

MARINE GEOHAZARDS

Safeguarding society and the Blue Economy from a hidden threat

Expert Group on Marine Geohazards
Position Paper 26

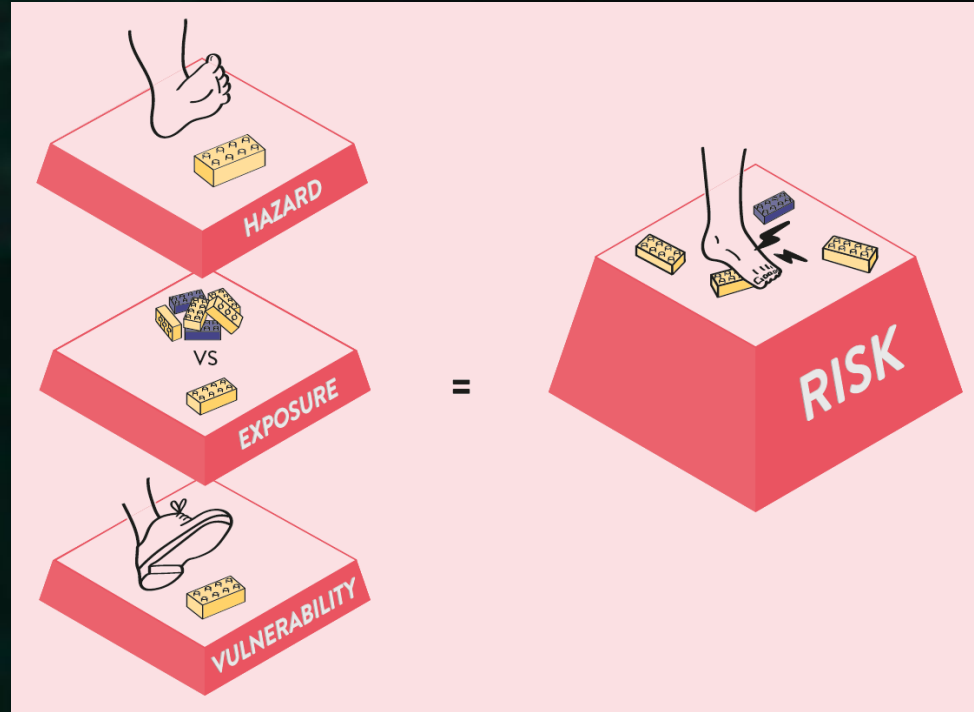
MARINE GEOHAZARDS

Safeguarding society and the Blue Economy from a hidden threat

H. Kopp, F.L. Chiocci, C. Berndt, M.N. Çagatay, T. Ferreira, C. Fortes, E. Gràcia,
A. González Vega, A.J. Kopf, M.B. Sørensen, N. Sultan, I.A. Yeo

Is Risk from Marine Geohazards Increasing in Europe?

Risk is the product of hazard, exposure and vulnerability.

