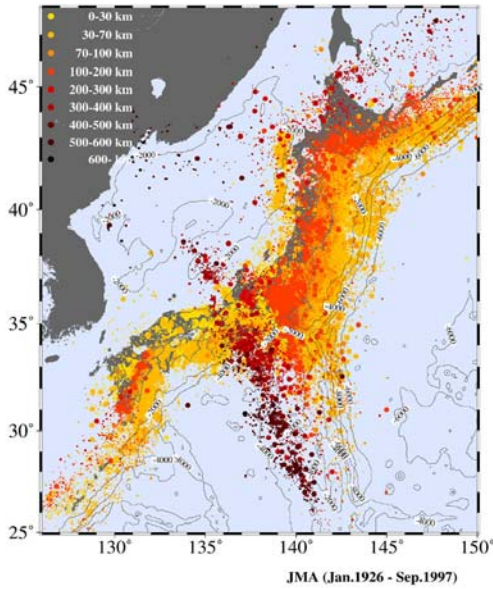


Hypocenter of Earthquakes Measured by the JMA Seismic Observation Network on Land.



1. Japan is located on the edge of plate boundaries, frequently hit by earthquakes and sometimes it create associated TSUNAMI hazards.

2. Seismogenic zones are located near plate boundaries, in which are many case underwater.

3. Seismic or any geophysical underwater observation is very important to study generation mechanism of earthquakes and improve the measurement precision around Japan.

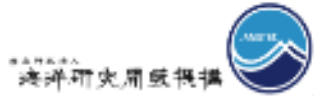
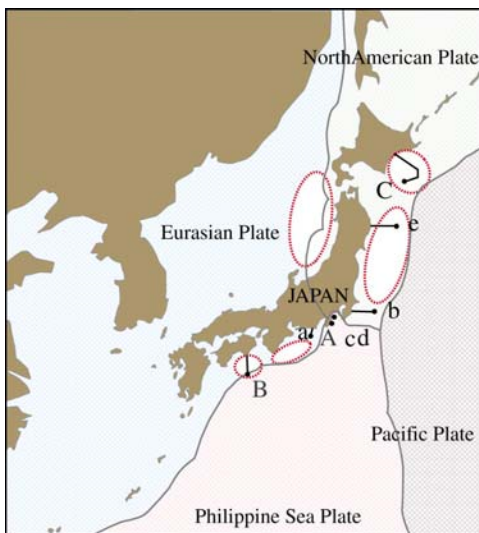


Plate Boundaries and Cable Connected Ocean Bottom Observatories around Japan.

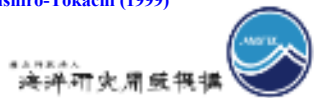


- a) JMA Omaezaki System (1978)
- b) JMA Off-Boso System (1985)
- c) ERI Off-Ito City System (1994)
- d) NIED Hiratsuka System (1995)
- e) ERI Off-Sanriku Seismic Network (1995)

A) Real Time Deep Sea Floor Observatory Off Hatsushima Island in Sagami Bay (1993)

B) Long-Term Deep Sea Floor Observatory Off Muroto Peninsula (1997)

C) Long-Term Deep Sea Floor Observatory Off Kushiro-Tokachi (1999)

