

Deep-sea cabled observatories Towards an interdisciplinary cooperation

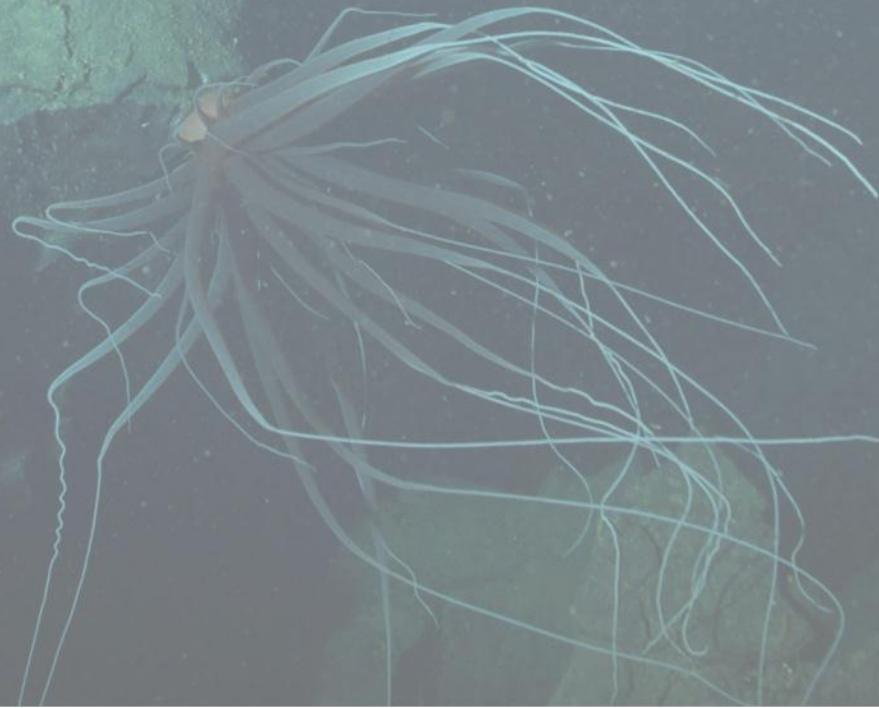


Remarks by an « innocent bystander »

Márcia Maia, CNRS-INSU
Michel Diament, CNRS-INSU

Initial steps of a **true interdisciplinary,** **win-to-win** cooperation

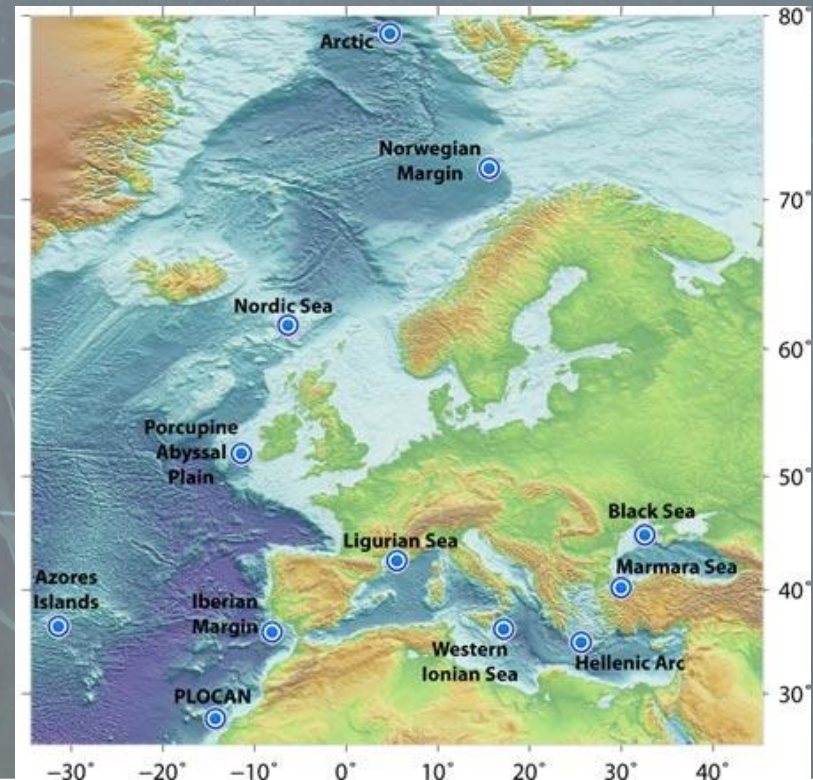
- Shared infrastructures
- Shared technological frontiers: new instrumentation



Initial steps of a **true interdisciplinary, win-to-win** cooperation

- Shared infrastructures
- Shared technological frontiers: new instrumentation
- **Shared science**

European networks:
EMSO, KM3Net ...