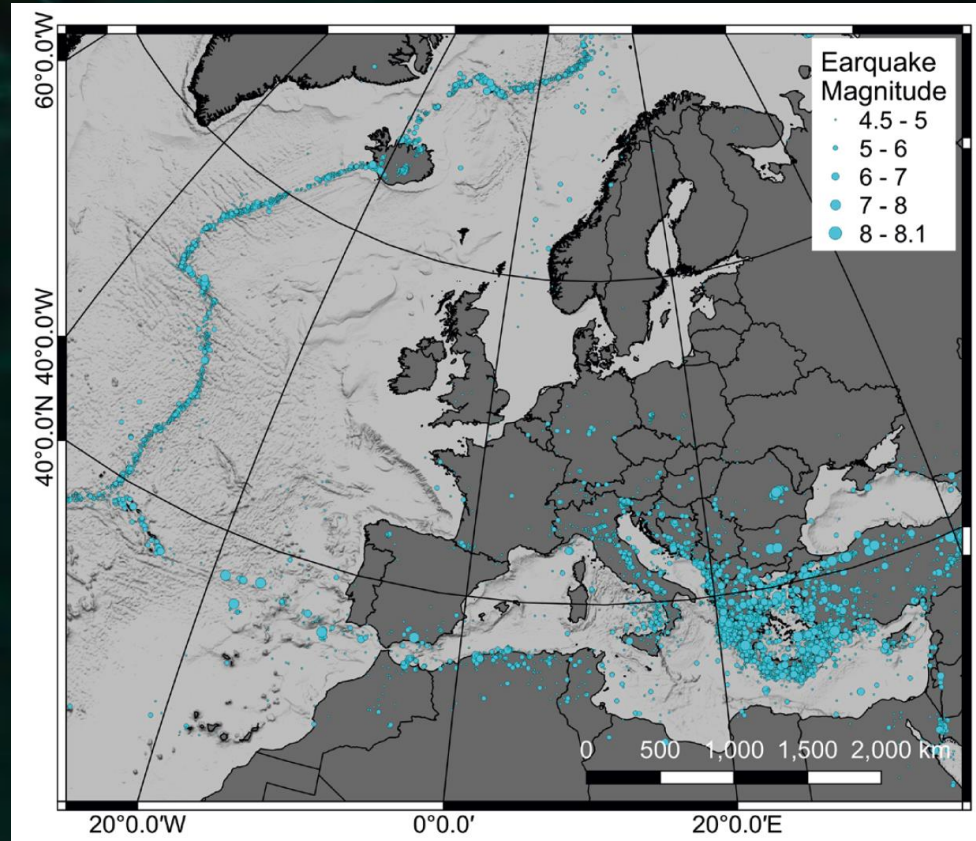




What Types of Hazards Are We Facing on Our Shores?

What Types of Hazards Are We Facing on Our Shores?

- Earthquakes



What Types of Hazards Are We Facing on Our Shores?

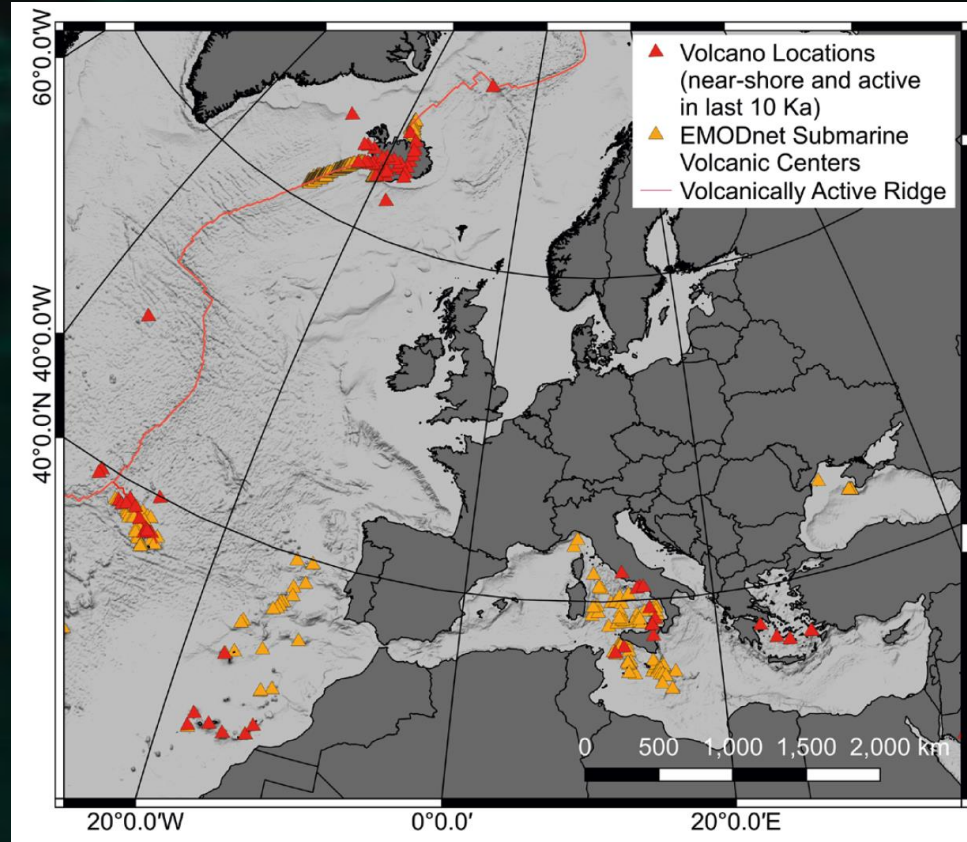
- Earthquakes

1908:
Messina-Calabria Disaster



What Types of Hazards Are We Facing on Our Shores?

