

Information on the Bachelor's Program Marine Geosciences

vISI on June 22, 2021

Dr. Ulrike Wolf-Brozio
Bremen June 15, 2021

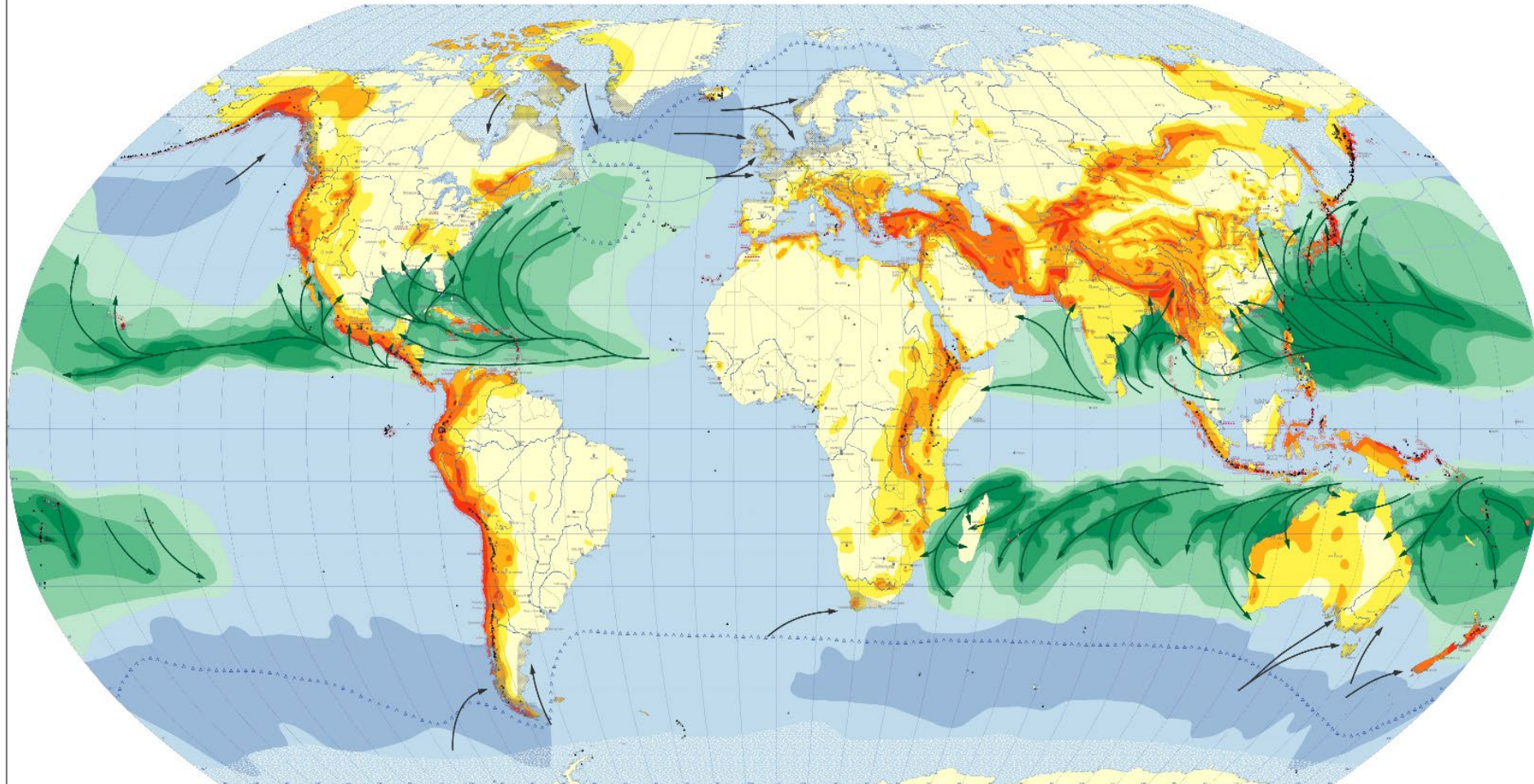
Studying the Earth and its Oceans...





