



CNR
ISMAR
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MARINE

DEEP-SEA FRONTIERS SCHOOL

SEABED GEOLOGY
HAZARDS, RESOURCES, HABITATS

Bologna (Italy)
February 15th-19th, 2027

In its second edition,
the School aims to
provide undergraduate
students and early-career
researchers with a
comprehensive
guide to deep-seabed
geological processes



The Ocean lying below the water depth of 200 m is One of the Earth's last frontiers. The Deep Sea remains largely unexplored and is considered one of the Earth's least know realms. The "Deep-Sea Frontiers School" will delve into the geological processes which shape this underwater environment, modify the seabed, allow life, generate resources,

The Topic

The Second Edition of the School offers a comprehensive training on some of the processes that shape the ocean floor with implications for natural resources, hazards, and habitats. The School will explore: Seafloor Instability, Contour Currents, Fluid Flow and Sub-surface Circulation, Volcanism and Hydrothermalism. The five-day program is designed to provide balance between theoretical foundations and hands-on practical exercises. Guided by international experts, students will master the integration of diverse datasets — from seismic reflection to geochemical proxies — to better understand the geomorphic evolution of the deep seabed and its environmental significance.

Organizing institution



CNR
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Consiglio Nazionale delle Ricerche
Istituto di Scienze Marine (Ismar)



in collaboration with
Sezione Geologia Marina
Società Geologica Italiana

Venue

CNR, Area della Ricerca
Room 216
Via Gobetti 101 - 40129 Bologna (Italy)

Ismar Director

Mario Sprovieri

School Directors

Marzia Rovere and Fabiano Gamberi

Logistics and fees



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Lecturers

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Daniele Casalbore	<i>University La Sapienza, Rome (Italy)</i>
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Nabil Sultan	<i>CNRS, Institut Universitaire Européen de la Mer (France)</i>

INDICATIVE PROGRAM

Monday, February 15

Geophysical Methods for exploring and studying seabed processes

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|--------------|--|--------------|--|
| 8:00 | Registration | 14:00 | Hands-on exercises on bathymetric data, seismic reflection data, reflectivity data including hints on habitat mapping. How to build a geothematic map with elements and legend |
| 8:45 | Institutional Welcome and Introduction to the School | | |
| 9:15 | Seismic facies analysis, sequence stratigraphy, seafloor reflectivity and morphobathymetry interpretation. 45' minutes lessons | | |
| 11:00 | <i>Coffee Break</i> | 16:00 | <i>Coffee Break</i> |
| 13:00 | <i>Lunch</i> | 17:30 | ICEBREAKER PARTY
Students' short presentations and drinks at the Scool location |

Tuesday, February 16

Seafloor instability and sediment-gravity flows

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|--------------|---|--------------|--|
| 9:00 | Landslide to turbidite spectrum, geomorphic elements, rate of change, implications for hazards, resources and habitats. 45' minutes lessons | 14:00 | Hands-on exercises on seismic reflection data and visit to the sediment core repository hosted at Ismar to work on sedimentary facies analysis |
| 11:00 | <i>Coffee Break</i> | 16:00 | <i>Coffee Break</i> |
| 13:00 | <i>Lunch</i> | 17:00 | <i>Closing of the day</i> |

Wednesday, February 17

Contour currents and sedimentation

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|--------------|---|--------------|--|
| 9:00 | Oceanography and countour currents, physical and geological data integration, geomorphic elements, implications for hazards, resources, habitats, pollution 45' minutes lessons | 14:00 | Hands-on exercises on seismic reflection data, interpretation of oceanographic data, integration of multiple proxies, estimate of current velocities |
| 11:00 | <i>Coffee Break</i> | 16:00 | <i>Coffee Break</i> |
| 13:00 | <i>Lunch</i> | 17:00 | <i>Closing of the day</i> |

INDICATIVE PROGRAM

Thursday, February 18

Fluid flow in sedimentary basins

9:00 Subsurface fluid circulation, tectonic control, physical, geochemical data integration, geomorphic elements; implications for hazards, resources, habitats. 45' minutes lessons

11:00 Coffee Break

13:00 Lunch

14:00 Hands-on exercises on geophysical data, integration of multiple proxies, isotopic signature interpretation, visit to the rock repository hosted at Ismar to look at samples

16:00 Coffee Break

17:00 Closing of the day

18:30 Get together downtown Bologna

20:00 SOCIAL DINNER

Friday, February 19

Volcanism and hydrothermalism

9:00 Submarine volcanism and hydrothermal systems, tectonic control, geomorphic elements and seamounts, volcanoclastic processes. Implications for hazards, resources, habitats. 45' minutes lessons

11:00 Coffee Break

13:00 Lunch

14:00 Hands-on exercises on geophysical data, integration of multiple proxies, visit to the rock repository hosted at Ismar to work on volcanic samples

16:00 Coffee Break

17:00 Closing Remarks and Farewell Ceremony

17:30 END OF THE SCHOOL

Register here



The programme will be updated regularly - check on the webpage