

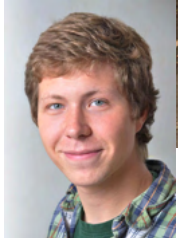
Projects for BSc and MSc students in AG Tectonics & Sedimentary Systems

Online Webinar – Thursday, April 15 – 13:15

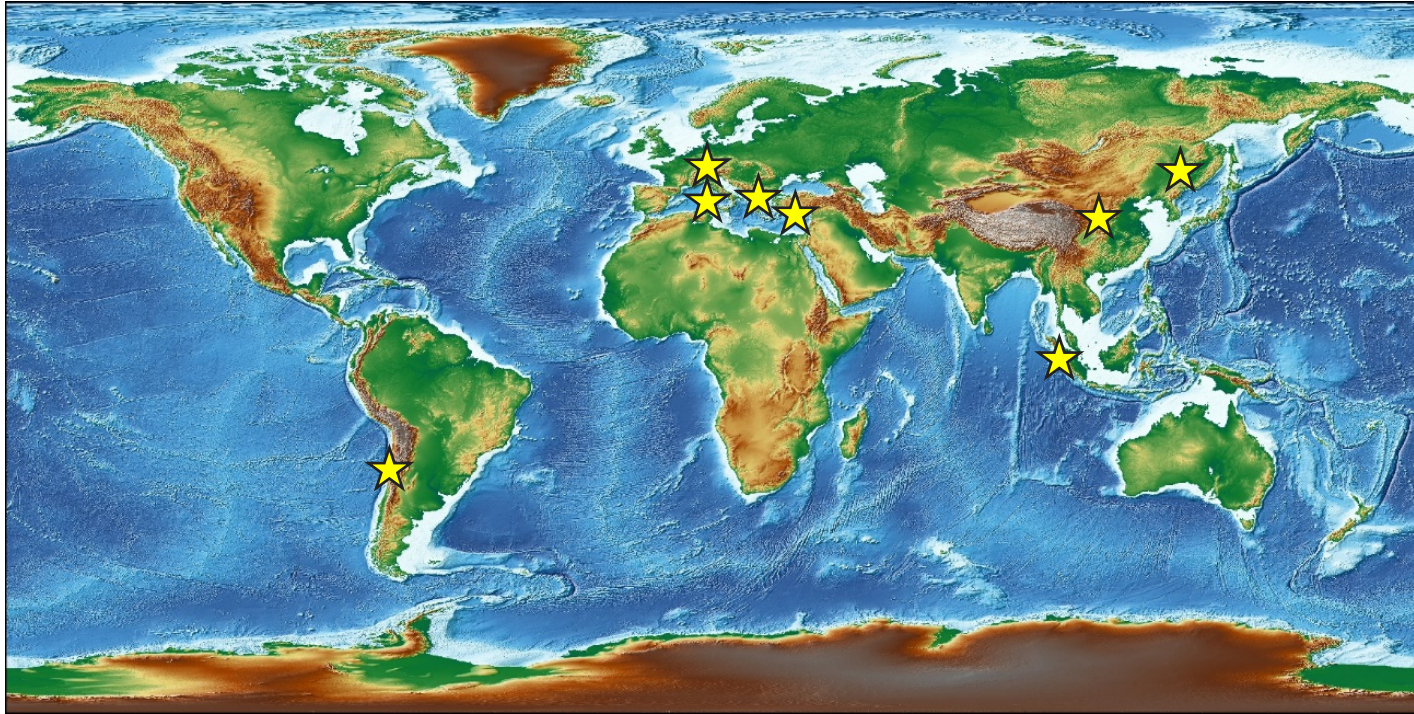
AG Tectonics & Sedimentary Systems

3 Professors
5 Research Scientists
3 Technical Staff
Office: Juliane Rohlmann

7 PhD Students
11 Tutors, HiWis, Intern
6 MSc Students



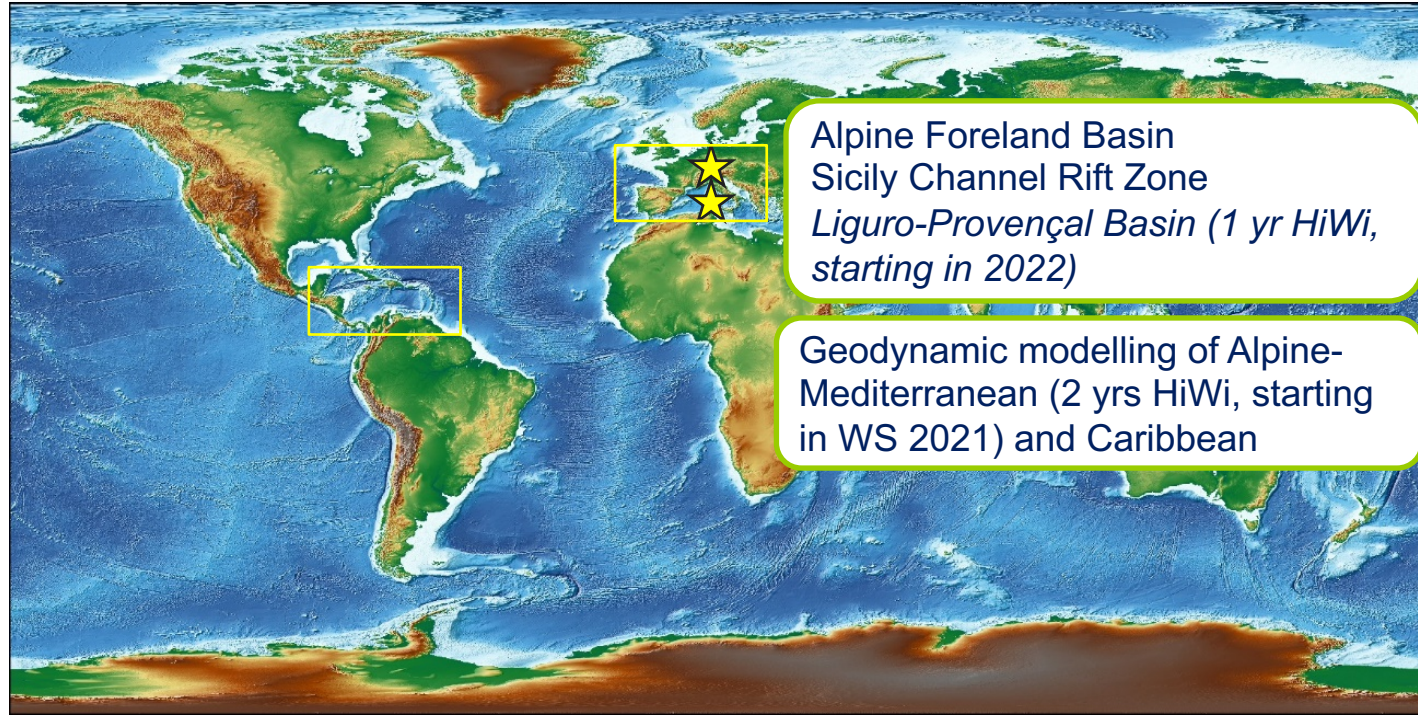
Ongoing projects in AG - Tectonics & Sedimentary Systems