World Map of Natural Hazards

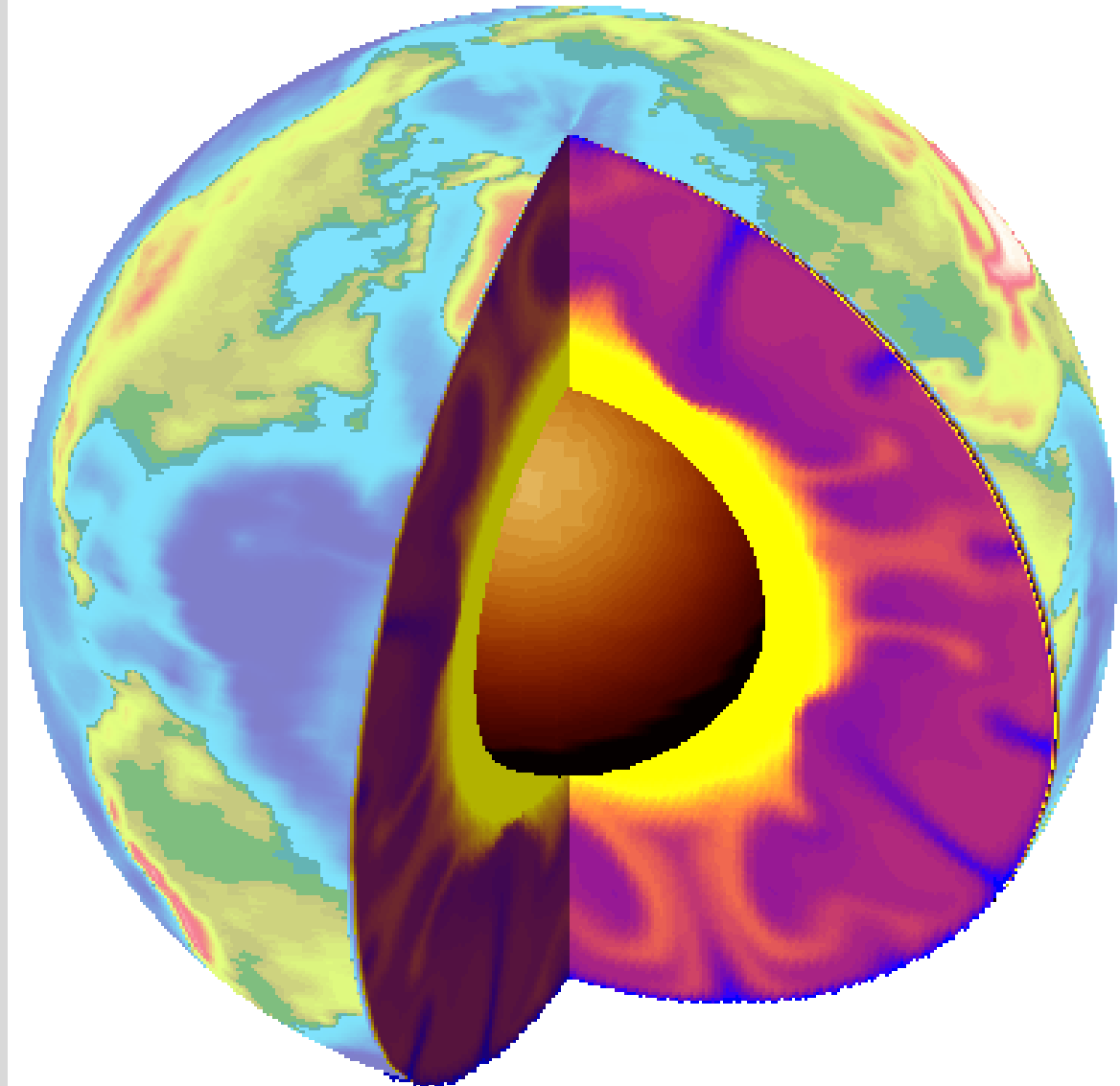