Deep sea observatories are a **new frontier** for Earth and environmental sciences

- initial steps to obtain **long-term, continuous and high-frequency time series** on geological, physical and biological processes
- **bring together** different communities: geoscientists, biologists, physical and chemical oceanographers
- deploy (semi) permanent instruments on the **ocean floor**

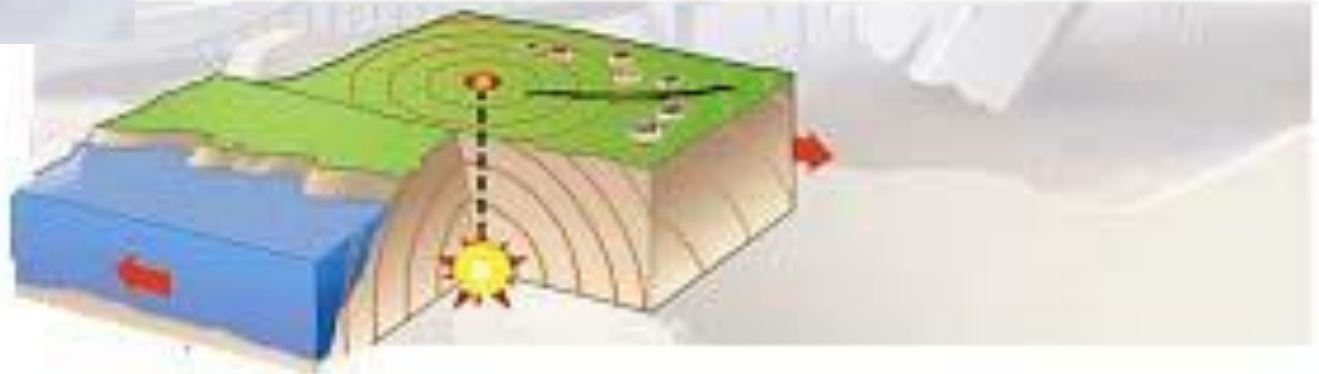
Earth is an active planet

volcanic and tectonic processes

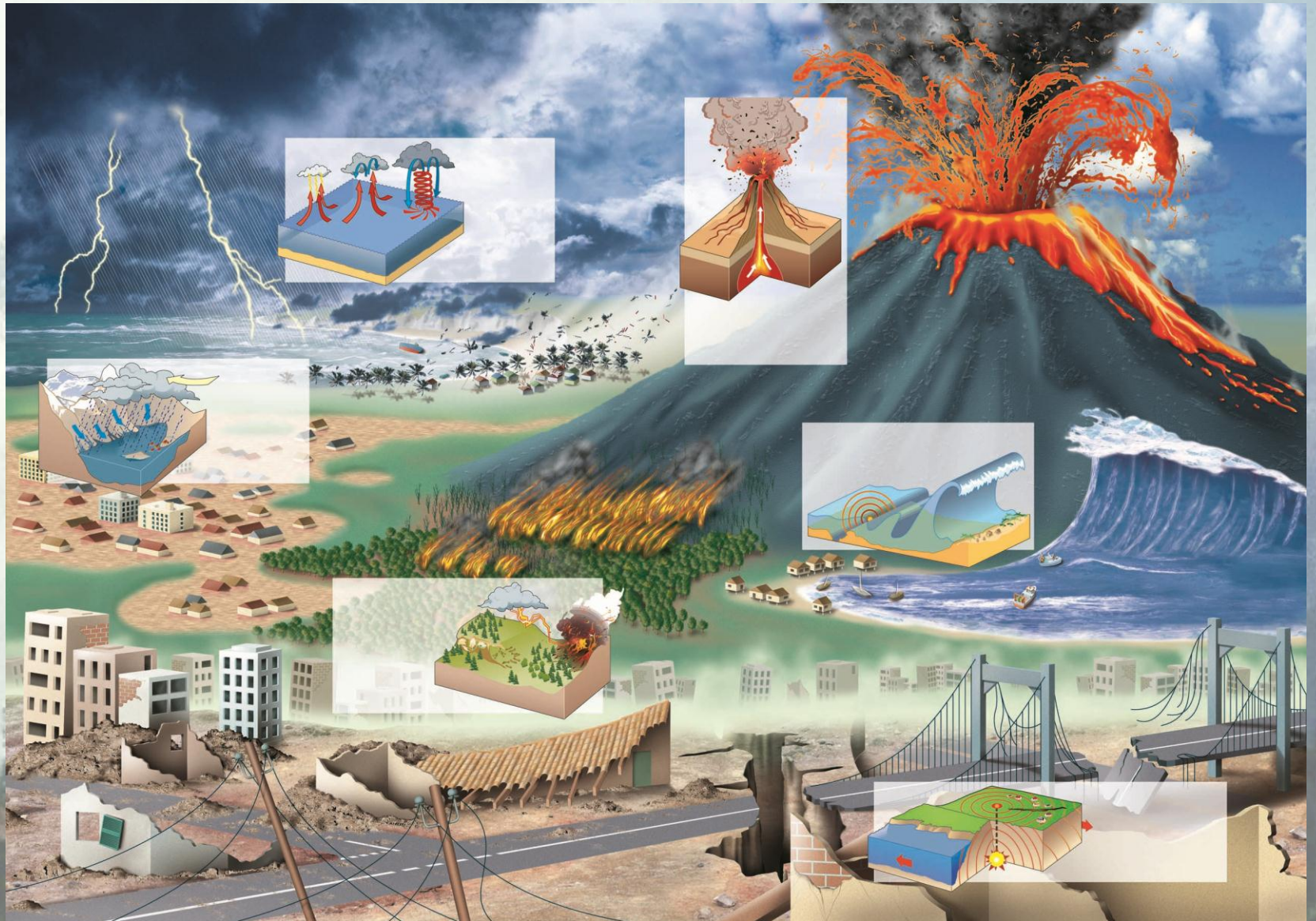
continuous activity

need monitoring

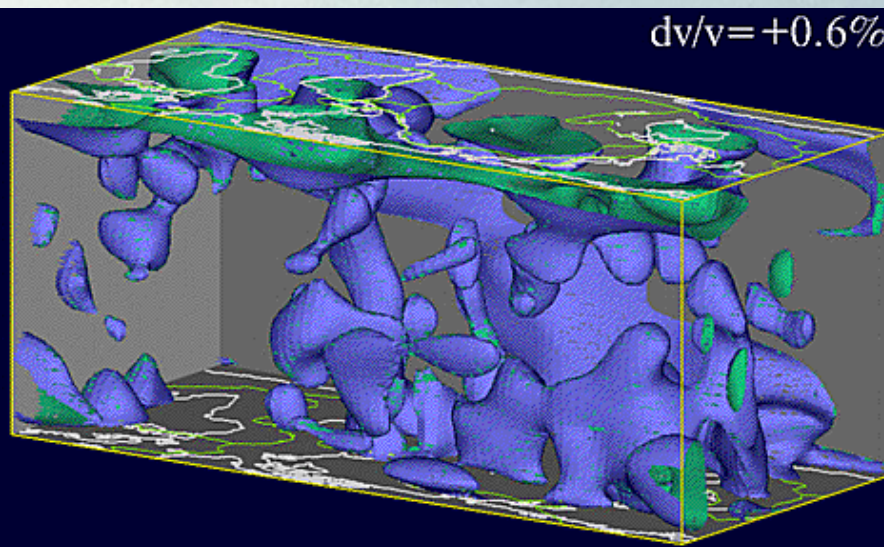
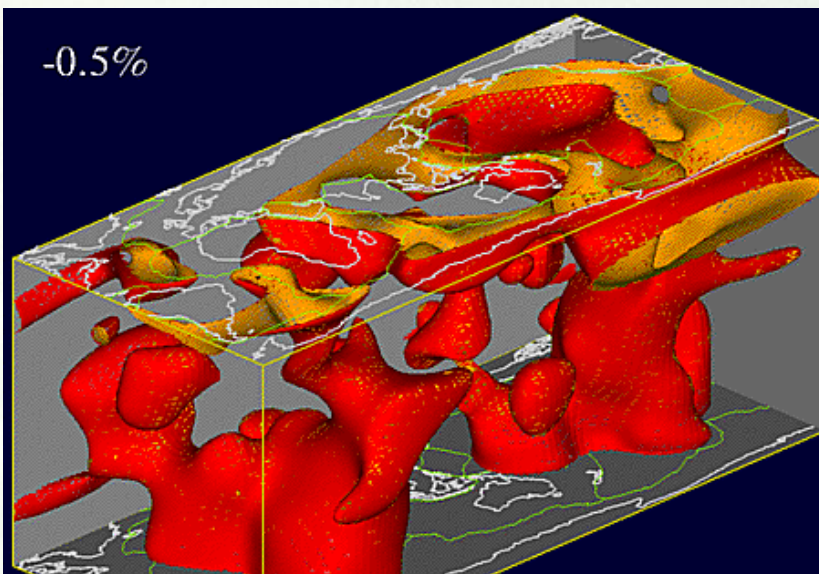
better understanding