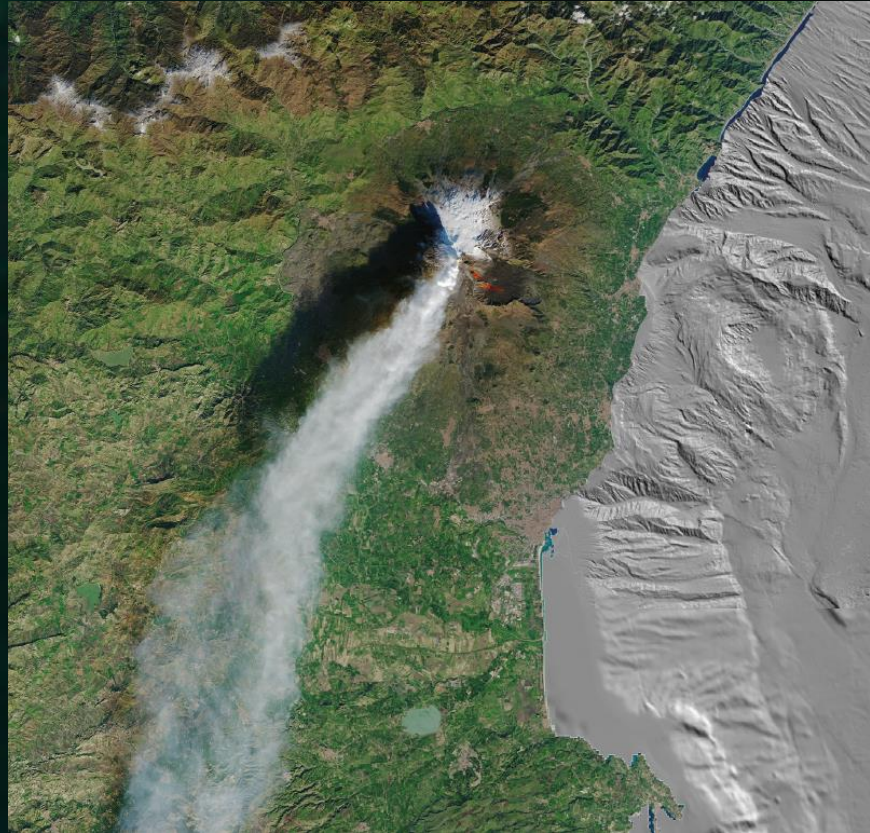
- Earthquakes
- Volcanoes



What Types of Hazards Are We Facing on Our Shores?

