Creating partnerships for capacity building in ecosystem assessment at ocean basin scale – Case studies from the Atlantic

J Murray Roberts

ATLAS project coordinator, University of Edinburgh

Two-day multi-stakeholder dialogue and capacity-building partnership event United Nations, New York, 24-25 January 2019





Ocean Warming

Ocean Acidification

Reduced oxygen

Invasive species

Plastics & Pollution

Practices
Deep-sea

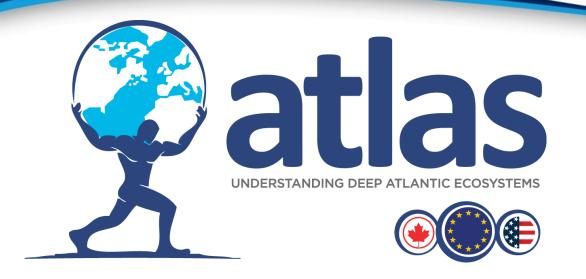
Mining

Harmful

Fishing

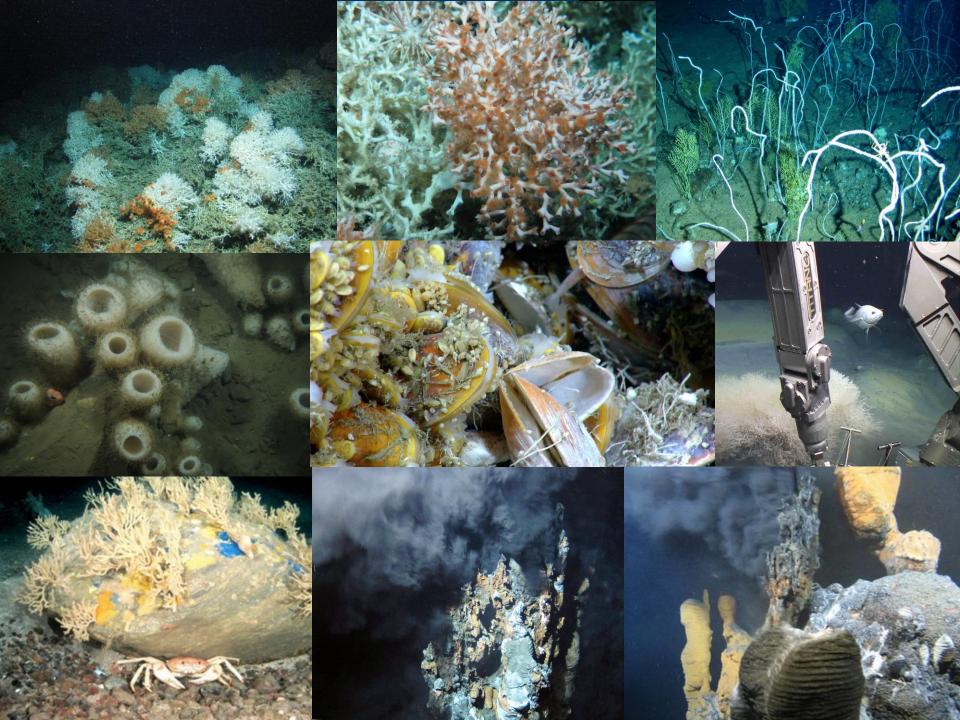
Hydrocarbon Exploitation

Bioprospecting



A trans-Atlantic assessment and deep-water ecosystem-based spatial management plan for Europe







At a Glance

A trans-Atlantic assessment and deep-water ecosystem-based spatial management plan for Europe

Call: EU Horizon 2020: BG-2015-2 (Unlocking the potential of seas and oceans)

Duration: May 2016 – April 2020 (48m)

Consortium: 24 partners +1 linked 3rd

party, from 12 countries

Budget: €9.3M

Coordinator: University of Edinburgh (UK)

Focus: Providing essential new knowledge of North Atlantic ecosystems through data gathering and synthesis

Impact: Discoveries and outputs will inform and facilitate stakeholder agreement on marine policy and regulation and spur Blue Growth

Core activities: 25+ research cruises investigating 12 case studies across the Atlantic

Galway Statement on Atlantic Ocean Cooperation Launching a European Union - Canada - United States of America Research Alliance

The Signatories of this Statement meeting on the occasion of the high level event

The Atlantic – a Shared Resource, held on 23 and 24 May 2013

at the Marine Institute, Galway, Ireland



Signed in Galway on 24 May 2013 in three originals in the English language.