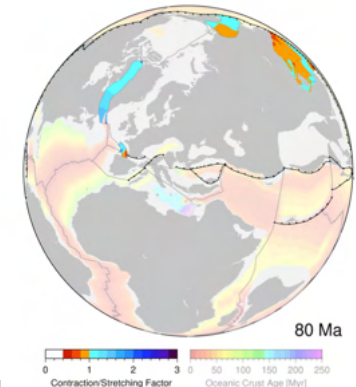
- Tectonic processes and surface response to subduction dynamics in the Alps and Mediterranean area
- Source to Sink processes and geohazards in Sumatra and Chile
- Paleo-environment reconstructions in China
- Global Topographic analysis

<https://www.geo.fu-berlin.de/en/geol/fachrichtungen/geologie/index.html>

Eline Le Breton – Kinematics of tectonic processes, geodynamics and surface response

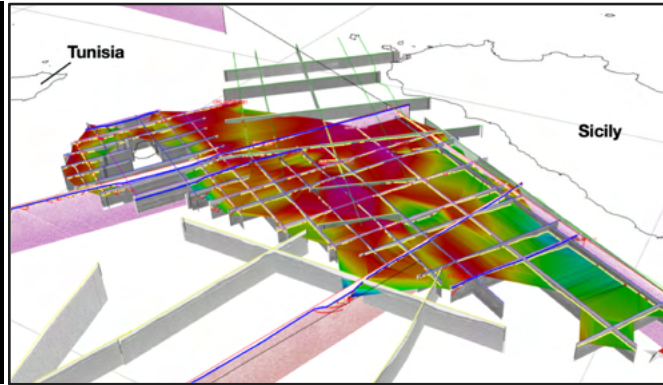
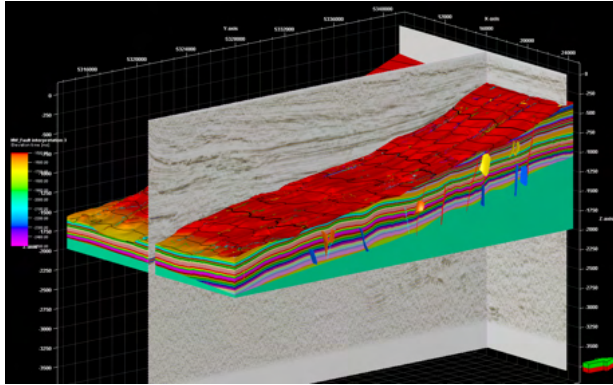


- Tectonic processes and surface response to subduction dynamics in the Alps and Mediterranean area
- Plate – Mantle plume interaction in the Caribbean

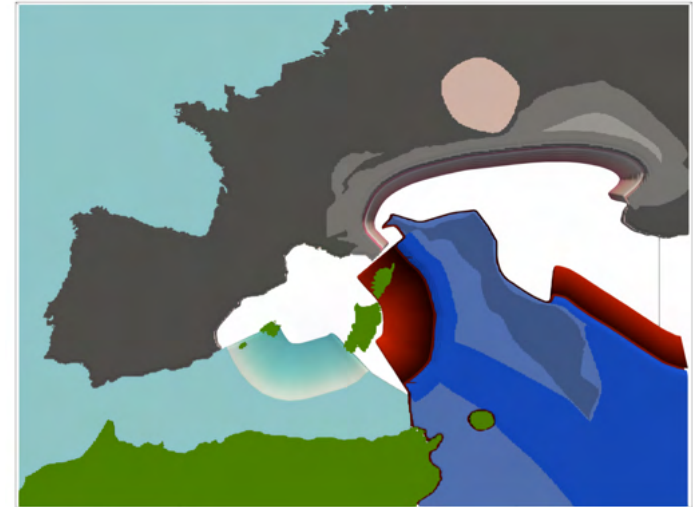


[4DMB](#) – Geophysics Project (Emanuel Kästle)

What will you do and learn?



- Acquisition, compilation & interpretation of tectono-stratigraphic and geophysics (seismic) data
- Quantify amount, direction and timing of deformation (kinematic reconstructions)
- Construct setups and run geodynamic models
- Software: MOVE, Petrel, ArcGIS, GPlates, Matlab, LaMEM, geomIO



What will you do and learn?



