength in the North Atlantic and Northeast Pacific basins. Journal of Geophysical Research, 102, 7947-7961, 1997.
3. Yañez, G., A. Giavelli, J. Cañuta. Grado de compensación isostática en el Altiplano: Análisis gravimétrico de 2 y 3 dimensiones. In: El Altiplano, Ciencia y conciencia en los Andes, pp. 15-22, 1997.

4. Yañez, G., P. Gana, R. Fernández. Sobre el origen y significado geológico de la anomalía Melipilla, zona central de Chile. *Revista Geológica de Chile*, 25, No. 2, 175-198, 1998
5. Godoy E., G. Yañez, E. Vera, Inversion of an Oligocene volcano-tectonic basin and uplifting of its superimposed Miocene magmatic arc in the Chilean Andes: first seismic and gravity evidences. *Tectonophysics*, 306, 217-236, 1999.
6. Yañez, G., C.R. Ranero, R. Von Huene, J. Díaz. Magnetic anomaly interpretation across the southern central Andes (32°-34°S): The role of the Juan Fernandez Ridge in the late Tertiary evolution of the margin. *Journal of Geophysical Research*. 106, 6325-6345, 2001
7. Yañez, G., J. Cembrano, M. Pardo, C. Ranero, F. Selles. The Challenger-Juan Fernandez-Maipo major tectonic transition of the Nazca-Andean subduction system at 33°-34°S: Geodynamic evidences and implications. *Journal South American Earth Sciences*, 15, 23-38, 2002
8. M. E. Ghidella, G. Yañez, J.L. LaBrcque, Revised tectonic implications for the magnetic anomalies of the western Weddell Sea. *Tectonophysics*, Volume 347, Issue 1-3, 65-86, March 2002
9. Garrido I, J. Cembrano, A. Siña, P. Stedman, G. Yañez. High magma oxidation state and contractional deformation: key factors in the generation of Andean porphyry copper deposits, Central Chile (31-34°S). *Revista Geológica de Chile*, Vol. 29, No. 1, p. 3-14, 5 Figs., 1 table, July 2002.
10. Tassara A., G. Yañez, Rigidez de la litósfera Andina (12°-47°S) y su relación con la segmentación del orógeno. *Revista Geológica de Chile*, vol 30, 159-186, 2003.
11. G. Yañez, J. Cembrano, The role of the viscous plate coupling in the late tertiary Andean deformation. *Journal of Geophysical Research*, vol 106, 6325-6345, 2004.
12. Moreno T. & Gibbons W. (ed.), Cembrano J., Lavenue A., Yañez G., *The Geology of Chile*, chap. 9: Neotectonics, 2007.
13. Piquer J., R. Charrier, JC. Castelli, G. Yañez, El Cenozoico del alto río Teno, Cordillera Principal, Chile Central: estratigrafía, plutonismo y su relación con estructuras profundas, *Andean Geology* 37 (1): 32-53. January, 2010
14. Arriagada C., Arancibia G., Cembrano J., Martínez F., Carrizo D., Van Sint Jan M., Saez E., González G., Rebolledo S., Sepulveda S., Contreras-Reyes E., Jensen E. and Yañez G. (2011) Nature and tectonic significance of co-seismic structures associated with the Mw 8.8 Maule earthquake, central southern Chile forearc. *Journal of Structural Geology*, 33, 891-897.
15. Aron, F., R. Allmendinger, J. Cembrano, G. González, and G. Yañez (2013), Permanent Forearc Extension and Seismic Segmentation: Insights from the 2010 Maule Earthquake, Chile, *J. Geophys. Res.*, doi:10.1029/2012JB009339, in press.
16. Allmendinger, R. W., González, G., Cembrano, J., Aron, F., & Yañez, G. (2013). Splay fault slip during the Mw 8.8 2010 Maule Chile earthquake: COMMENT. *Geology*. 41(12), e309–e309. doi:10.1130/G34326C.1.
