

Vetrina sulla Geologia

Seminari in Dipartimento di Matematica, Informatica e Geoscienze - "Vetrina Sulla Geologia"

Il Dipartimento propone un ciclo di seminari denominati "Vetrina sulla Geologia" (<https://mige-web.units.it/dati/vetrina.pdf>), a cui intervengono esperti nazionali e internazionali provenienti dal mondo produttivo ed accademico. Tutti gli studenti della laurea triennale in 'Geologia' e delle lauree magistrali in 'Geoscienze' e in 'Geophysics and Geodata' sono caldamente invitati a partecipare.

- **Relatore: Prof. Christoph A. Hauzenberg, University of Graz, Austria**

Titolo: Mantle xenoliths from Thailand, Laos and Vietnam

Contenuti:

Data: 10 Aprile 2025

Luogo: to decide

Ora: to decide

Ospite: Ana Černok

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- **Relatore: Prof. Xin Jin, Chengdu University of Technology, China**

Titolo: The Carnian Pluvial Episode in the Sichuan Basin (China)

Contenuti: The Carnian Pluvial Episode (CPE) was a remarkable global climatic event that occurred approximately 234 million years ago during the Late Triassic. This event was characterized by increased humidity and enhanced runoff, leading to enhanced input of terrigenous material into sedimentary basins. Beyond its impact on sedimentation, the CPE is also marked by multiple negative shifts in the carbon isotopes record, the development of dysaerobic to anoxic conditions, and significant biotic turnover or extinction. The profound changes in global ecosystems during this period have been widely documented and are largely attributed to the eruption of the Wrangellia Large Igneous Province. In the Sichuan Basin (China), the CPE was first reported as the "Carnian black shale event." This designation stemmed from the collapse of the Carnian carbonate platform and the subsequent deposition of black shales in the western Sichuan Basin. Since then, considerable debate has surrounded the interpretation of this event, particularly in terms of its age determination. In this presentation, I will introduce our research group's findings alongside those of others, highlighting our perspectives on the CPE. We will also discuss ongoing debates and explore future research directions of this event within the Sichuan Basin and beyond.

Data: 12 marzo 2025

Luogo: Aula C, Palazzina C

Ora: 12:00 -13:00

Ospite: Marco Franceschi

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- **Relatore:** Janneke De Laat, University of Twente, Nederland

Titolo: Project SEA-SEIS: Imaging the mantle below the North Atlantic using Ocean Bottom Seismometers

Contenuti: The North Atlantic region is shaped by complex mantle dynamics, driven by the Iceland plume and its interaction with the Mid-Atlantic Ridge. To better understand these processes, Project SEA-SEIS deployed 18 broadband ocean-bottom seismometers (OBS) across the northeast Atlantic to better understand these processes, recording continuous seismic data for 19 months (2018–2020). Fourteen instruments were successfully retrieved, with 12 providing high-quality data. Data pre-processing included clock-drift correction, horizontal component orientation determination, and suppression of compliance and tilt noise to enhance signal quality.

Using this dataset, combined with a global seismic dataset, we developed NA25_UM, a new high-resolution seismic waveform tomography model of the North Atlantic upper mantle. The model reveals a complex Iceland plume structure, suggesting that the plume rises beneath Greenland in the transition zone before migrating diagonally toward Iceland and rising vertically and outward along the ridges above 200 km depth. Additionally, the azimuthal anisotropy results indicate a strong southward channelized flow from the Iceland plume beneath the Reykjanes Ridge, with no evidence of radial outward dispersion.

In this talk, I will take you through the SEA-SEIS expedition, the data pre-processing, the inversion procedure and the resulting upper mantle tomography model, providing new insights into the dynamics and evolution of the Iceland plume.

Data: 11 Marzo 2025

Luogo: Aula Magna Marussi, palazzina C, via Weiss 1

Ora: 11:00-12:00

Ospite: Chiara Civiero

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Argomento: **Degassamento da grandi province magmatiche: risultati recenti e strategie future**

Relatore: **Dott.ssa Sara Callegaro, Università di Bologna (vincitrice di un ERC Consolidator grant)**

Quando: **3 Febbraio 2025, 12:00 – 13:00**

Dove: **MIGE, Aula C - Palazzina C, via Edoardo Weiss, 1, Trieste**

Ospite: **Luca Ziberna**

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- **Relatore:** Carla Braitenberg, Muhammad Javed Tahir

Titolo: Slip distribution of the February 6, 2023 Mw 7.8 and 4 Mw 7.6, Kahramanmaraş, Turkey earthquake sequence through optical and SAR remote sensing acquisitions

Contenuti: The indentation of Arabian plate towards the Anatolian plate forms triple junction slip partitioning among the North Anatolian Fault (NAF), the East Anatolian Fault (EAF), and the Main Recent Fault. The NAF is a 1,200 km-long, mature, right-lateral strike-slip fault while the EAF, 310 km-long left-lateral fault, extend southwards and branches out diffusely to the Dead Sea Fault (DSF) and the Cyprus Arc to the southwest. On February 6, 2023, two large earthquakes occurred near the Turkish town of Kahramanmaraş. The moment magnitude (Mw) 7.8 main-shock ruptured a 310 km-long segment of the left-lateral East Anatolian Fault, propagating through multiple releasing step-overs. The Mw 7.6 aftershock involved nearby left-lateral strike-slip faults of the East Anatolian Fault Zone, causing a 150 km-long rupture. We use remote-sensing observations to constrain the spatial distribution of coseismic slip for these two events and the February 20 Mw 6.4 aftershock near Antakya. Pixel tracking of optical and synthetic aperture radar data of the Sentinel-2 and Sentinel-1 satellites, respectively, provide near-field surface displacements. High-rate Global Navigation Satellite System data constrain each event separately. Coseismic slip extends from the surface to about 15 km depth with a shallow slip deficit. Most aftershocks cluster at major fault bends, surround the regions of high coseismic slip, or extend outward of the ruptured faults. For the mainshock, rupture propagation stopped southward at the diffuse termination of the East Anatolian fault and tapered off northward into the Pütürge segment, some 20 km south of the 2020 Mw 6.8 Elaziğ earthquake, highlighting a potential seismic gap (currently we are working on it). These events underscore the high seismic potential of immature fault systems. The article is published and available online as open access with the following link.