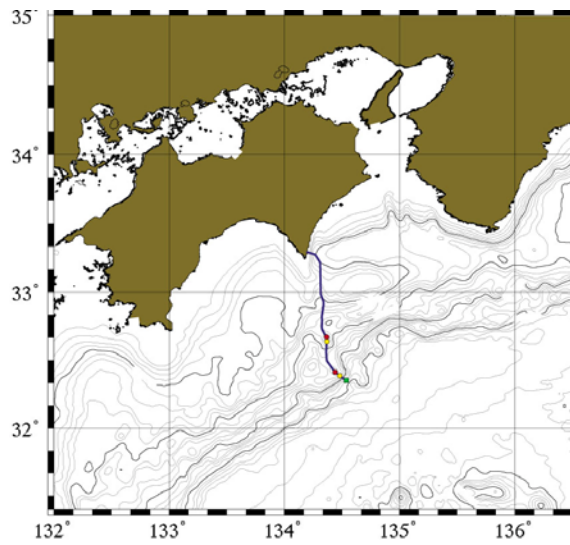




A Picture of seafloor observatory sitting on the 1174m depth of clam colony

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海洋研究所 張得攝





Cable Route of Off Muroto Observatory

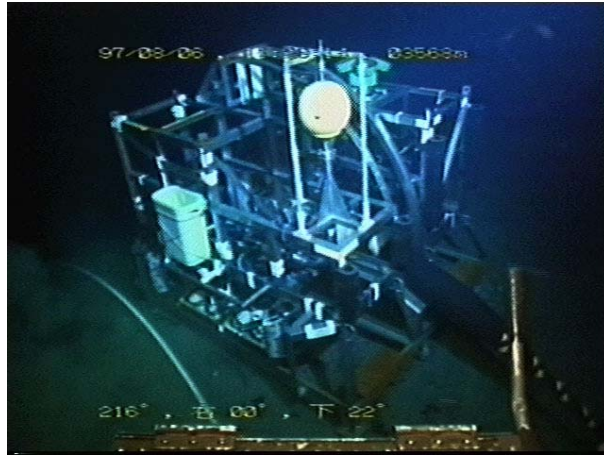
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Cable In-line OBS on the 1277m depth of seafloor

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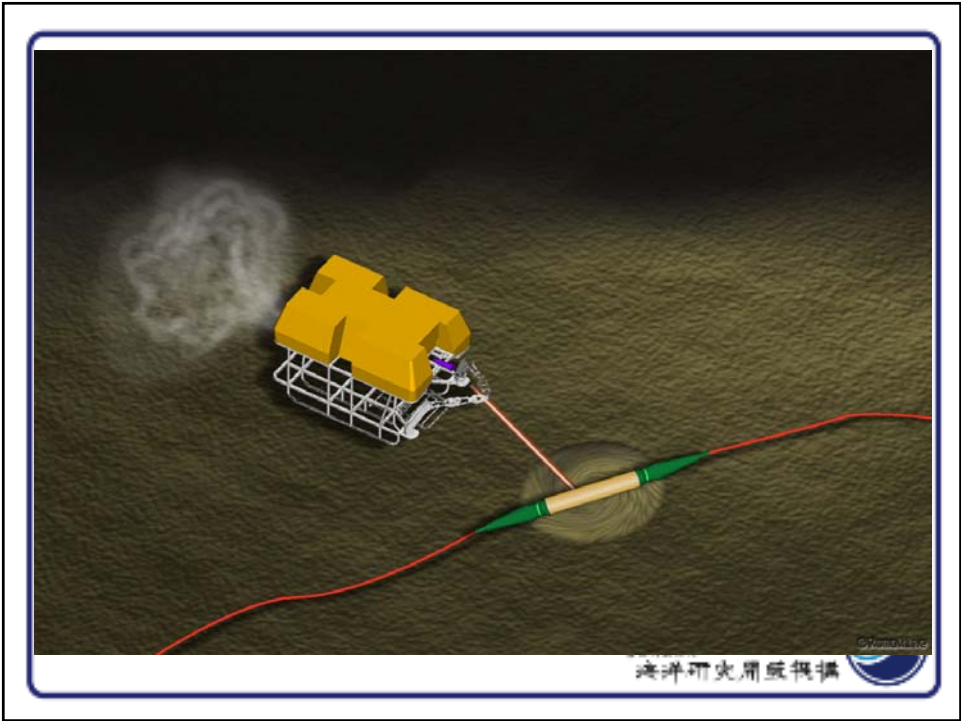
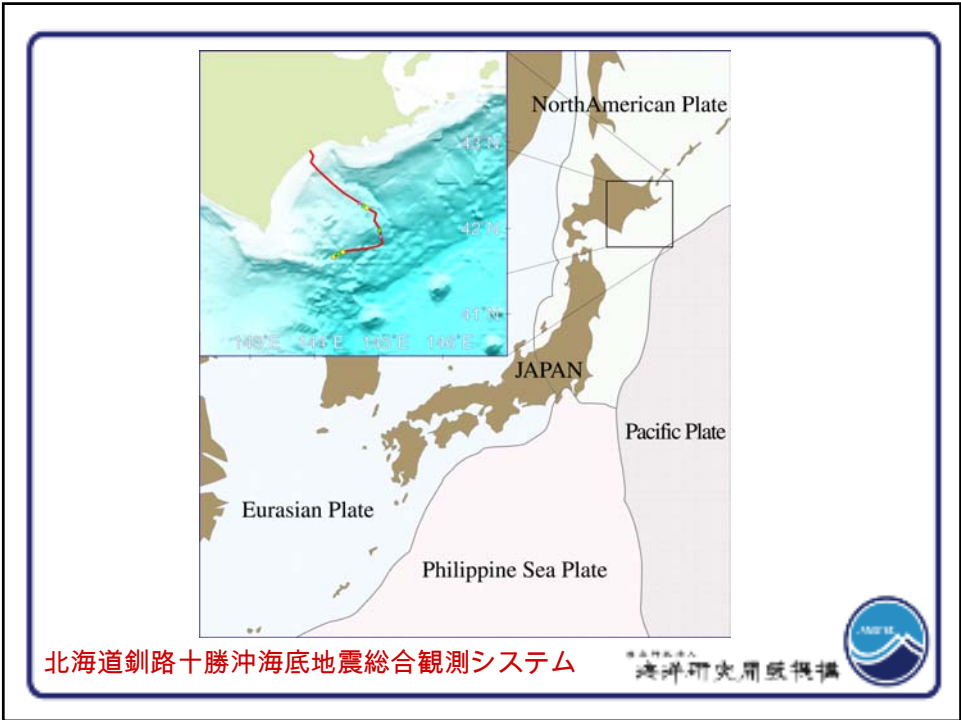
Cable End Multi-sensor Station