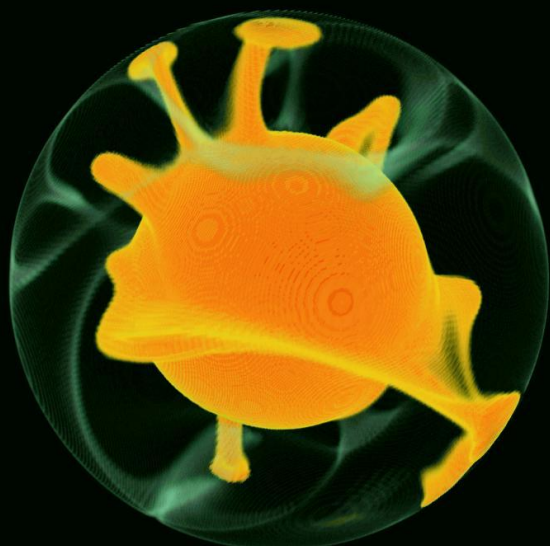
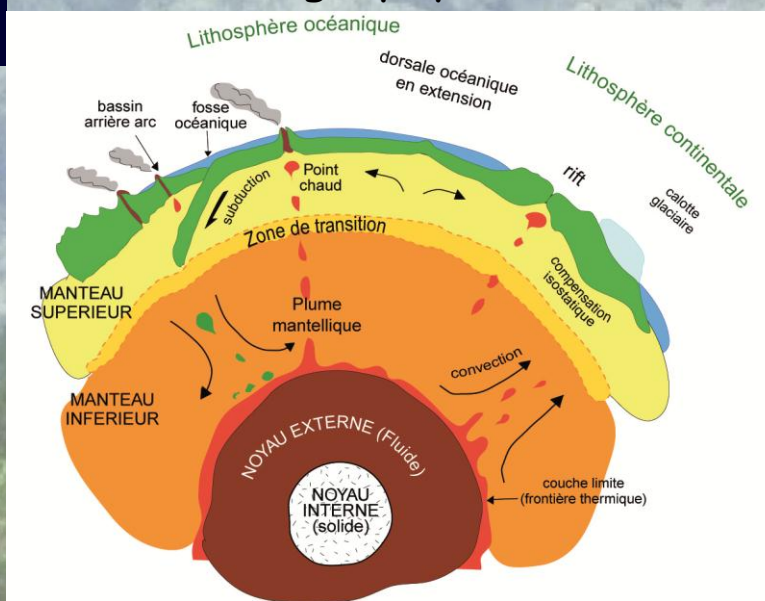
Hazards for society



Keys to the understanding of Earth's structure, dynamics and evolution: From data to concepts and models...