- Earthquakes
- Volcanoes

Mt Etna and its shoreline-crossing eastern flank



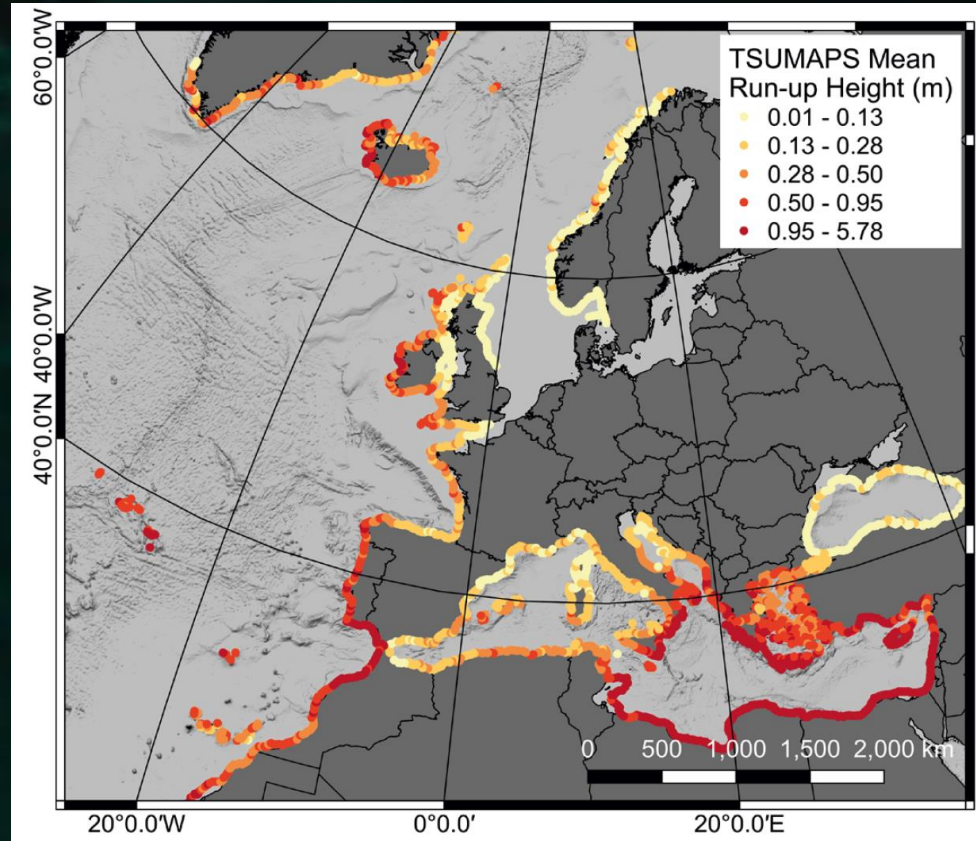
What Types of Hazards Are We Facing on Our Shores?

- Earthquakes
- Volcanoes
- Mass movements



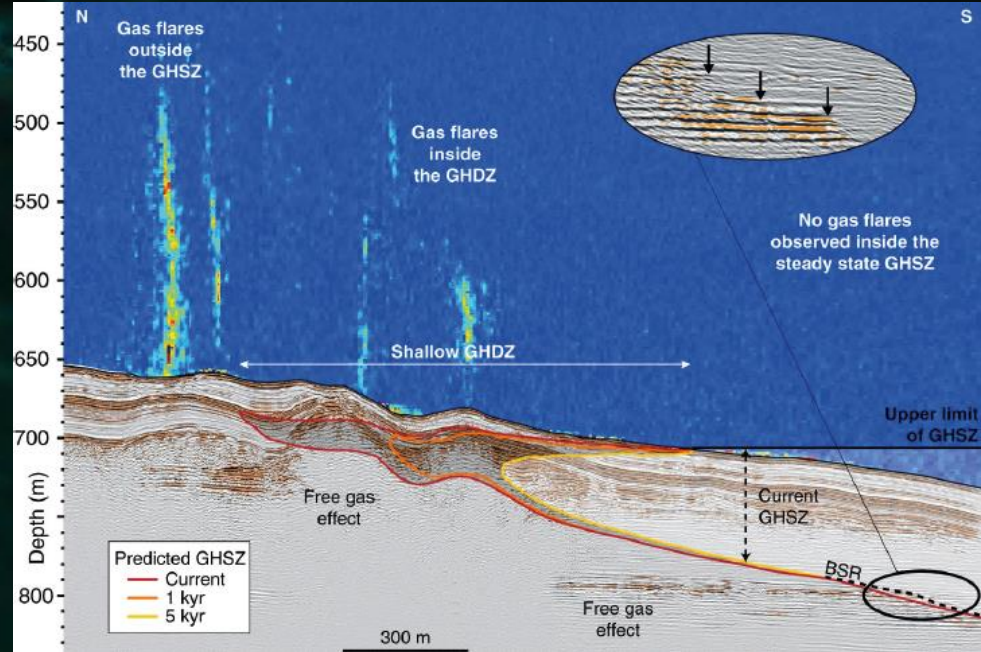
What Types of Hazards Are We Facing on Our Shores?