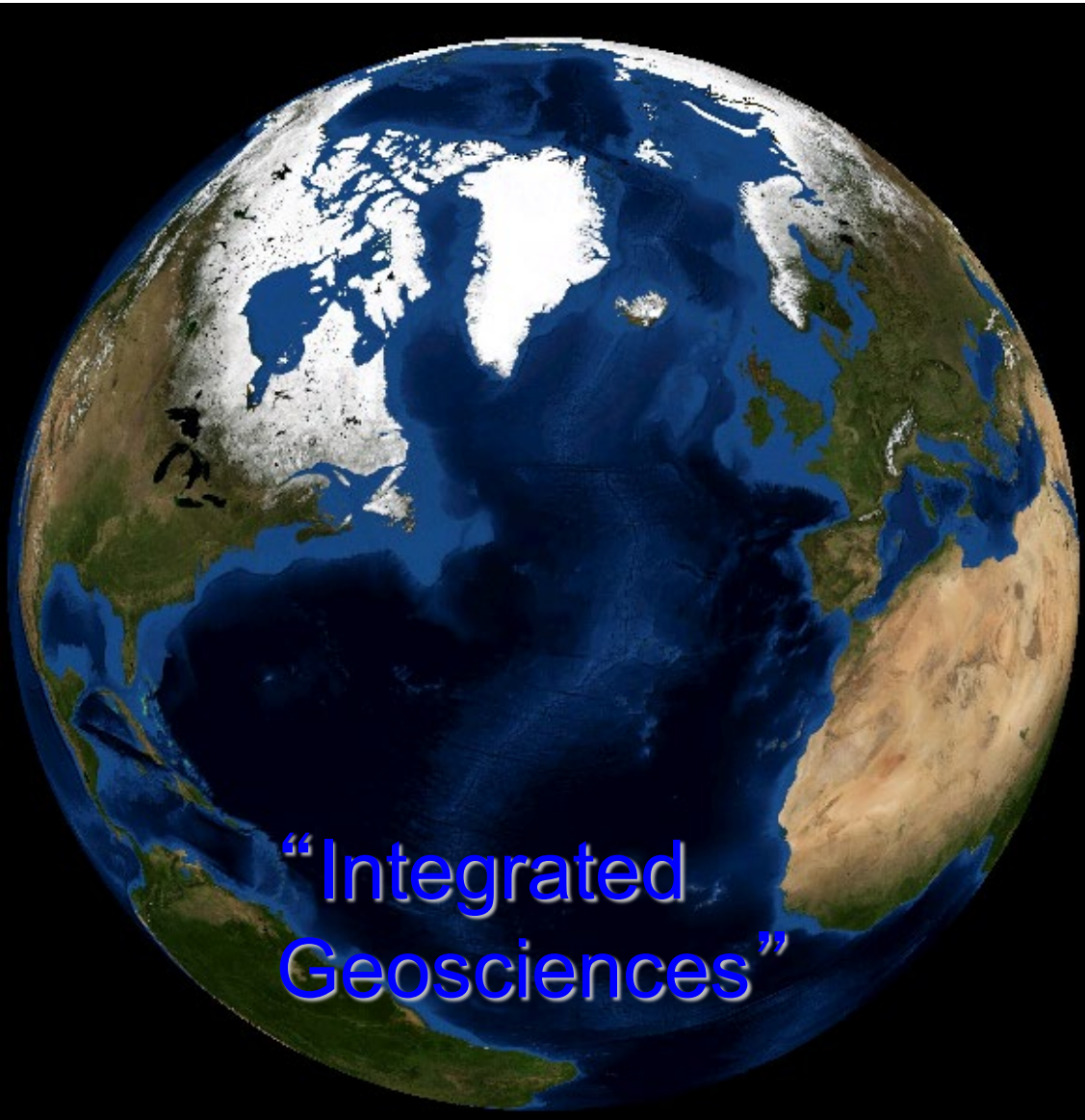
Weltkarte der Naturgefahren