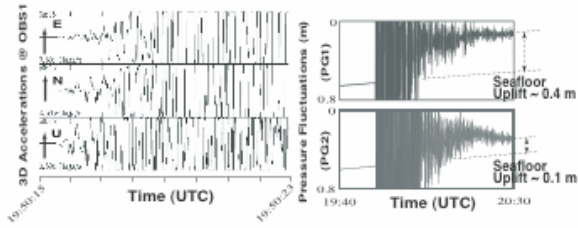
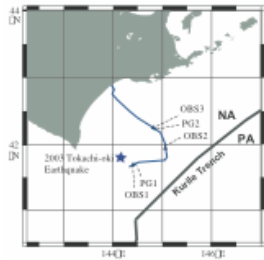
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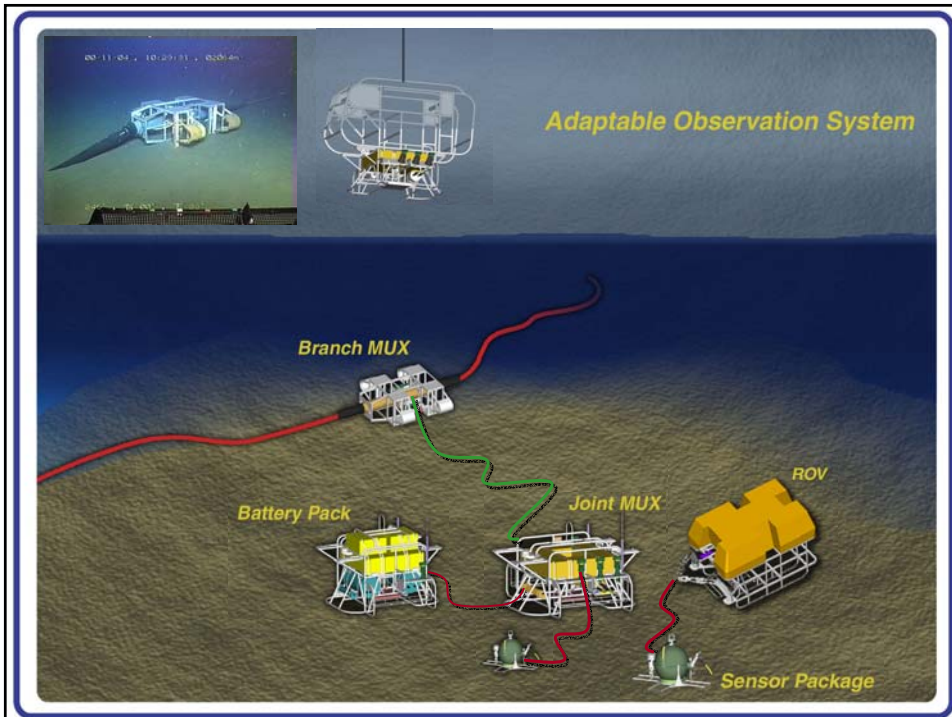