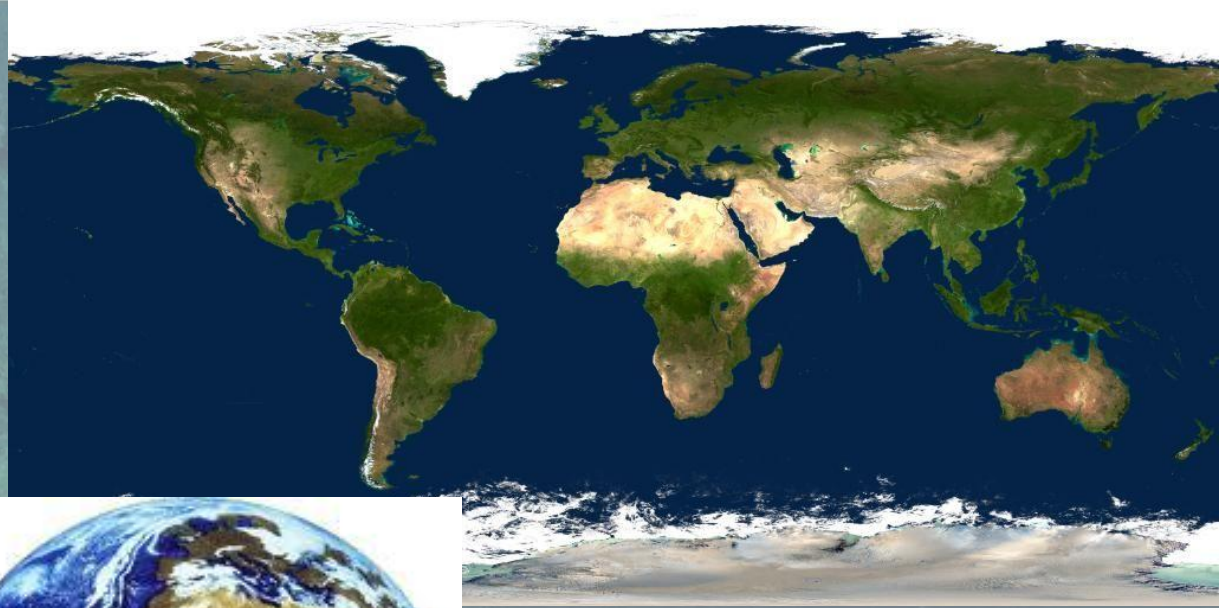
Mantle tomography models, Harvard



Numerical models, D. Yuen

Earth is a « water planet »...

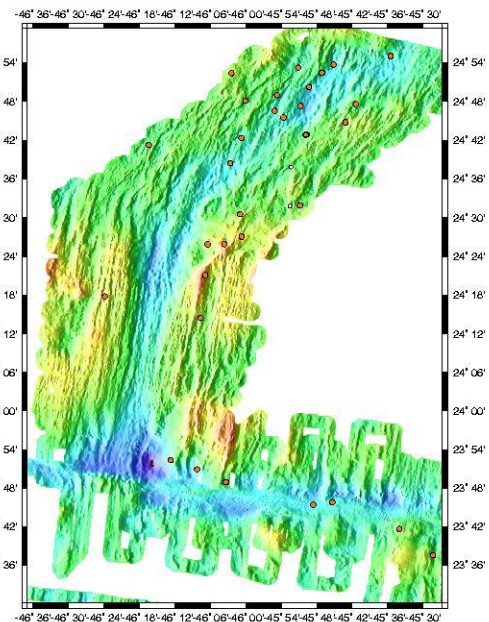
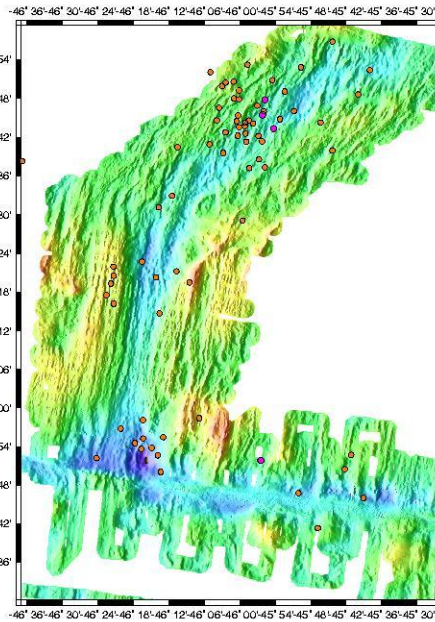
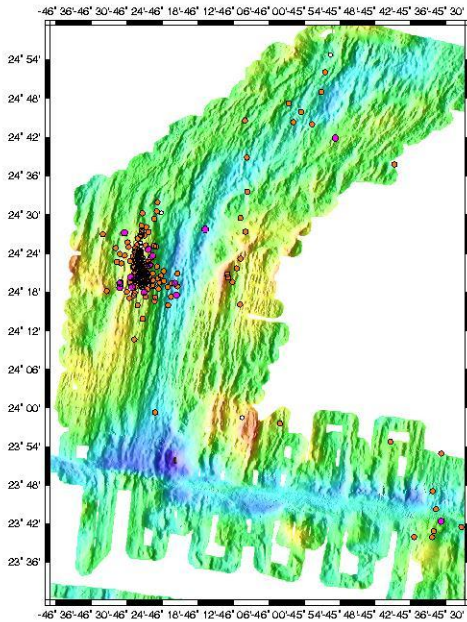
much of its surface is poorly known