For the European Union

For the Government of Canada

For the Government of the United States of America

Maire

Máire GEOGHÉGAN-OLUNN

Commissioner for Research, Innovation and Science Edward FAST
Minister of International
Trade and Minister for the
Asia-Pacific Gateway

Dr Kerri-Ann JONES Assistant Secretary of State for Oceans and International Environmental and Scientific

Affairs

Maria DAMANAKI Commissioner for Maritime Affairs and Fisheries

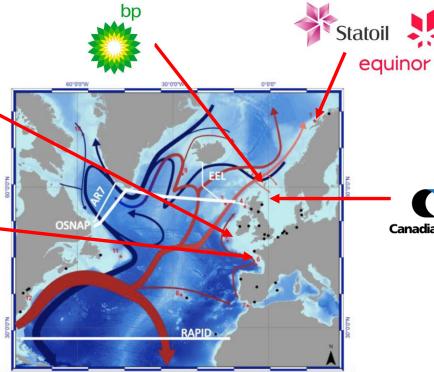
atlas Advisory & Stakeholder Board



Jake Rice, DFO **Scientist Emeritus**

















Multidisciplinary Approach

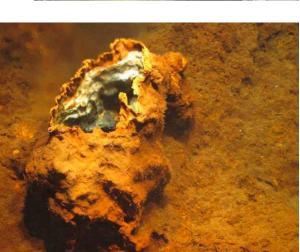




ATLAS @sea















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Cite this article: Fox AD, Henry L-A, Corne DW. Roberts JM. 2016 Sensitivity of marine protected area network connectivity to atmospheric variability, R. Soc. open sci

Sensitivity of marine protected area network connectivity to atmospheric variability

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Coral Reefs DOI 10.1007/s00338-016-1519-8 46 ATLAS publications with 85 in preparation

https://www.euatlas.org/resources/atlaslibrary

WILEY MOLECULAR ECOLOGY

Marine Policy

Scientific rationale and international obligations for protection of active

C.L. Van Dover", S. Arnaud-Haond, M. Gianni, S. Helmreich, J.A. Huber, A.L. Jaeckel, A. Metaxas, L.H. Pendleton, S. Petersen, E. Ramirez-Llodra, P.E. Steinberg, V. Tunnicliffe,

hydrothermal vent ecosystems from deep-sea mining



Received: 05 April 201

Published: 11 October 2016

frontiers

Ecosystem engineering creates a direct nutritional link between 600-m deep cold-water coral mounds and surface productivity

Journal of Geaner Production 180 (2018) 913-923

Contents lists available at ScienceDirect

Journal of Cleaner Production

Marine Policy

Mainstreaming marine biodiversity into the SDGs: The role of other effective

Daniela Diza, David Johnson, Michael Riddell, Sian Rees, Jessica Battle, Kristina Gjerde,

journal homepage: www.elsevier.com/locate/jcleps

Developing a performance evaluation mechanism for Portuguese

Maria Adelaide Ferreira a.*, David Johnson b, Carlos Pereira da Silva c, Tomás B. Ramos d

marine spatial planning using a participatory approach

Karline Soetaert¹, Christian Mohn², Anna Rengstorf³, Anthony Grehan³ & Dick van Oev

Deep-Sea Mining With No Net Loss

of Biodiversity-An Impossible Aim

Holly J. Niner", Jeff A. Ardron^{1,3}, Elva G. Escobar^a, Matthew Gianni¹, Aline Jasckel¹, Daniel O. B. Jones², Liss A. Levin¹, Craig R. Smith², Torsten Thiele³, Phillip J. Turner²³, Chry L. Van Dover²¹, Lew Walling¹¹ and Kristina M. Gjerde⁵¹

* Department of Footsweigen (Heleanity College) modes: Artifacts SE Australia * Madismal College

the small-scale spatial distribution of live biogenic reef framework in cold-water coral habitats