17. Humire F., E. Saez, F. Leyton, G. Yañez, Combining active and passive multi-channel analysis of surface waves to improve reliability of Vs,30 estimation using standard equipment, *Bull. Earthquake Engineering*, DOI 10.1007/s10518-014-9662-5, 2014.
18. Yañez G., M. Muñoz, V. Flores-Aqueveque, A. Bosh, 2015, Gravity derived depth to basement in Santiago Basin, Chile: implications for its geological evolution, hydrogeology, low enthalpy geothermal, soil characterization and geo-hazards, *Andean Geology*, 42 (2): 147-172. May, 2015 doi: 10.5027.
19. Becerra A., L. Podestá, R. Monetta, E. Saez, F. Leyton, G. Yanez, 2015, Seismic microzoning of Arica and Iquique, Chile, *Natural Hazards*, DOI: 10.1007/s11069-015-1863-y

20. Aguilaf S., J. Araya, G. Yáñez, 2016, Relationship between bulk mineralogy and Induced Polarization responses in IOCG and Porphyry Copper mineralization, Northern Chile, *Exploration Geophysics*, doi: 10.1071/EG15077.
21. Shrivastava M.N., G. González, M. Moreno, M. Chlieh, P. Salazar, C. D. Reddy, J. C. Báez, G. Yáñez, J. González, J. C. de la Llera, 2016, Coseismic slip and afterslip of the 2015 Mw 8.3 Illapel (Chile) earthquake determined from continuous GPS data, *Geophysical Research Letters*, DOI: 10.1002/2016GL070684.
22. Perez-Estay N., G. Yáñez, S. Carretier, E. Lira, J. Maringue, 2016, Seismic hazard in low slip rate crustal faults, estimating the characteristic event and the most hazardous zone: study case San Ramón Fault, in southern Andes, *Nat. Hazards Earth Syst. Sci.*, 16, 1–18, doi:10.5194/nhess-16-1-2016.
23. Yáñez, G., Ugalde, H., Araya Vargas, J., 2017, Topographic correction of magnetic data on rugged topography with application to Río Blanco-Los Bronces and El Teniente porphyry copper districts, Southern Andes, Chile. Accepted, *Exploration Geophysics*.
24. Maringue J., G. Yáñez, E. Sáez, L. Podestá, R. Figueroa, N. P. Estay, E. Lira, 2017, Dynamic characterization of the Mejillones Basin in northern Chile, using combined geophysical field measurements, *Engineering Geology*, DOI: 10.1016/j.enggeo.2017.12.016
25. García-Perez T., C. Marquardt, G. Yáñez, J. Cembrano, R. Gomila, I. Santibañez, J. Maringue, 2018, Insights on the structural control of a Neogene forearc basin in Northern Chile: A geophysical approach, DOI: 10.1016/j.tecto.2018.04.003.
26. Viguier B., H. Jourde, G. Yáñez, E. Lira, V. Leonardi, C. E. Moya, T. García-Pérez, J. Maringue, E. Lictévout, 2018, Multidisciplinary study for the assessment of the geometry, boundaries and preferential recharge zones of an overexploited aquifer in the Atacama Desert (Pampa del Tamarugal, Northern Chile), *Journal of South American Earth Sciences*, <https://doi.org/10.1016/j.jsames.2018.05.018>
27. Santibañez I., J. Cembrano, T. García-Perez, , C. Costa, G. Yáñez, C. Marquardt, G. Arancibia, , G. González, 2019, Crustal faults in the Chilean Andes: geological constraints and seismic potential, *Andean Geology*, 46 (1): 32-65,. doi: 10.5027/andgeoV46n1-3067
28. Valdenegro P, M. Muñoz, G. Yáñez, D. Morata, M.A. Parada, 2019, A model for thermal gradient and heat flow in central Chile: the role of thermal properties, *Journal of South American Earth Sciences*, <https://doi.org/10.1016/j.jsames.2019.01.011>.