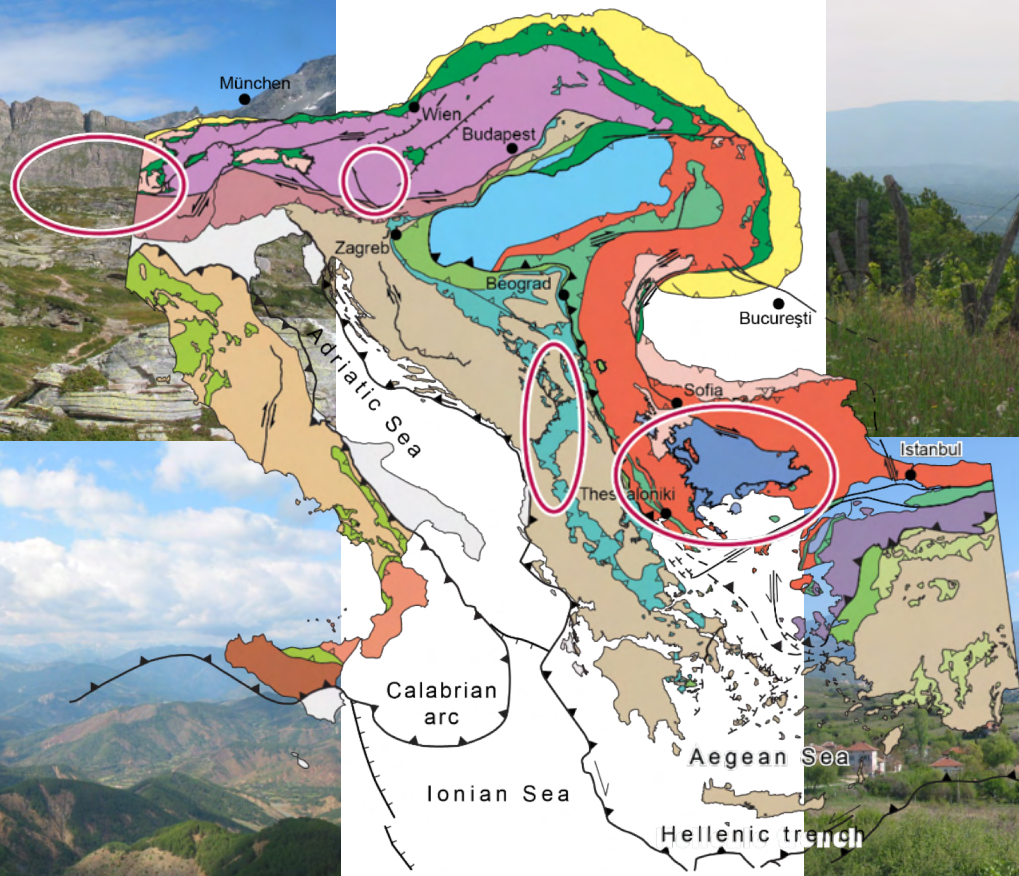
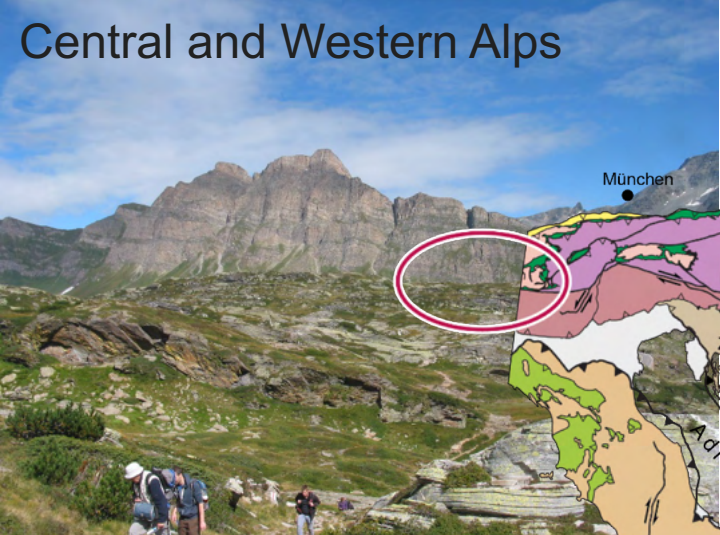
➤ *Field and international collaboration experience*

Questions?

Contact Eline Le Breton

B138

eline.lebreton@fu-berlin.de



- Kartierung, Profilaufnahme
- Strukturelle Analyse
- Strainanalyse
- Polarisationsmikroskopie
- Druck- und Temperatur-Bestimmung
- Geochemische Untersuchung von Ophiolithen

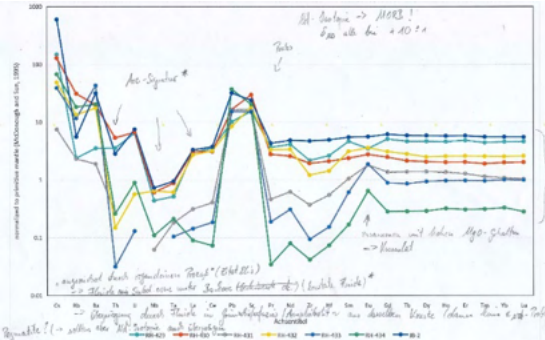
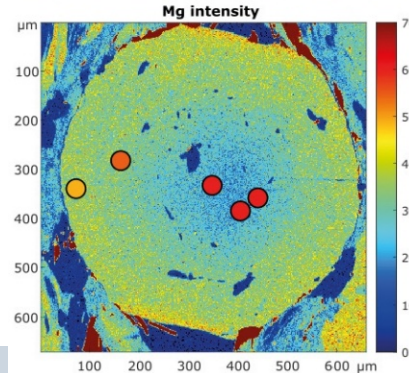
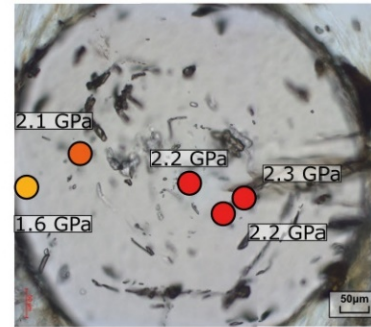
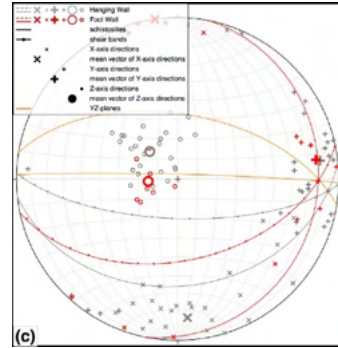
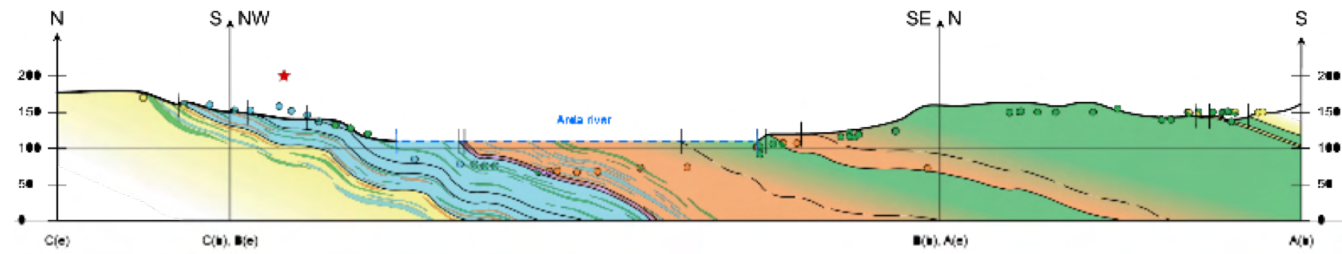


Figure 1 consists of four vertically stacked cross-sectional diagrams illustrating the evolution of the Borovica Shear Zone. Each diagram shows a sequence of geological layers (purple, green, brown, and grey) and a central shear zone (yellow) where rock is being eliminated. The diagrams are labeled with geological time periods: Eocene (ca. 42 Ma), Eocene (ca. 45 Ma), Early Eocene (ca. 55 Ma), and Palaeocene. The final stage, Palaeocene, shows the rock volume eliminated along the Kardzali Shear Zone. The diagrams illustrate the progressive elimination of rock volume along the Borovica Shear Zone, with the final stage labeled 'Palaeocene' and 'Rock volume eliminated along Kardzali Shear Zone'.

Questions?