L. H. De Clippele¹ · J. Gafeira² · K. Robert³ · S. Hennige⁵ · M. S. Lavaleye⁴ · G. C. A. Duineveld4 · V. A. I. Huvenne3 D · J. M. Roberts5

New name for the soft coral Alcyonium rubrum Stokvis & van Ofwegen, 2006 (Alcyonacea, Alcyoniidae):

Alcyonium burmedju nom. n. frontiers in Marine Science Íris Sampaio^{1,2}, Frank R. Stokvis³, Leen P. van Ofweg



INVITED REVIEWS AND SYNTHESES

Invertebrate population genetics across Earth's largest habitat: The deep-sea floor

M. L. Taylor | C. N. Roterman (1)

ELEMENTA Science of the Australian Associations in the Deep Sea

Marina Carreiro-Silva^{1,2,3}*, Oscar Ocaha⁴, David Stanković¹, Iria Sampalo ^{5,5} Filipe M. Porteiro ^{1,5,6,7}, Marie-Claire Fabri² and Sergio Stefanni²

Seo-Temas, 16 (1) ISSN 1576-5172

Marine Science

ICES Journal of

Using novel acoustic and visual mapping tools to predict

Mar Biol (2017) 164:112 DOI 10.1007/s00227-017-3141-METHOD Development of a sensitive detection method to survey pelagic

biodiversity using eDNA and quantitative PCR: a case study of devil ray at seamounts Laura M. Gargan^{1,2} · Telmo Morato³ · Christopl Jeanette E. L. Carlsson^{1,2} · Jens Carlsson^{1,2}

Congreso Geológico de España

Major impacts of climate change on deep-sea benthic ecosystems

Evidencias de expulsión de fluidos en el complejo Hespérides en el talud medio del Golfo de Cádiz

Evidence of fluid venting on the Hespérides complex at the middle slope of the Gulf of Cádiz

Andrew K. Sweetman*, Andrew R. Thurber*, Craig R. Smith*, I Camilo Moral, Chih-Lin Weil, Andrew J. Gooday**, Daniel O. B Moriaki Yasuhara^{‡†}, Jeroen Ingels^{§§}, Henry A. Ruhl^{‡*}, Christina Roberto Danovaro^{18,***}, Laura Würzberg^{†††}, Amy Baco^{†††}, Benjan Alexis Pasulka Kirstin S. Mever Katherine M. Dunlop, J. Murray Roberts****

Lionfish (Pterois sp.) invade the upper bathyal zone in the western Atlantic

frontiers

ICES

(B)

Cold-Water Coral Habitats in Submarine Canyons of the Bay of Biscay

Inge M. J. van den Beld¹*, Jean-François Bourillet³, Sophie Arnaud-Haond ¹³, Laurent de Chambure*, Jaime S. Davies¹*, Brigitte Guillaumont¹, Karine Olu¹ and Lénaick Menot¹

Sebastian Hennige⁸, J. Murray Roberts

area-based conservation measures (SDG 14.5)

Contents flats realiable at ScienceDire Marine Policy Climate change is likely to severely limit the effectiveness of deep-sea ABMTs in the North Atlantic avid Johnson". Maria Adelaide Ferreira". Ellen Kenchington

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Cite this article: Famell ED. Carlsson JEL arlsson J. 2016 Next Gen Pop Gen: menting a high-throughout approach t ulation genetics in boarfish (Copros oper Soc open sci. 3: 160651.

Next Gen Pop Gen: implementing a high-throughput approach to population genetics in boarfish (Capros aper)

Area S2 Research Group, School of Biology and Environmental Science/Earth Institute, University College Dublin, Belfield, Dublin 4, Republic of Ireland

D. Palomino¹, J.T. Vázquez¹, N. López-González¹, L.M. Fernánd

Instituto Español de Oceanografia. CO de Málaga, Puerto Pesquero s/n, 29640, Fo

stituto Español de Oceanografía. CO de Cádiz, Muelle Pesquero s'in, 11006, Cádiz (C acultad de Ciencias, Universidad de Málaga, Campus de Teatinos s'in, 29071, Málaga