(Semi) permanent instruments are not evenly distributed
located on land (continents or islands)

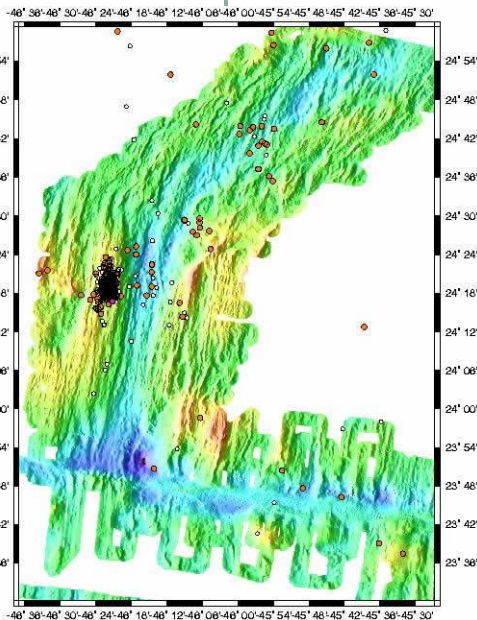
Install such instruments on the sea floor would be a major progress

Temporal dimension of the geological processes



GMT Lin 30918

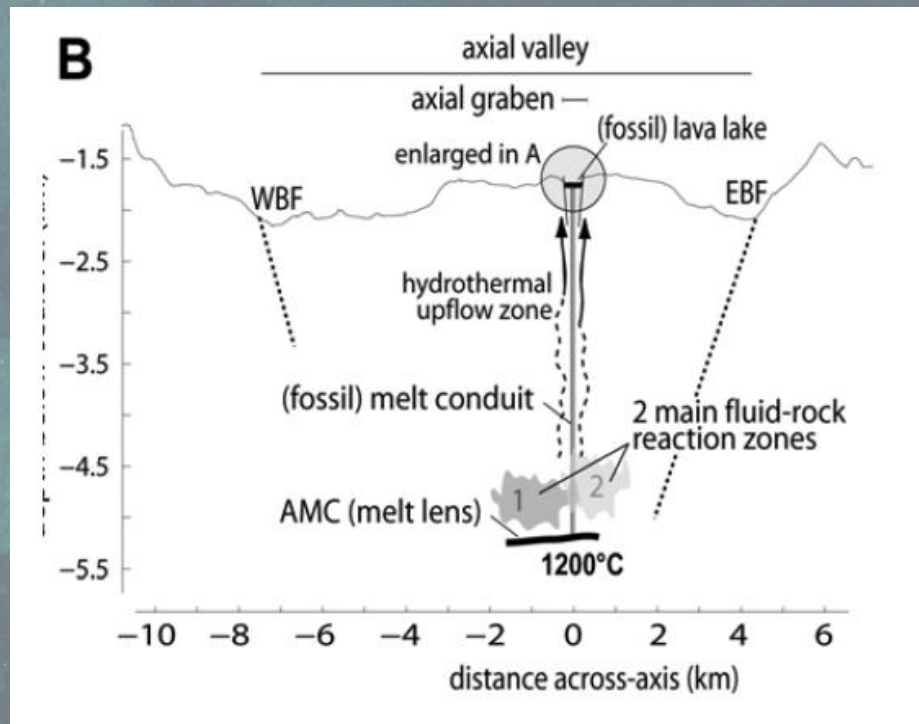
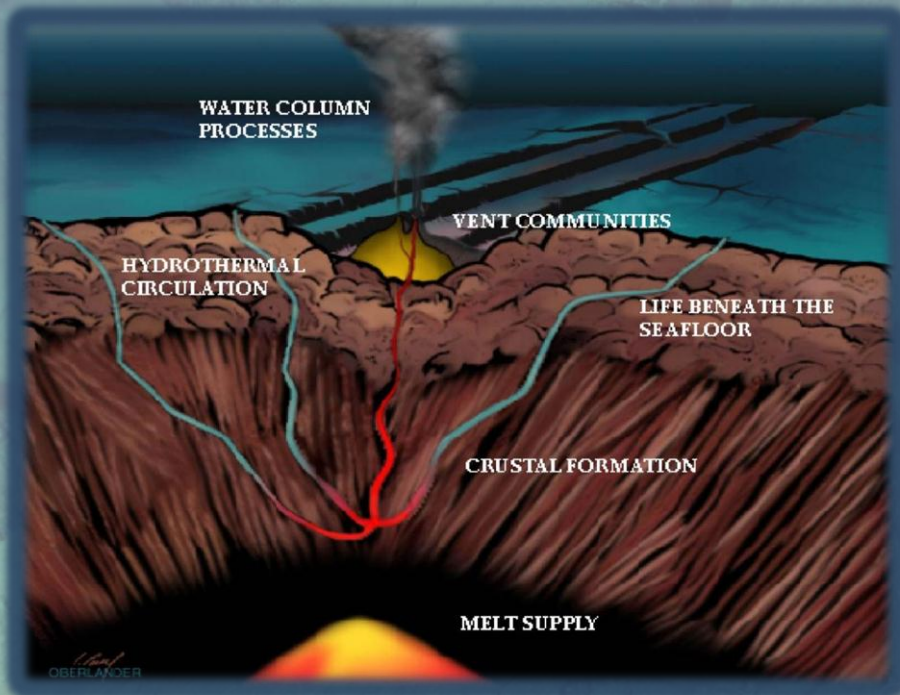
PMEL-NOAA



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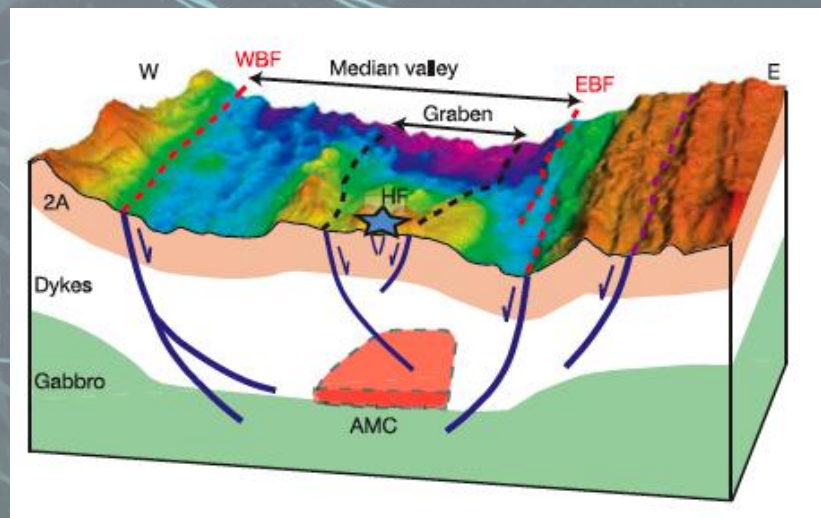
2/9/2002 - 2004 (?)

High resolution studies



MOMARDREAM Team

Geometry of hydrothermal circulation
Structure of hydrothermal fields



Singh et al., 2006

Difficult conditions

deep sea : high pressure, extreme temperatures (low or high...), highly corrosive environments...



Areas of difficult access: far from land, difficult weather conditions...



Marion Dufresne (120 m long), Indian Ocean, spring 2006

Not for tomorrow... but soon!

Summary

cooperation already begun: develop!

some communities more easily concerned?

new technology, instruments, approaches

adaptations for other sites (energy, data storage)

new sites that are good targets for both communities?

some communities more easily concerned?