Contact Jan Pleuger

B107

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Plate collision, Topography, and Surface Processes Interaction

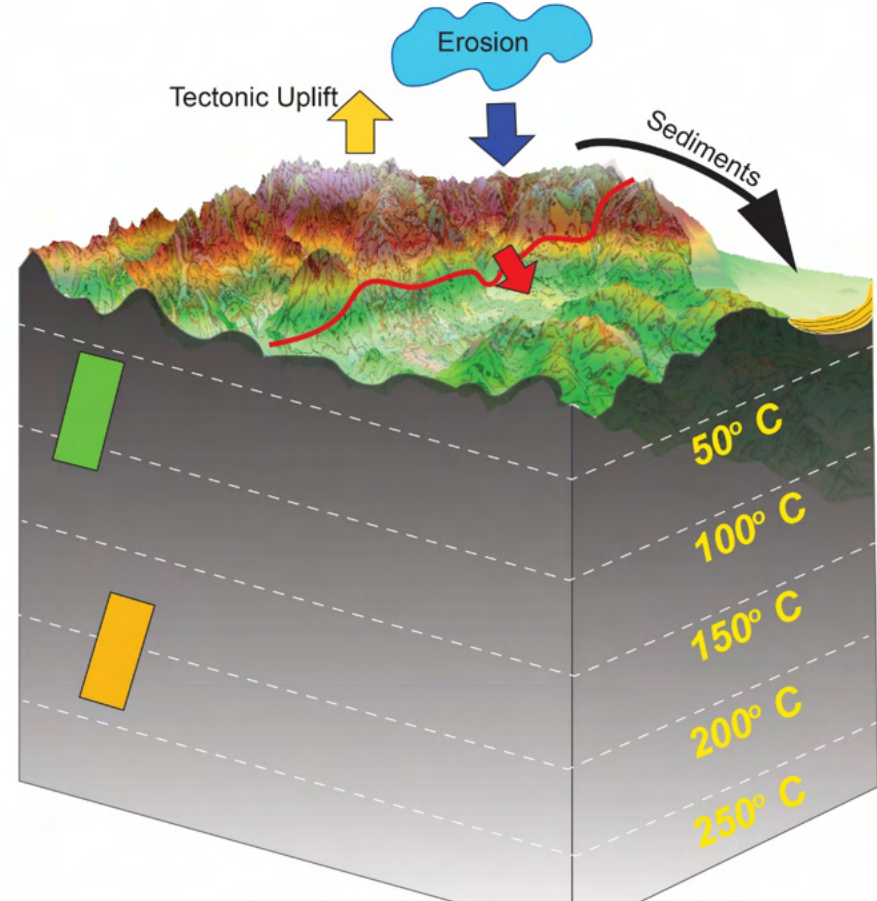
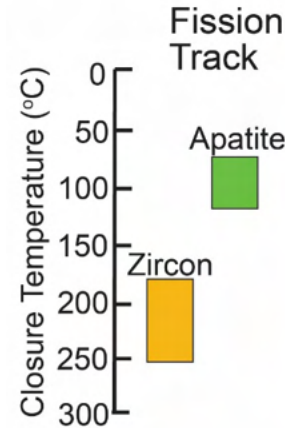


Multi-Proxy Approach

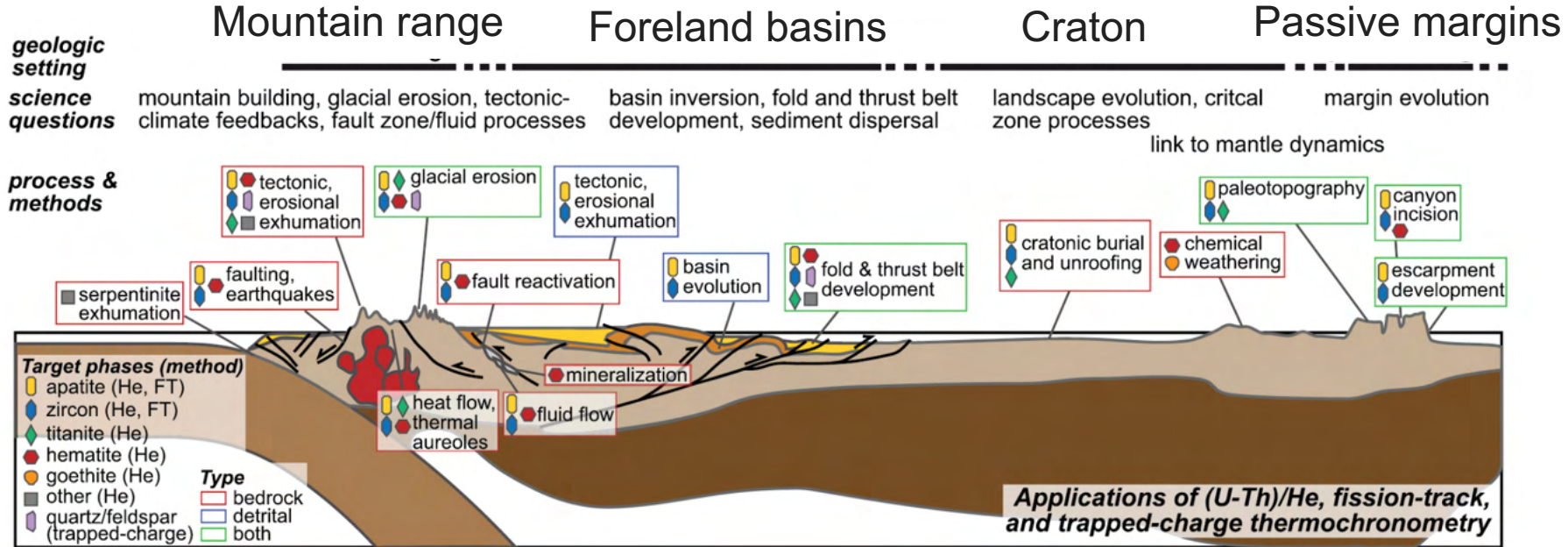
We measure the **time** and **rates** of tectonics, and erosion at different time scales