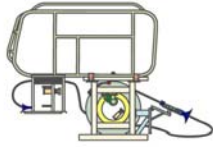
The 2003 Tokachi-oki earthquake was recorded by full seismic and pressure gauge data by the JAMSTEC's real-time cabled observatory system, which was deployed in 1999. The system is equipped with three broadband tri-component seismometers and two high-precision pressure gauges. The sensors are located on the other side of any other land seismic stations at the earthquake's focal region. The system has provided invaluable seismic and tsunami data on the earthquake. The closest seismometer, OBS1, is located above the focal region about 28.6 km from the epicenter. This is the first time that such near field data have been recorded for a major M 8 megathrust earthquake at a subduction zone

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A Scenario of A Thin Fiber Cable Laying Operation

1



Set Laying System under Towing Vehicle frame and Approach to B-MUX on Seafloor

3



Keep The Vehicle Altitude 5-10m and Laying Thin Fiber Cable to Destination

2

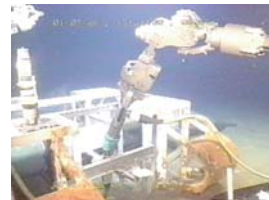
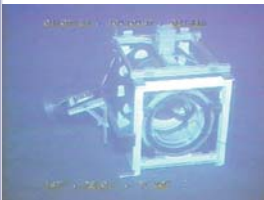
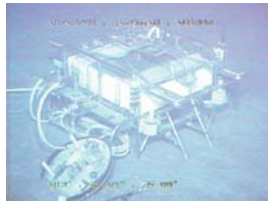