Edward D. Farrell, Jeanette E. L. Carlsson and Jens Carlsson

Food for Thought Moving from ecosystem-based policy objectives to operational implementation of ecosystem-based management measures

Contribution to the Themed Section: 'Case studies in operationalizing ecosystem-based

Roland Cormier, 1,4 Christopher R. Kelble, 2 M. Robin Anderson, 3 J. Icarus Allen, 4 Anthony Grehan, 5 and Ólavur Gregersen⁶

icesthacht, Germany NOAA, Atlantic Oceanographic and Meteorological Laboratory, Ocean Chemistry and Ecosystems Division, 4301 Rickenbacker Cause

ntal Science Division, Science Branch, Fisheries and Oceans Canada, PO Box 5667, St. John's, NL ATC 5X1, Canada Plymouth Marine Laboratory, Prospect Place PL1 3DH, Plymouth, UK Earth and Ocean Sciences, School of Natural Sciences, National University of Ireland Galway, Room A107, University Road, Galway, Ireland H91 TK33
"Syntesia Paterns & Associates, Pyri Oman Brú2, FO-510 Ceta, Force Islands Peer.

Assessing the living and dead proportions of cold-water coral colonies: implications for deep-water Marine Protected Area monitoring in a changing ocean

Johanne Vad^{1,2}, Covadonga Orejas³, Juan Moreno-Navas⁴, Helen S. Findlay⁵ and J. Murray Roberts24

¹ School of Engineering Geoscience Infrastructure and Society, Heriot-Watt University, Edinburgh, United Kingdom ² School of Geoscience, Grant Institute, University of Edinburgh, Edinburgh, United Kingdom

Instituto Español de Oceanografia, Centro Oceanografico de Baleares, Palma, Spain
 Physical Oceanography Research Group, Universidad de Malaga, Málaga, Spain
 Plymouth Marine Laboratory, Plymouth, UK

Center for Marine Science, University of North Carolina at Wilmington, Wilmington, NC, United States of

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Expected Impacts

- Improve **resource management** (ecosystem approach) and governance
- Improve **cooperation** within EU and transatlantic
- Contribute to the EU Integrated Maritime Policy
- Strengthen international **agreements to conserve** Vulnerable Marine Ecosystems and Ecologically & Biologically Significant Areas
- Engage with UN process developing an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction

Please visit the ATLAS stand for more info







Belém Statement on Atlantic Research and Innovation Cooperation

Conference in Lisbon on 13-14 July 2017

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GOVERNMENT
DEPARTMENT OF THE
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SOUTH AFRICA

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Naledi Pandor

Minister of Science and Technology

Gilberto Kassab

Minister of State for Science, Technology, Innovations and Communications



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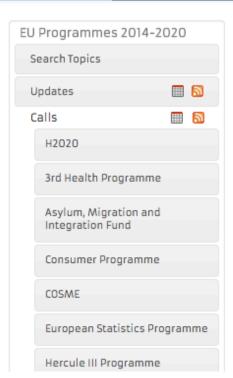
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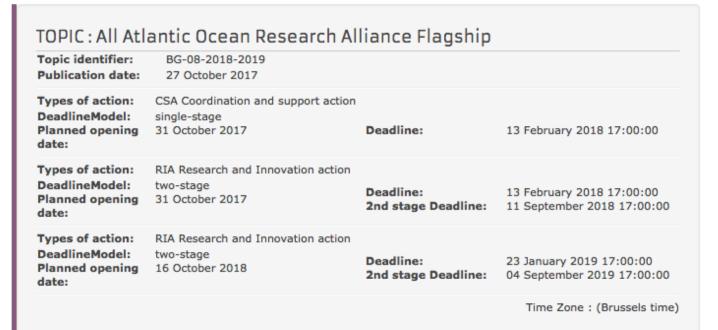
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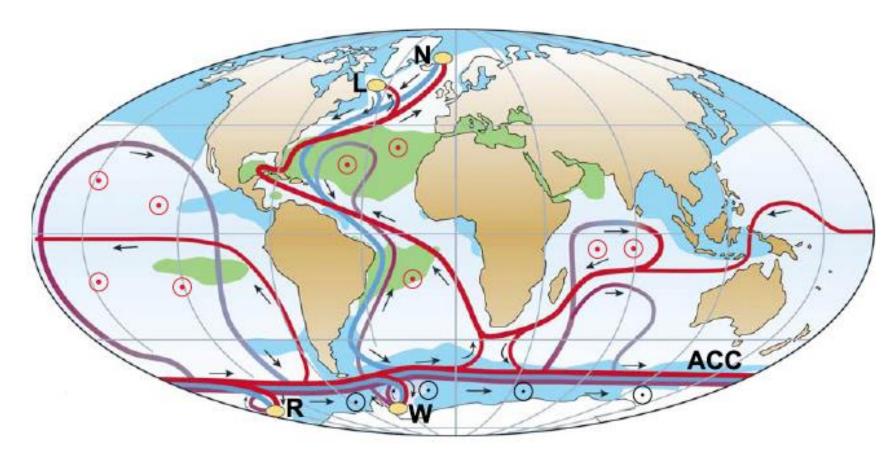