Albania 2019



Multi-Proxy Approach: A vast array of application



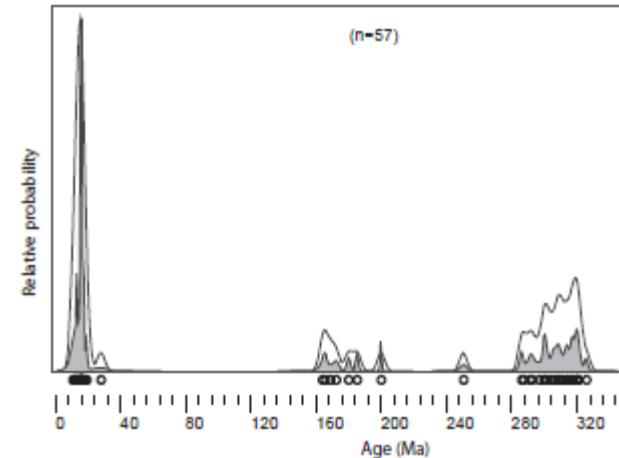
*Ault et al., 2019 -
Tectonics*

From the Macro to the Atomic Scale

Laboratory availability: B – 132 B-137



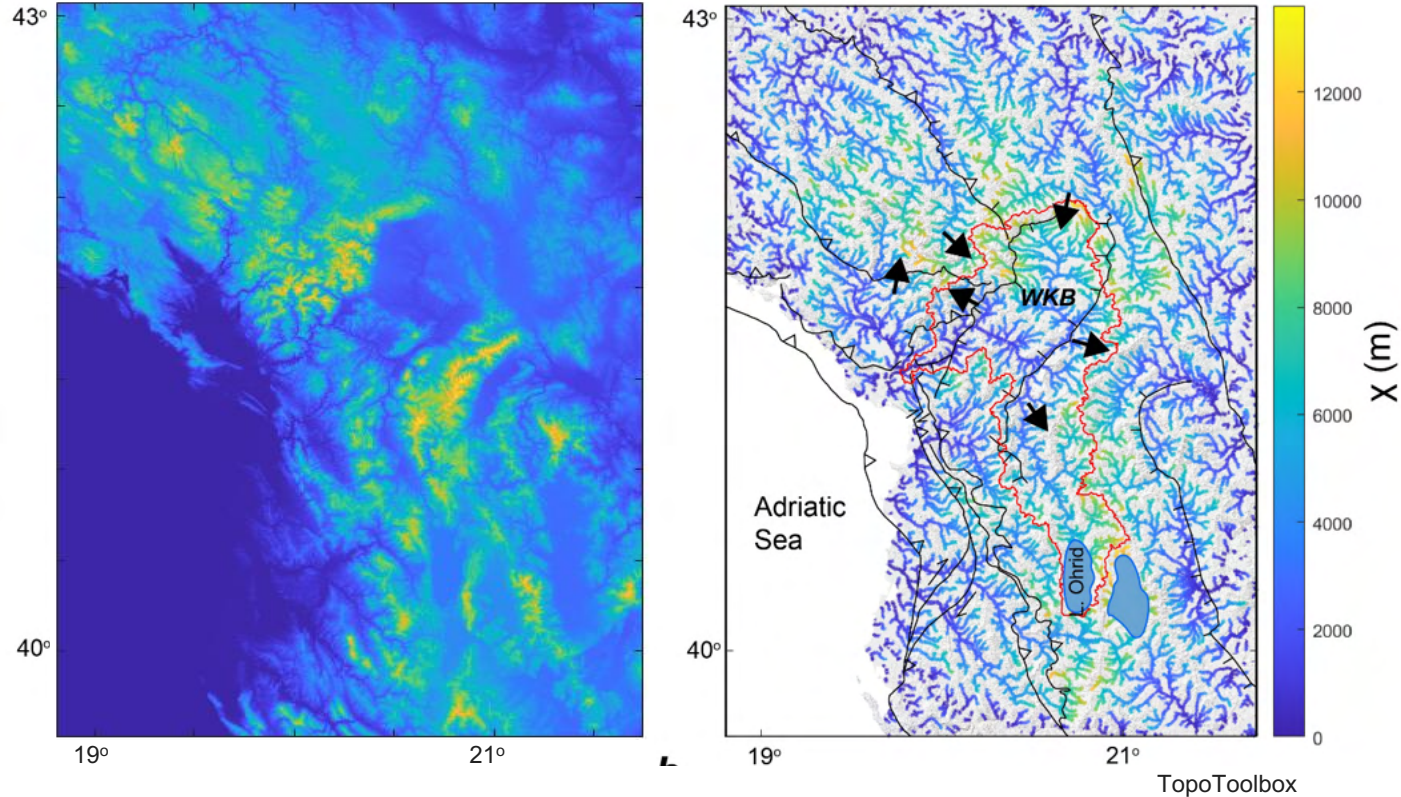
Dating the evolution of orogens



Transient landscapes: Terrain Analysis of present day rivers networks



ASTER-gDEM



To Recap: Available Projects

Mediterranean Area-Dinarides-Hellenides in collaboration with other group fellows

- Structural Geology Mapping (ASAP)
- Thermochron: FT on current available samples
- Terrain Analysis using DEM

Alps: FT from river sediments

More project to come, if interested contact me...

Contact & Infos:
Dr. Lorenzo Gemignani,
Lorenzo.gemignani@fu-berlin.de

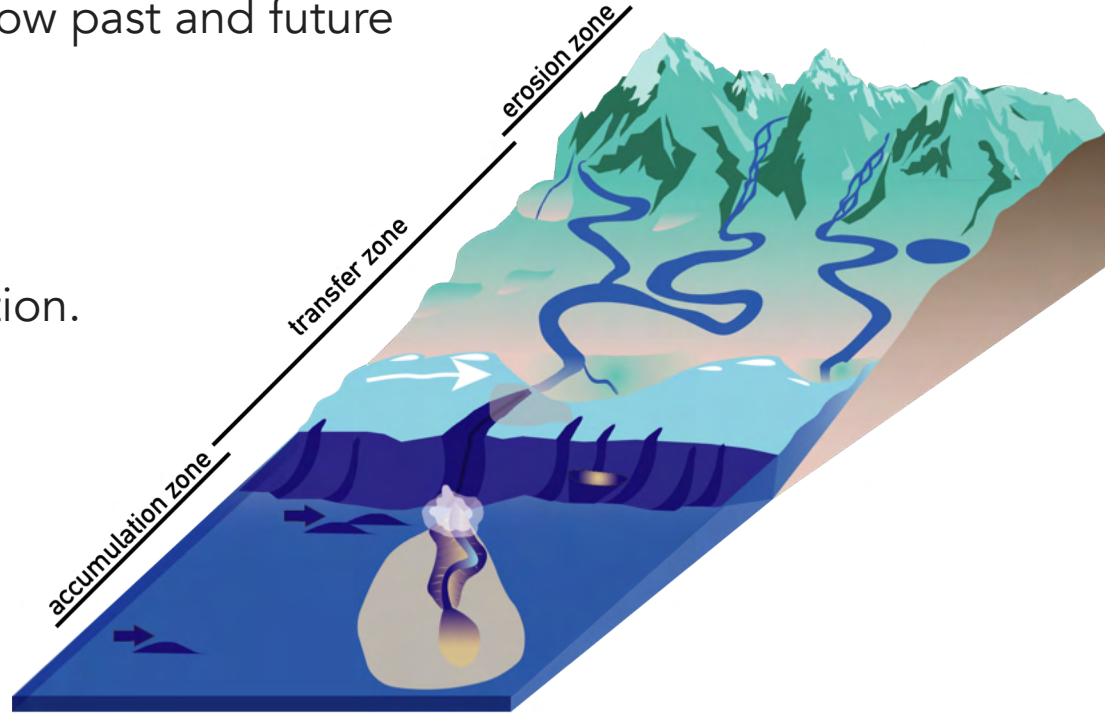
Questions?