Ereignisse Zone 1: 1824-1826 Zone 2: 1827-1829 Zone 3: 1830-1832 Zone 4: 1833-1835	Distanz zur Zone (km) 100 200 300 400 500	Vulkane - Vulkane (nach 1820) - Vulkane (nach 1820) - Vulkane (nach 1820)	Tsunamis und Sturmfluten - Tsunamis (nach 1820) - Sturmfluten (nach 1820)	Tropische Wirbelstürme Zone 1: 1824-1826 Zone 2: 1827-1829 Zone 3: 1830-1832 Zone 4: 1833-1835	Wahrscheinliche Meeresspiegelanstiege - Meeresspiegelanstieg (nach 1820) - Meeresspiegelanstieg (nach 1820)	Auf tropische Stürme/Wirbelstürme - Auf tropische Stürme/Wirbelstürme (nach 1820)	Arktische Naturgefahren - Arktische Naturgefahren (nach 1820)	Siedle - Siedle (nach 1820)	Politische Grenzen/Bewässerung - Politische Grenzen/Bewässerung (nach 1820)
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“System Earth”



Geology

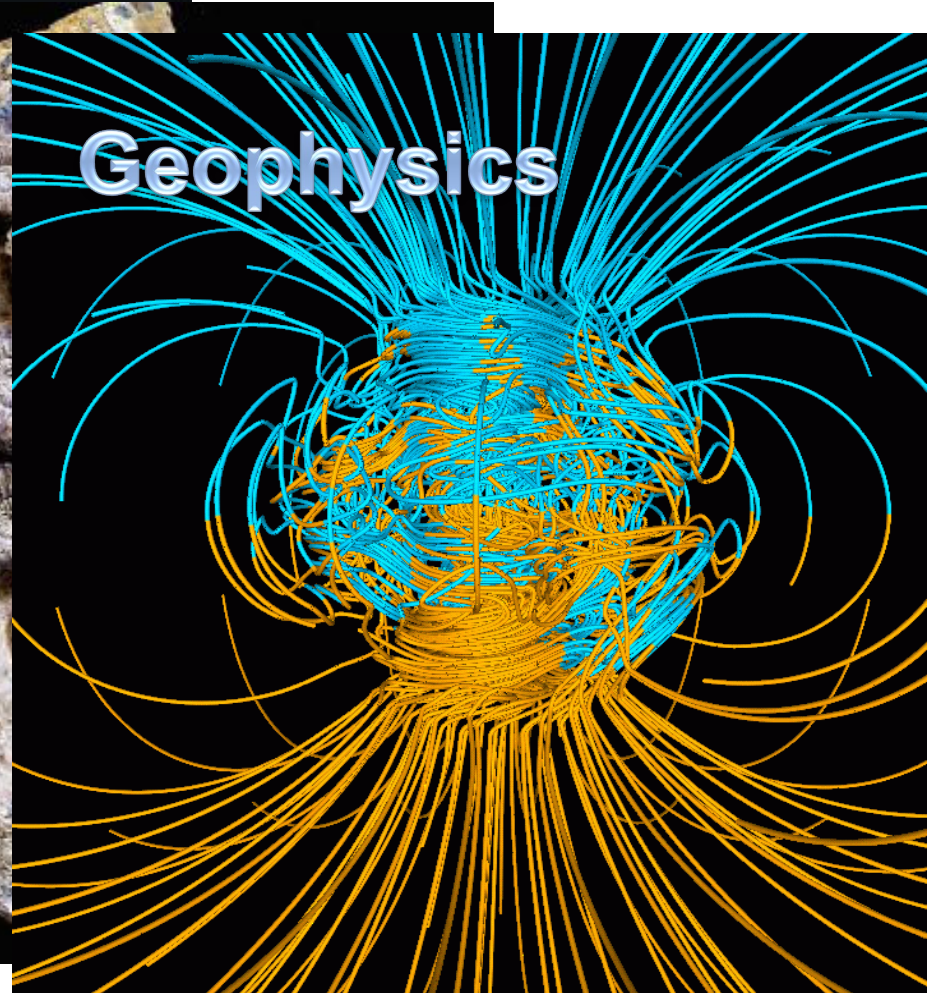
Mineralogy



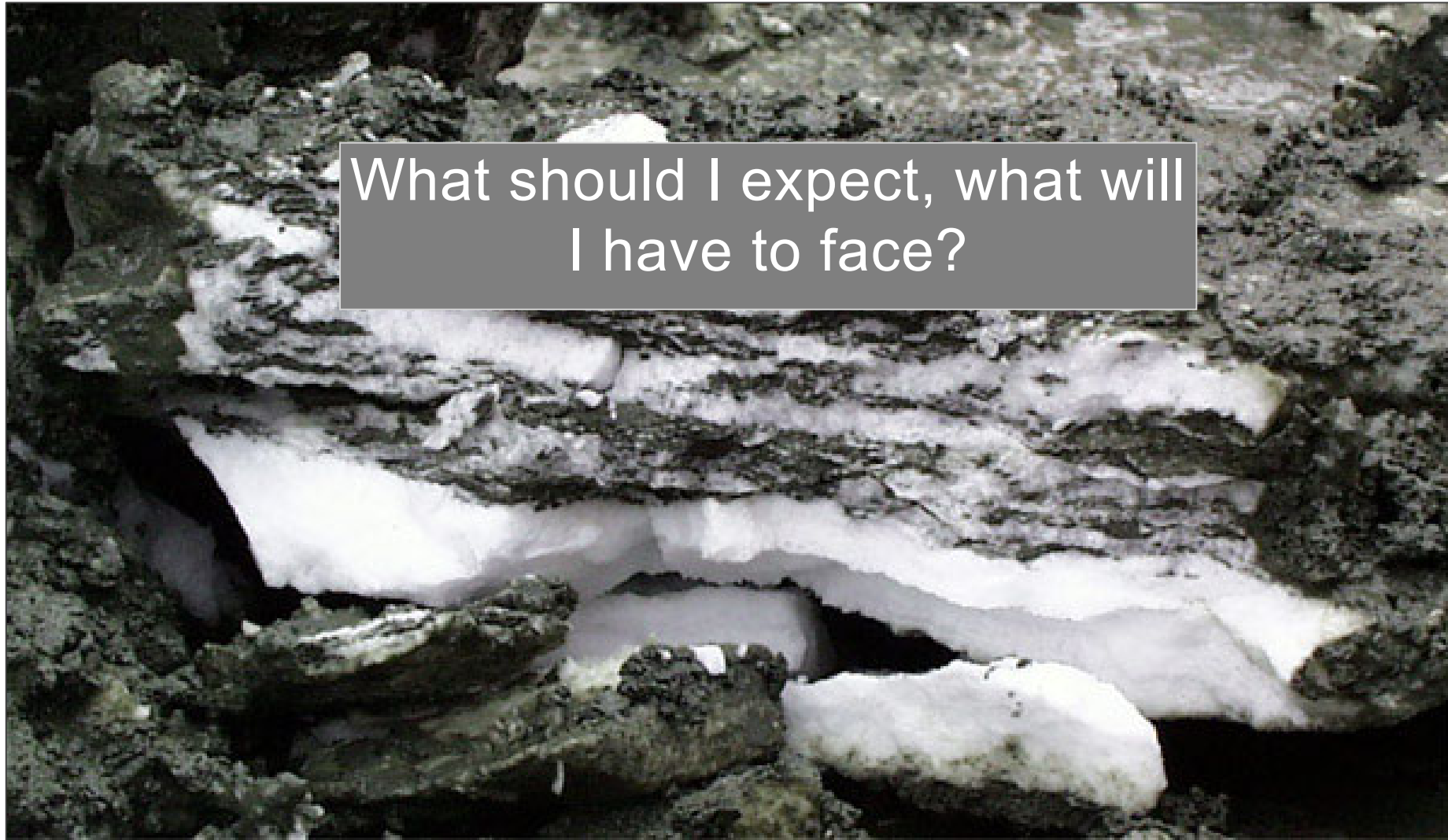
Paleontology



Geophysics



Bachelor of Science Marine Geosciences, University of Bremen



Bachelor Marine Geosciences

Content: studying System Earth and the oceans = record and analyze physical, chemical and geological processes on the earth's surface as well as in its interior using scientific methods.

Structure: modular, 29 modules, 180 credits

Degree: Bachelor of Science (B.Sc.) in Marine Geosciences

Duration: 3 years

Language of instruction: English

Application deadline: until July 31, non-EU citizens need a VPD by UniAssist

Language test deadline: until September 15

Orientation Week: Oct. 11 - 15, 2021

Start of lectures: Oct. 18, 2021

Credit Point System



- You start with a target of 180 points
- Each successfully completed module from the study plan earns points
- If you have collected 180 points according to the study plan, the bachelor's degree is completed
- 1 credit point stands for a workload of 30 h



Grading system

- all passed exams already count for the final grade (in the ratio CP number to 180 CP)
- passed means: grade is better than 4.05 (1.0 is the best)
- failed: 4 following semesters time to pass, otherwise: exmatriculation



Study Plan

What belongs to your studies?