- Earthquakes
- Volcanoes
- Mass movements
- Tsunamis



What Types of Hazards Are We Facing on Our Shores?

- Earthquakes
- Volcanoes
- Mass movements
- Tsunamis
- Fluid activity



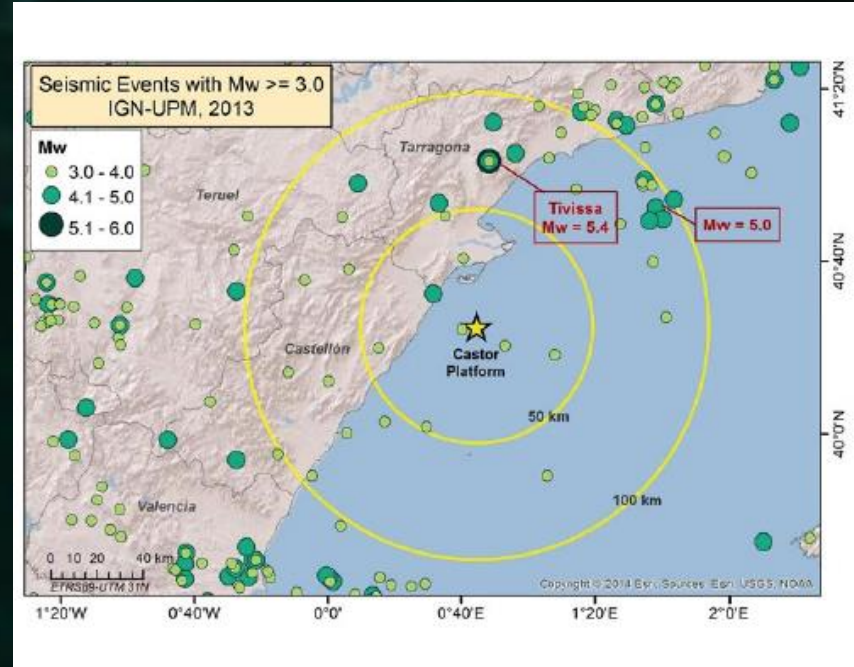
What Types of Hazards Are We Facing on Our Shores?

- Earthquakes
- Volcanoes
- Mass movements
- Tsunamis
- Fluid activity
- Migrating bedforms



What Types of Hazards Are We Facing on Our Shores?

- Earthquakes
- Volcanoes
- Mass movements
- Tsunamis
- Fluid activity
- Migrating bedforms
- Human induced and technological hazards



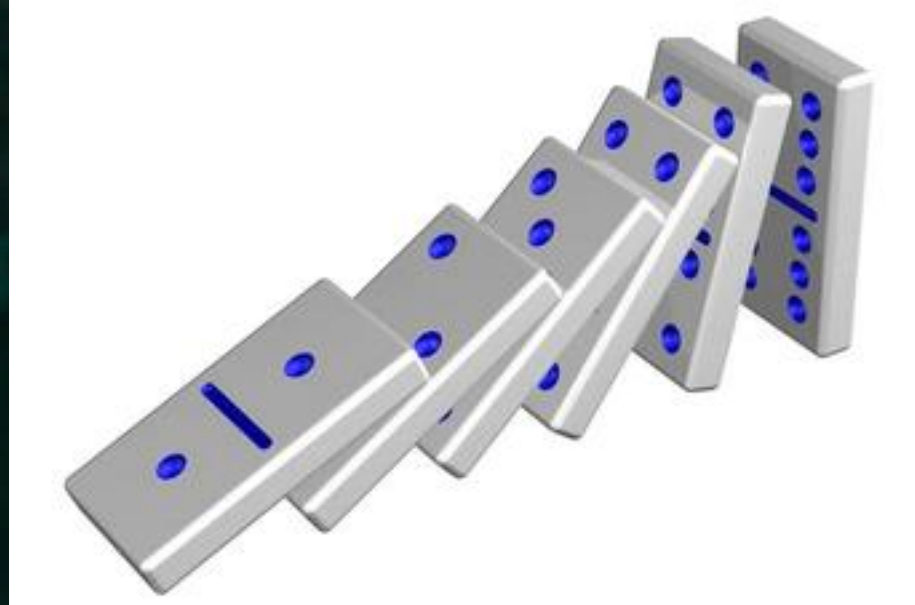
What Types of Hazards Are We Facing on Our Shores?