Contact Lorenzo Gemignani

B137

lorenzo.gemignani@fu-berlin.de

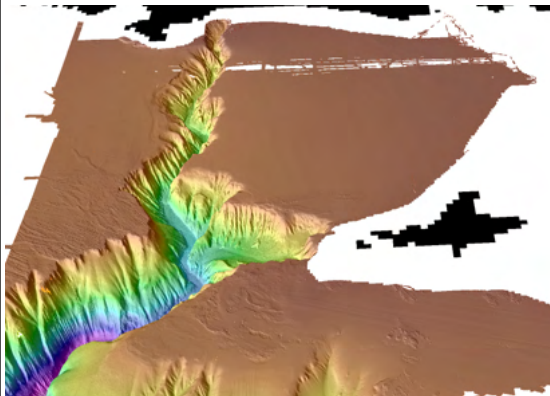
- We explore how Earth surface processes are preserved in sediments and sedimentary rocks.
- The ultimate goal is to find out how past and future
 - tectonic activity &
 - climatic changesaffect sediment transport & deposition.



modern systems

(bathymetry, core, profiles)

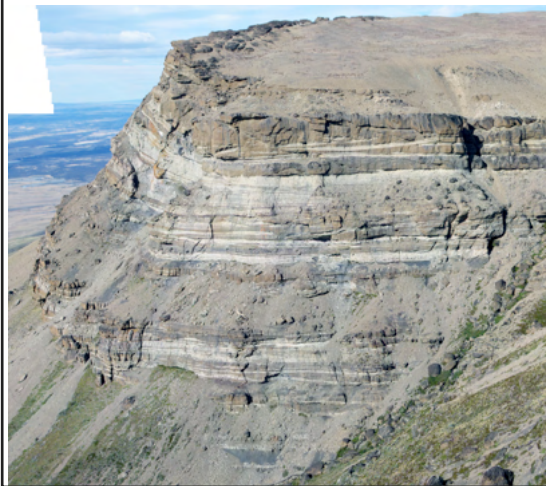
historical, centennial to
millennial



outcrop

(field work)

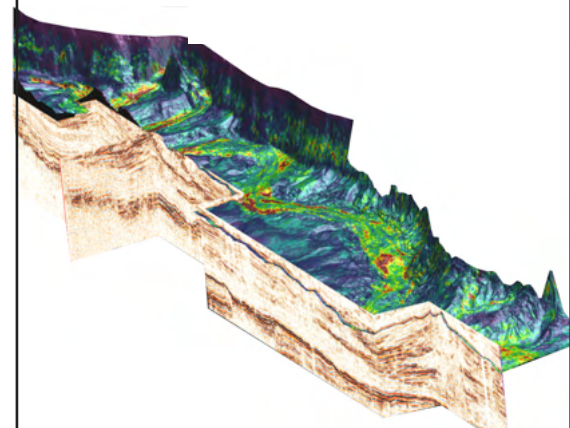
millennial to
geologic deep time



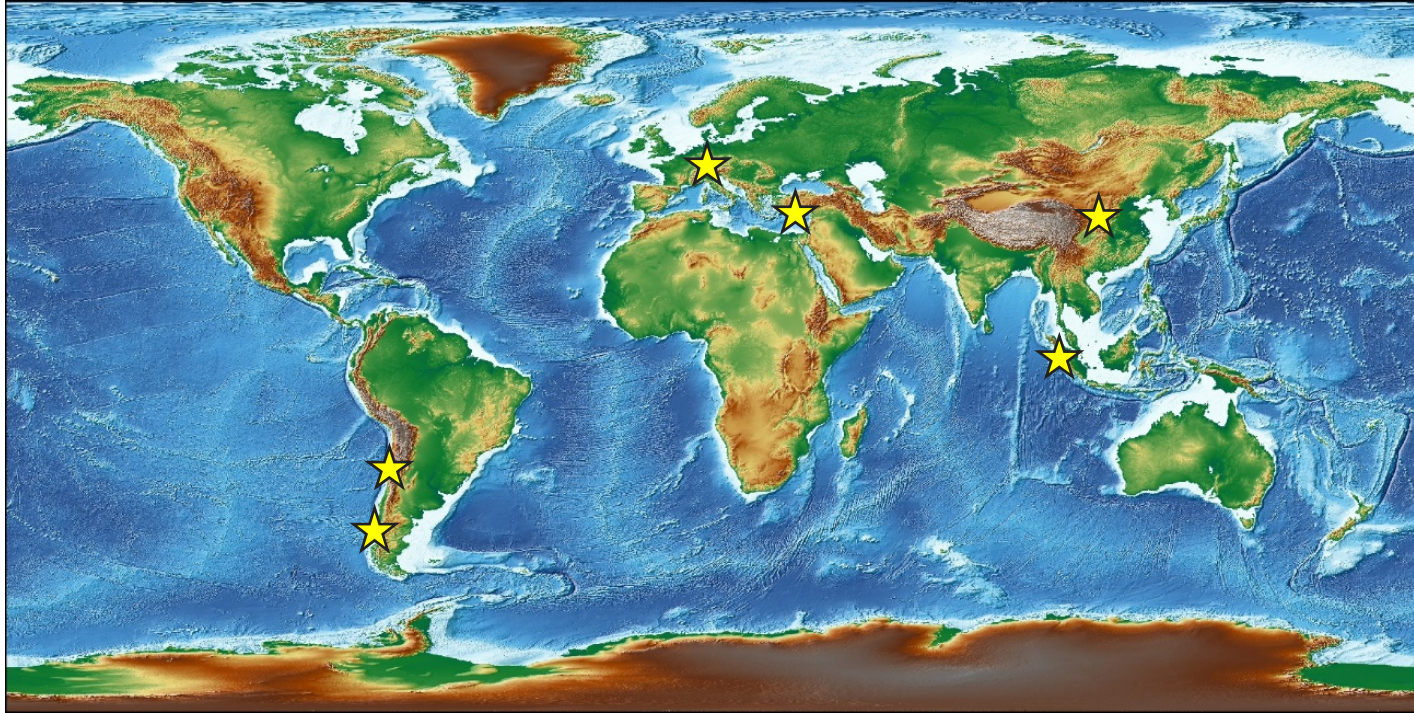
subsurface

(seismic-reflection data, core)