Barbot, S., Luo, H., Wang, T., Hamiel, Y., Piatibratova, O., Javed, M.T., Braitenberg, C. and Gurbuz, G., 2023. Slip distribution of the February 6, 2023 Mw 7.8 and Mw 7.6, Kahramanmaraş, Turkey earthquake sequence in the East Anatolian Fault Zone. *Seismica*, 2(3). <https://doi.org/10.26443/seismica.v2i3.502>

Data: 17 maggio 2023

Luogo: aula D, palazzina Q, via Weiss 2

Ora: 16:15 - 17:00

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- **Relatore:** dr. Claudia BERTONI, Oxford University

Titolo: 'Esplorazione del sottosuolo per analisi di distribuzione di fluidi in bacini sedimentari'

Contenuti: La presentazione mostrerà esempi di studi basati su dati di sismica a riflessione e di pozzo, con esempi in Africa Orientale e nel Mediterraneo, e con enfasi sull'interazione dei diversi fluidi presenti in sedimenti marini.

Data: 30 gennaio 2023

Luogo: Aula B, Edificio Q di Via Weiss, 2

Ora: 11:00 – 12:00

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- **Relatore:** Luca Ziberna, Marco Venier

Titolo: Project DIVE (Drilling the Ivrea-Verbano zone): Probing the continental lower crust and its transition to the mantle through scientific drilling

Contenuti: DIVE is an international scientific project that aims to explore the nature and evolution of Earth's deep continental crust and the crust-mantle transition zone through deep drilling. It involves more than 30 institutions from more than 7 countries. It is highly multidisciplinary, including geophysics, petrology, structural geology, rock and fluid geochemistry and microbiology. In this seminar, we will present the scientific background, the major interdisciplinary steps of the project, from planning to operations, and the first results obtained through drilling almost 600 meters of crystalline rocks in Ornavasso, Val d'Ossola (Southern Alps).

Data: 29 marzo 2023

Luogo: aula D, palazzina Q, via Weiss 2

Ora: 16:15 - 17:00

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- **Relatore:** Davide Baldini, Global Geological Advisor ENI e Claudio Chinigò, Exploration, Geology and Geophysics Professional Areas Manager ENI

Titolo: MASTER GEMS 2022-2023. Master in Geoscience for Energy

Contenuti: presentazione del master GEMS: un percorso di alta formazione di Eni rivolto a giovani laureati capaci di guardare all'energia e alle georisorse del domani e pronti a cogliere le enormi sfide dell'innovazione tecnologica che il percorso di transizione energetica ci pone davanti.

Data: 25 maggio 2022

Luogo: aula B, palazzina O, via Weiss 6 - e anche online al link <https://us02web.zoom.us/j/87453128323?pwd=wUY7MqpXtuw3NggHO2-0W3WDzGRkJE.1>

Meeting ID: 874 5312 8323, Passcode: 326995

Ora: 16:15 - 17:00

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- **Relatore:** dott. Simon Buckley

Titolo: Value-added virtual outcrops: from pretty pictures to a fundamental basis for multidisciplinary analysis and education.

Contenuti: The use of Virtual Outcrops (VO) in geosciences is becoming common-practice and has opened new pathways in data acquisition and analysis and geosciences education. The seminar will provide background on VO history and acquisition, focused on the transition from creating VOs (the pretty pictures part) to actually being able to benefit from them in many ways. Examples will include quantitative analysis, integration of data types (e.g. the hyperspectral, but also geophysical data and seismic modelling) through to 3D model sharing and virtual field trips.

Data: 4 maggio 2022

Luogo: aula B, palazzina O, via Weiss 6 - **evento online**
(<https://us02web.zoom.us/j/83428575103?pwd=VIJYUHhXcURrL1d1VktKTWYxUm5lZz09>)

Ora: 16:15 - 17:00

- **Relatore:** dott. Giacomo Vinci

Titolo: Un approccio geo-archeologico per lo studio delle interazioni tra uomo ed ambiente nell'Alto Adriatico

Contenuti: Tema del seminario è lo studio dell'interazione di lungo periodo tra uomo e ambiente nei territori altoadriatici. Tramite la presentazione di alcuni casi studio relativi a contesti geomorfologici molto diversi (altopiano carsico, alta pianura e fascia lagunare), verranno discussi: (i) metodologie e tecniche per l'indagine del "palinsesto" del paesaggio; (ii) condizionamenti ambientali e strategie di occupazione del territorio da parte delle comunità del passato; (iii) legame tra lo studio dei paesaggi antichi e i giorni nostri (tutela e valorizzazione del territorio, cambiamenti ambientali, ..).

Data: 27 aprile 2022

Luogo: aula B, palazzina O, via Weiss 6