- Earthquakes
- Volcanoes
- Mass movements
- Tsunamis
- Fluid activity
- Migrating bedforms
- Human induced and technological hazards

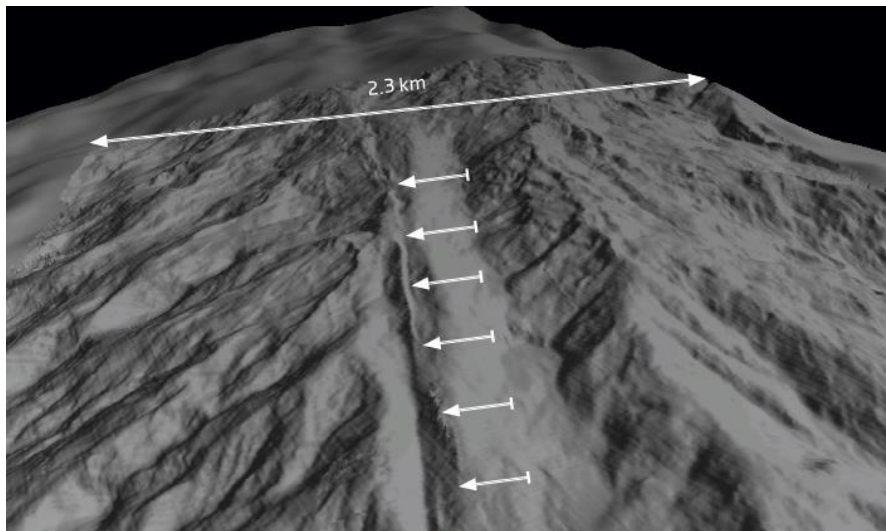


What Types of Hazards Are We Facing on Our Shores?

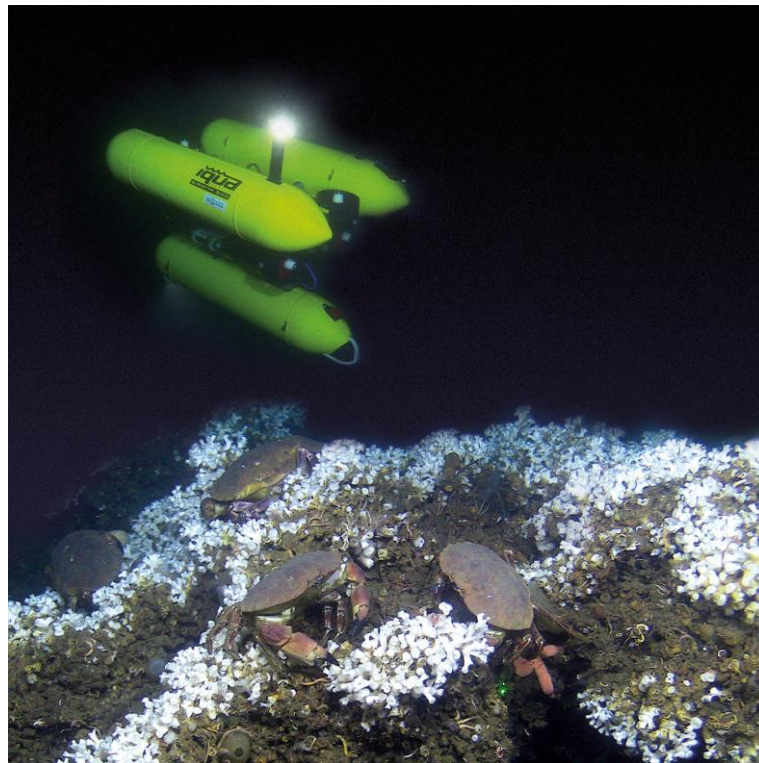
- Earthquakes
- Volcanoes
- Mass movements
- Tsunamis
- Fluid activity
- Migrating bedforms
- Human induced and technological hazards
- Cascading and / or cumulative events



The Seafloor Stores All Hazard Information



High-resolution seafloor map revealing a slipping fault on the flank of Mt Etna.