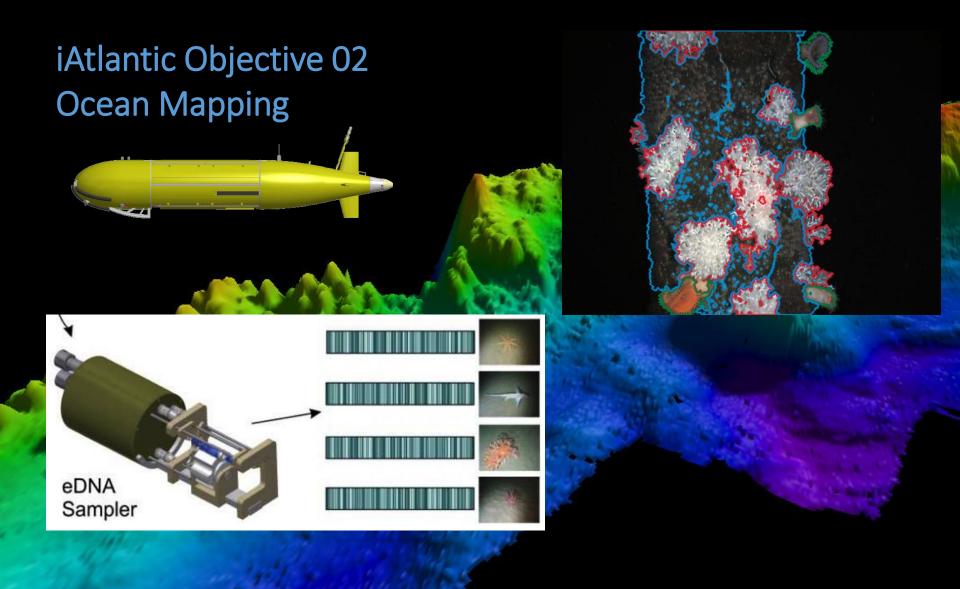


iAtlantic project selected for funding and currently in Grant Agreement Preparation

iAtlantic Objective 01 Ocean Observation



Standardise South and North Atlantic Ocean observations to enable short, medium and long-term assessments of Atlantic Ocean circulation and its physico-biogeochemical environment.



Map deep and open-ocean ecosystems at basin, regional and local scales.

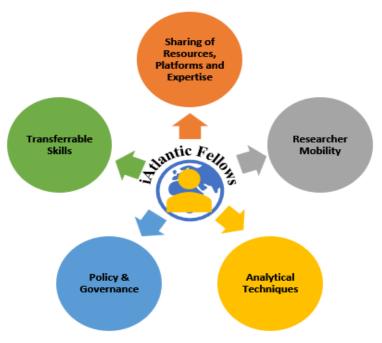




Assess the stability, vulnerability, and any tipping points of deep and open-ocean Atlantic ecosystems to changes in ocean circulation, and effects of single and multiple stressors.

iAtlantic Objective 04 Capacity Building





Align and enhance human, technological and data inter-operability capacities for cost-effective cooperation and planning across the Atlantic.