29. Araya Vargas, J., N.M. Meqbel, O. Ritter, H. Brasse, U. Weckmann, G. Yáñez, & B. Godoy, 2019, Fluid distribution in the Central Andes subduction zone imaged with magnetotellurics. *Journal of Geophysical Research: Solid Earth*, 124. <https://doi.org/10.1029/2018JB016933>
30. Piquer Romo, J.; Yáñez, G.; Rivera, O.; Cooke, D. 2019, Long-lived damage zones associated with fault intersections in the Andes of Central Chile. *Andean Geology* 46 (2): [doi:<http://dx.doi.org/10.5027/andgeoV46n2-3106>]
31. Yáñez G., O. Rivera, 2019, Crustal dense blocks in the fore-arc and arc region of Chilean ranges and their role in the magma ascent and composition. *Breaking paradigms in the Andean metallogeny, Journal of South American Earth Sciences*, 10.1016/j.jsames.2019.04.006.
32. Podesta L, E. Saez, G. Yáñez, F. Leyton, 2019, Geophysical study and 3D modeling of site effects in Viña del Mar city, Chile, *Earthquake Spectra*, <https://doi.org/10.1193/080717EQS155M>.
33. Viguier B., L. Daniele, H. Jourde, V. Leonardi, G. Yáñez, 2019. Changes in the conceptual model of the Pampa del Tamarugal Aquifer: implications for Central Depression water resources, *Journal of South American Earth Sciences*, <https://doi.org/10.1016/j.jsames.2019.102217>.

34. Lictévout E., C. Abellanosa, C. Maass, N. Perez, G. Yáñez, 2020, Filtration Galleries of the Pica Oasis, Northern Chile: Exploration, Mapping and Characterization, *Andean Geology*, DOI: <http://dx.doi.org/10.5027/andgeoV47n3-3272>.
35. Valois R., N. Schaffer, R. Figueroa, A. Maldonado, E. Yáñez, A. Hevia, G. Yáñez, S. MacDonell 2020, Characterizing the water storage capacity and hydrological role of mountain peatlands in the arid Andes of North Central-Chile, *Hydrology Water* 2020, 12(4), 1071; <https://doi.org/10.3390/w12041071>.
36. Yáñez G., N. Perez-Estay, J.A. Araya-Vargas, J. Sanhueza, R. Figueroa, J. Maringue, T. Rojas, 2020, Shallow anatomy of the San Ramón Fault (Chile) constrained by geophysical methods: implications for its role in the Andean deformation, *Tectonics*, TECT21371, DOI: 10.1029/2020TC006294.
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OTHER RELEVANT ACTIVITIES

- Associated Editor Andean Geology, Chile, 2000-2020
- Vice-president Geological Society 2003-2006
- Invited talk NASA, Washington, USA, 1991: Satellite Geophysics
- Invited talk Congreso Geológico Chileno, Concepción 2003: Symposia Economic Geology
- Referee of international journals (Economic Geology, Journal of Geophysical Research, Tectonics, Tectonophysics, Journal of South American Earth Science, Nature)
- AGU member since 1983
- Referee of Conicyt Projects, Chile (1994-)
- Referee of Conicet projects, Argentina (2008-)
- Referee of NASA projects (2010-)
- Director of Geological Society (2010-2011)
- Chile Explore 2014, Continuing Exploration Success, key-note speaker: Natural Seismicity as an exploration tool in new metalotecs, the case of giant ore deposits in Chile
- Panel Referee, FONDEQUIP-CONICYT, 2015
- Panel Referee, FONDEF-CONICYT, 2016-2020
- Panel Referee, BECAS-CHILE-CONICYT, 2016-2021
- Consultant, ECS project, NOAA, USA, 2020
- Member of Study Group ANID, Earth Science, 2021-2022
- Geophysical Consultant, Andean Belt, 2021