Drop Fore Anchor by The Side of B-MUX

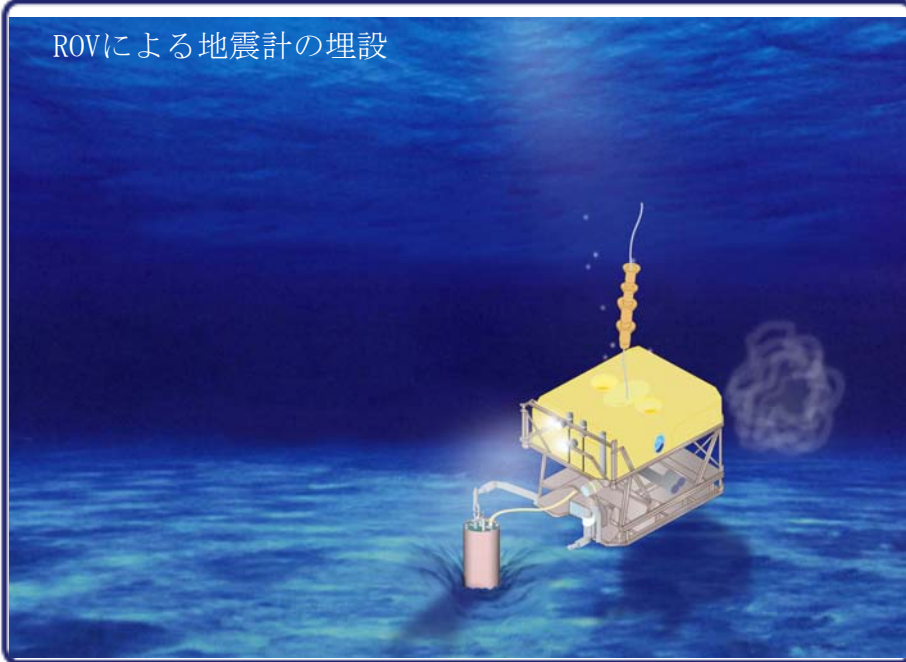
4



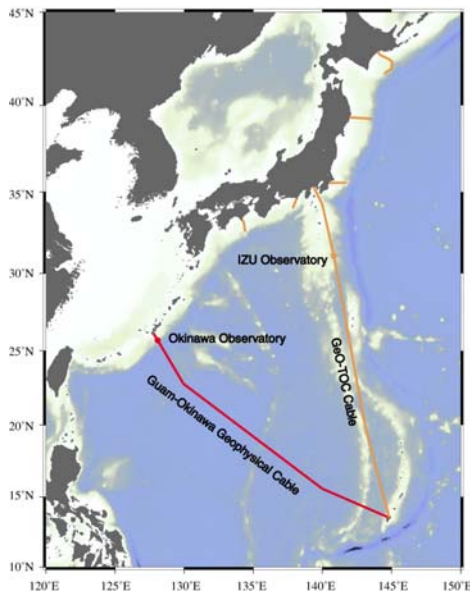
Set Cable Bobbin Free at the Target Site



ROVによる地震計の埋設

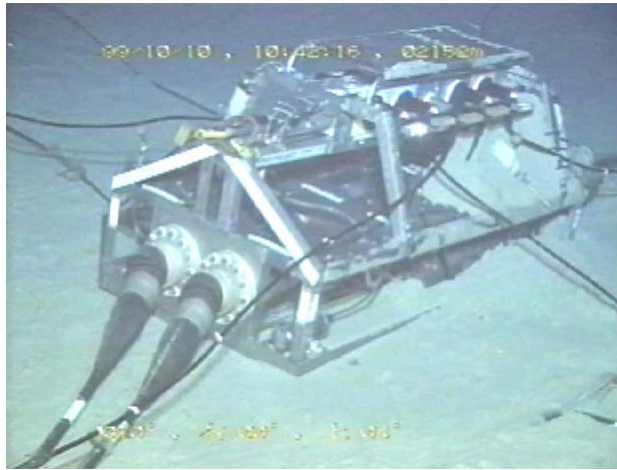


Scientific Reutilization of Decommissioned Submarine Cable

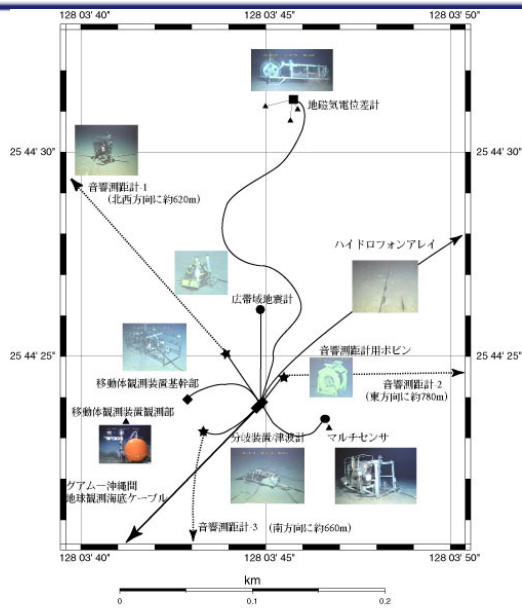


- Reuse of decommissioned submarine cables has been discussed for long time since 1980s. Some of the decommissioned submarine cable system was donated from international telegram and telephone company in Japan (KDD(I)) to University of Tokyo for scientific re-utilization.