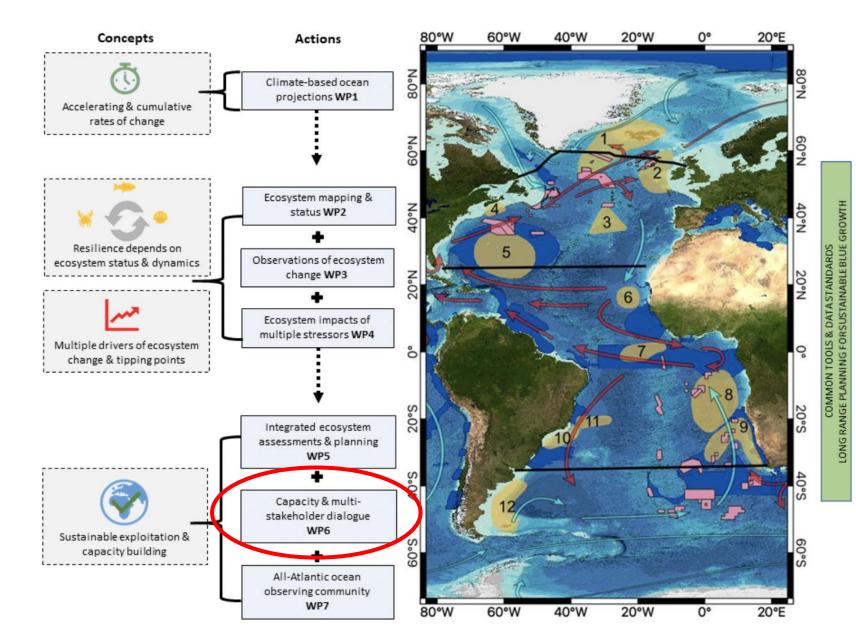






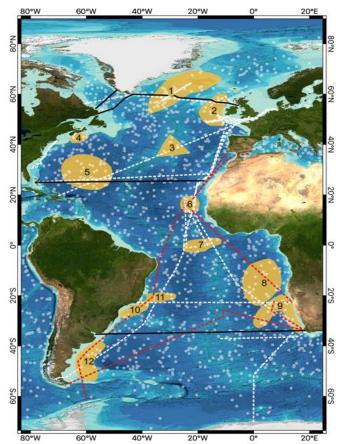
Define requirements for sustainable management with industry, regulatory and governmental stakeholders to reflect societal needs and inform policy developments that ensure and encourage a sustainable Blue Economy.

iAtlantic



iAtlantic

- 34 partners
- €10.6M budget
- 11 international associate partners
- €27M programme of 32 cruises



<u>Figure 2</u>: Chart illustrating the density of ARGO floats (grey circles) and positions of transatlantic monitoring arrays (black lines) providing oceanographic data to iAtlantic. Dashed white lines illustrate tracks of iAtlantic cruises with the two **S** Atlantic Demonstrator Capacity Building cruises iMirabilis and iCorsage shown in red. Led by the Spanish Institute of Oceanography (IEO) and named for iconic plants of W Africa and S America, these cruises are dedicated to the iAtlantic consortium. iMirabilis targets Regions 6–9 and will bring the UK Autosub6000 AUV equipped with the MAPS eDNA sampler and the Portuguese Luso ROV to the S Atlantic for the first time. The iCorsage cruise primarily targets Region 11 where it will conduct extensive mapping of the Vitória-Trindade Seamounts and provide training in the latest shipboard mapping approaches. iAtlantic will run a third Demonstrator Capacity Building cruise on a UK vessel in Region 2. Equipped with Autosub6000 and science-class ROV, this cruise will be open to iAtlantic fellows with dedicated berths for S Atlantic researchers.



Take home messages

- Deep & open ocean remains largely unexplored but human activities are expanding rapidly
- Ocean monitoring & ecosystem assessment technologies improving at exponential rate
- Need to work closely with Blue Economy stakeholders from data gathering to sustainable management
- Vital to <u>invest in the human element</u> throughout the science-to-policy process



Many thanks!

Please visit the ATLAS stand for more information

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