geologic deep time



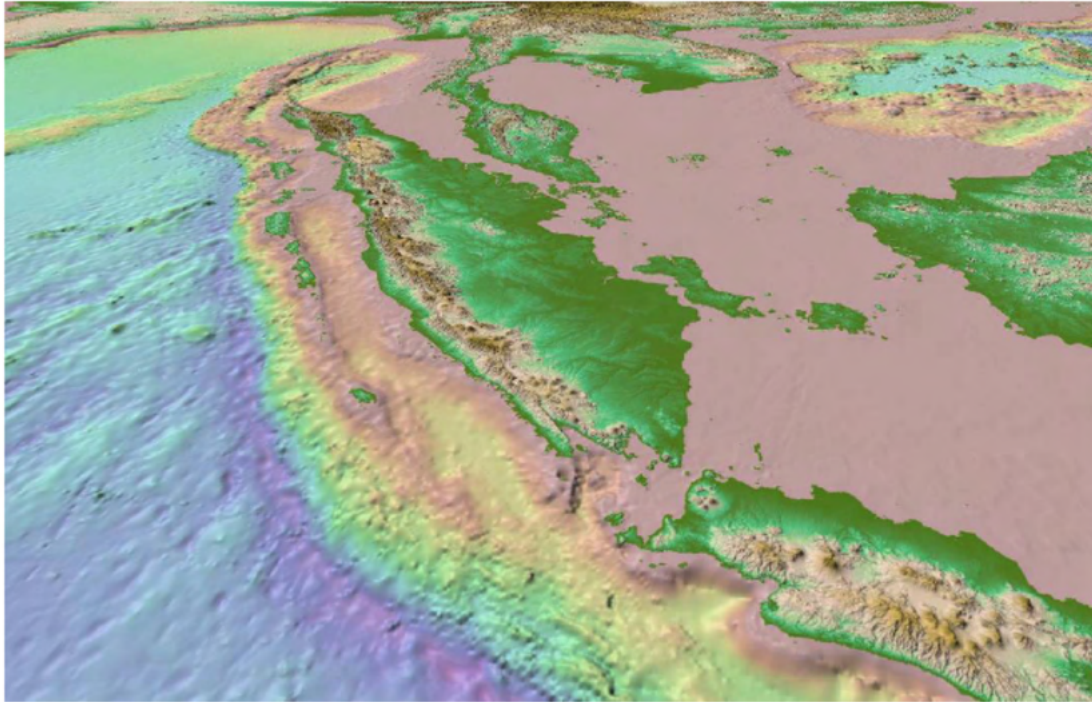
Ongoing projects in AG - Sedimentary Systems



- Alps
- Mediterranean Sea
- Sumatra
- Chile
- China
- Global topographic analysis

<https://www.geo.fu-berlin.de/en/geol/fachrichtungen/geologie/sedimentary-systems/research/index.html>

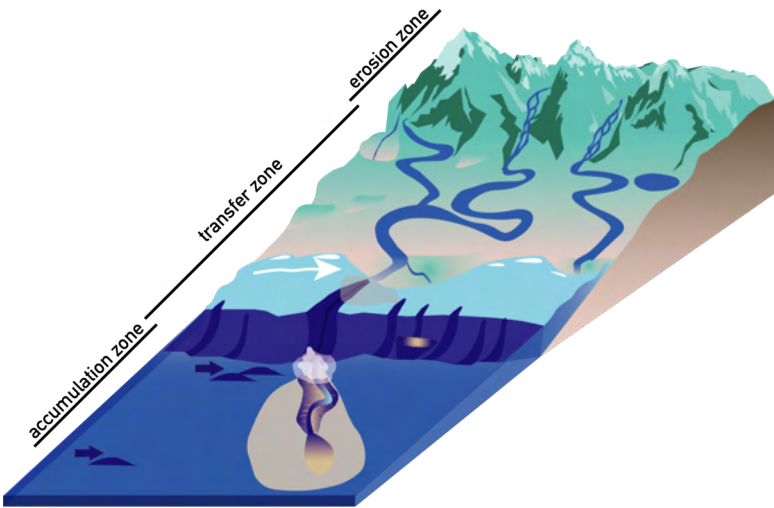
Global topographic analyses



Courtesy of H. Thöle

Quantitative geomorphic analyses of the seafloor landscape to learn about submarine formation processes of seafloor geomorphic features, such as canyons.

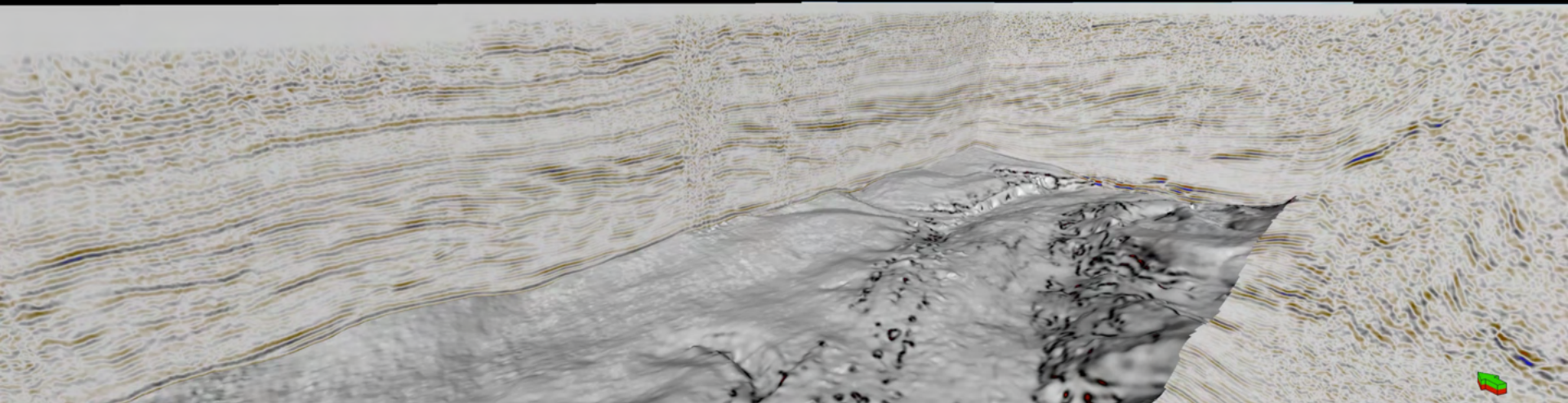
Changes in sediment export after climate change: Sumatra & Chile



Tectonic processes and surface response to subduction dynamics in the Alps

Tertiary sedimentary strata in the subsurface of the Northern Alpine Foreland Basin.

Animation by Julian Hülscher



Questions?