An autonomous underwater vehicle (AUV) flying above the seafloor.

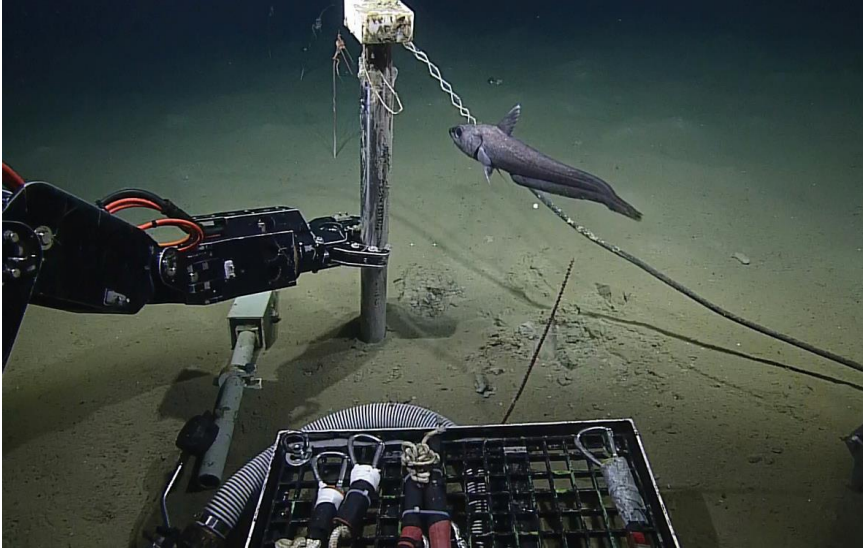
The Seafloor Stores All Hazard Information



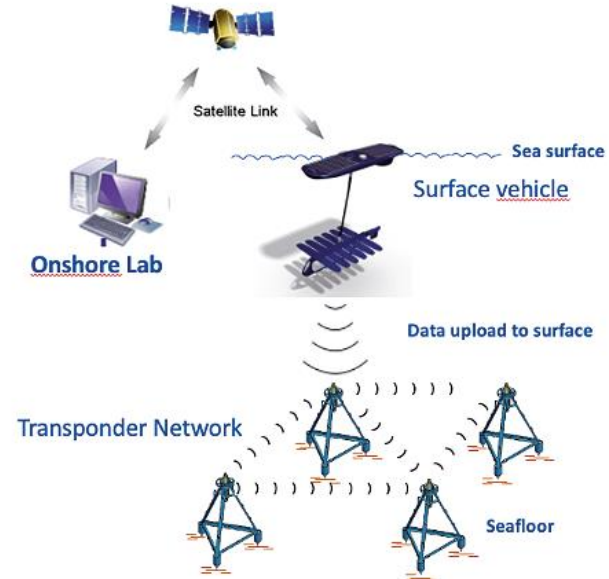
Seafloor drilling to extract samples and drill cores.



The Seafloor Stores All Hazard Information



Putting sensors into the seafloor to measure physical properties of the subsurface.



Seafloor monitoring networks connect to satellites and surface vehicles to monitor earthquakes and seafloor deformation.

The Seafloor Stores All Hazard Information



Recommendations

Implement hazards in policies to advance mitigation
Harvest seafloor information

Recommendations

Implement hazards in policies to advance mitigation

- **adapt risk mitigation strategies at local to (trans-) national levels**
- **increase awareness among public authorities and communities**
- **model potential impacts on coastal and marine infrastructures**

Recommendations

Harvest seafloor information

- through a census of geohazard features in European Seas
- identify focus sites for targeted monitoring
- conceive novel sensors and methods

Recommendations

Harvest seafloor information

- through a census of geohazard features in European Seas
- identify focus sites for targeted monitoring
- conceive novel sensors and methods

Thank you for your attention!