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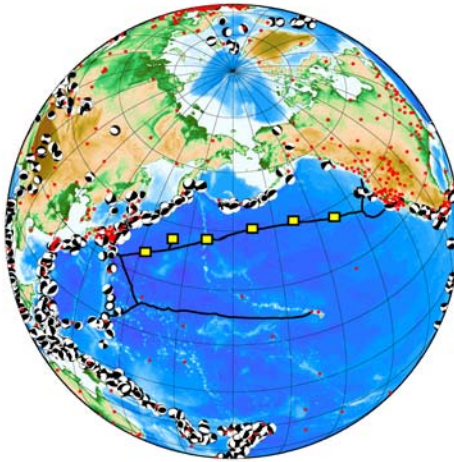


VENUS沖縄観測点

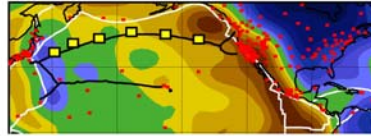
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太平洋横断ケーブル地震観測アレイの構想



地震（ボール）・既存地震観測網（赤点）の分布と
太平洋横断ケーブル観測アレイ（構想）（黒線と黄色四角）
うち一点はWP2孔内地震観測所として2000年より観測を開始している

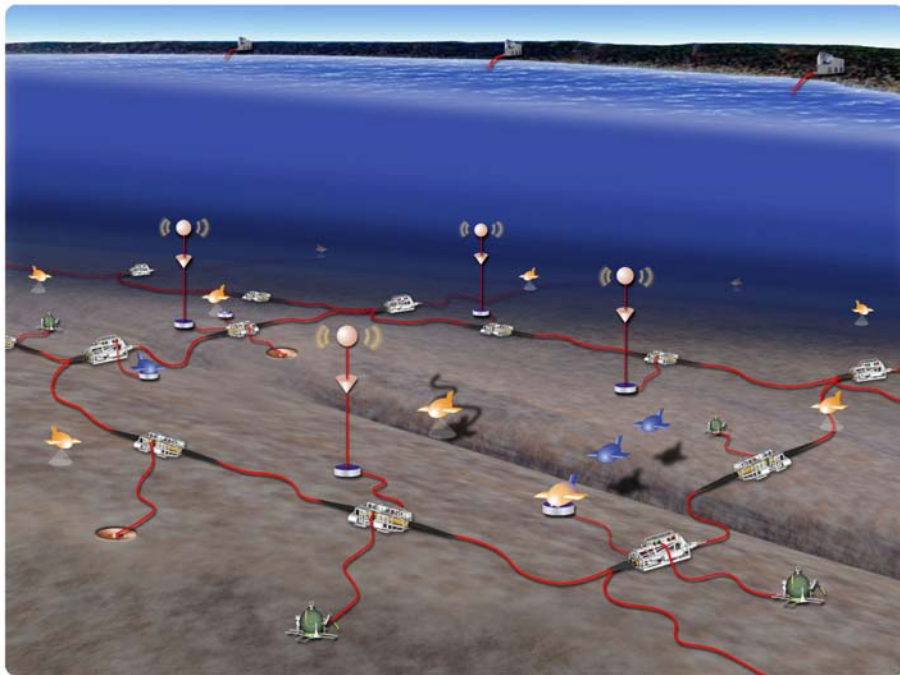


海洋プレート下の地震波構造と地震観測網（赤点）
太平洋ケーブル観測アレイ（黄色四角）

地震は陸側からのみ観測されている。
プレート境界で起こる**大地震のメカニズム**をつかむために太平洋側に観測網が必要である

北太平洋を横断する観測網によって、
日本列島下に沈み込む**海洋プレート**の**進化**を理解する

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A concept of future science cable network around Japan



Cable length: 16,000 km

20-50km observatory interval is expected
(320 observation point) on this cable route.

Scientists and engineers in Japan started
feasibility study for this science cable
network project.

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