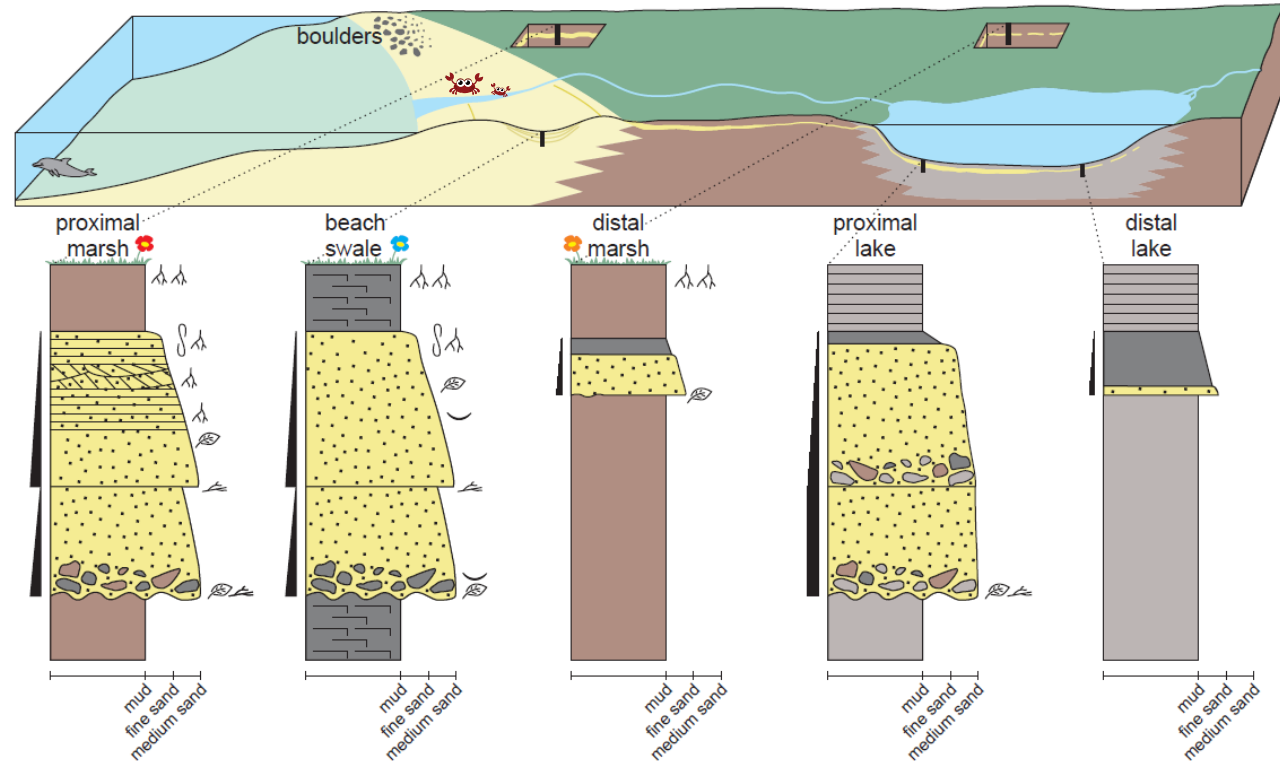
Contact Anne Bernhardt

B105

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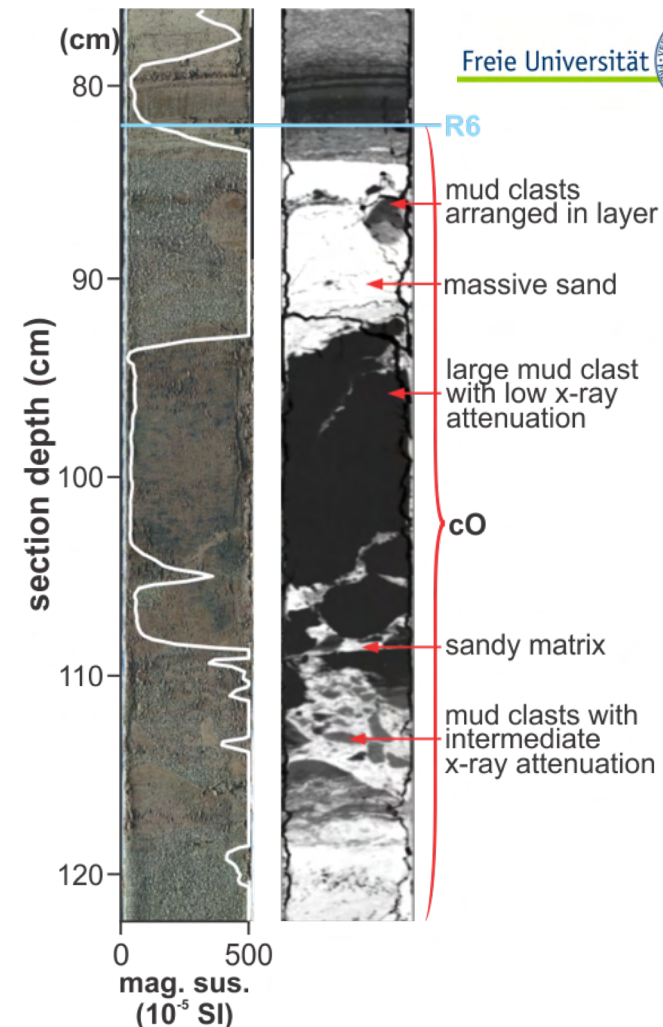
Geohazards – Chile and Sumatra

- subduction zone geohazards:
 - earthquakes
 - tsunamis
- post-event landscape recovery



Sediment Core Analysis

- **physical properties:**
 - magnetic susceptibility
 - CT-scanning
 - XRF-scanning
- **chemical properties:**
 - XRF-scanning
 - carbon content
- **biological properties:**
 - diatoms
 - pollen
 - biomarkers



Questions?

Contact Philipp Kempf

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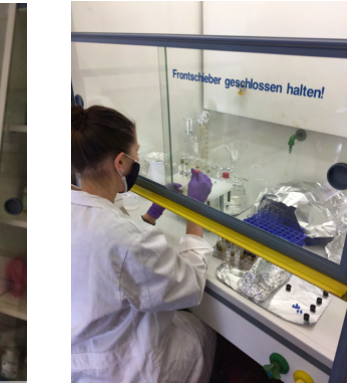
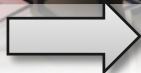


Gives unique information about the paleoenvironment, ecology and climate through an isotope-finger print:

Hydrogen and Carbon



extraction



chemical treatment



chromatography

My ongoing projects and opportunities for students



- Tectonic processes and surface response to subduction dynamics in the Alps and Mediterranean area
- Source to Sink processes and geohazards in Sumatra and Chile
- Paleo-environment reconstructions in China
- Global Topographic analysis

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Questions?

Contact Alexander Rohrmann

B102

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