BSc Marine Geosciences University of Bremen, FB 5

	6 CP	6 CP	6 CP	6 CP	6 CP
1. Year WiSe	Introduction Earth Dynamics Introduction Earth sciences Minerals + rocks Field trip 1	From Atoms to Minerals From atoms to minerals - L From atoms to minerals - E	Chemical Principles I General chemistry General chemistry exercise	Physical Principles I Physics for natural sciences I Physics of the solid Earth I	Mathematical Principles I Mathematical principles for geosciences I
1. Year SuSe	Evolution of Earth and Life Earth and life history Basics biology Introduction to fossils	Struct Geology + Tectonics Structural geology Geol mapping Field trip 2	Chemical Principles II Introduction to geochemistry Chemistry lab practise	Physical Principles II Physics for natural sciences II Physics of the solid Earth II	Mathematical Principles II Mathematical principles for geosciences II
2. Year WiSe	Ph, Ch, Biol Oceanography Climate and Ocean	Marine Sediments Intro marine geology Ship-based survey sediments Stratigraphy marine sediments	Dynamics of Ocean Crust	Princ Applied Geophysics Fund applied geophysics Geophysical field exercise	Sediment Core Project Sediment core project
2. Year SuSe	Core field MarGeo 1 Core fields (choose 3 out of 5) Sedimentology Geochemistry	Core field MarGeo 2 Paleontology Paleoceanography	Core field MarGeo 3 Geoinformatics	Geoscientific Competences 2x 7 day field camps	General Studies 1 Digital competences e.g. GIS, GMT, Matlab, etc.
3. Year WiSe	Core field MarGeo 1 Core fields (choose 3 out of 5) Sedimentology Geochemistry	Core field MarGeo 2 Paleontology Paleoceanography	Core field MarGeo 3 Geoinformatics	General Studies 2 Professional competences 4 week internship	General Studies 3 Interdisciplinary skills e.g. soft skills, language, economics, etc.
3. Year SuSe	Core field MarGeo 1 Core fields (choose 3 out of 5) Sedimentology Geochemistry	Core field MarGeo 2 Paleontology Paleoceanography	Core field MarGeo 3 Geoinformatics	Bachelor thesis + defense	

or choose 1 core field from BSc Geosciences
Geodynamics Exploration Geophysics

Bachelor Marine Geosciences -1rst year

- Chemistry, Physics, Mathematics (2 modules each)
- Marine Geoscientific Basics
 - Introduction Earth Dynamics
 - From Atoms to Minerals
 - Evolution of Earth and Life
 - Structural Geology and Tectonics
 - incl. 2 field trips:
 - introduction to geological field work, structural geology

B.Sc. Marine Geosciences (BMG) - starting WiSe 2021/22

Principles	Evolutionary Processes of Earth and Ocean		Materials and Structures of the Earth		Chemical Principles of Geosciences		Physical Principles of Geosciences		Mathematical Principles of Geosciences	
	English/German		English/German		English/German		English/German		English/German	
Language										
Modules Sem. 1	Introduction to Earth Dynamics		From Atoms to Minerals - Mineralogy and Crystallography		Chemical Principles of Geosciences I		Physical Principles of Geosciences I		Mathematical Principles of Geosciences I	
Title, Form, CP Lect. 1	Earth Dynamics	L 2	From Atoms to Minerals	L+E 6	General Chemistry for Geoscientists	L 4	Physics f. Natural Science I	L+E+P 4	Fundamentals of Mathematics for Geosciences I	L+E 6
Title, Form, CP Lect. 2	Identification of Rocks	E 2			General Chemistry for Geoscientists Exercise	E 2	Physics of the Solid Earth I	L 2		
Title, Form, CP Lect. 3	Introduction to Geoscientific Fieldwork	F 2								
	6 SWS		4 SWS		6 SWS		6 SWS		4 SWS	
Modules Sem. 2	Evolution of Earth and Life		Structural Geology and Tectonics		Chemical Principles of Geosciences II		Physical Principles of Geosciences II		Mathematical Principles of Geosciences II	
Title, Form, CP Lect. 1	Earth and Life History	L 2	Structural Geology	L+F 3	Introduction to Geochemistry	L 4	Physics for Natural Science II	L+E+P 4	Fundamentals of Mathematics for Geosciences II	L+E 6
Title, Form, CP Lect. 2	Basics of Biology	L 3	Regional Geology	L 1	General Chemistry Lab Practice	E 2	Physics of the Solid Earth II	L 2	(Huhn, Kasemann)	
Title, Form, CP Lect. 3	Introduction to Fossils	E 1	Geological Maps	E 2						
	5 SWS		6 SWS		6 SWS		6 SWS		4 SWS	

1rst year: Mathematics and Science minors

Chemical Principles of Geosciences	Physical Principles of Geosciences	Mathematical Principles of Geosciences
English/German	English/German	English/German

Chemical Principles of Geosciences I		Physical Principles of Geosciences I		Mathematical Principles of Geosciences I	
General Chemistry for Geoscientists	L 4	Physics f. Natural Science I	L+E+P 4	Fundamentals of Mathematical for Geosciences I	L+E 6
General Chemistry for Geoscientists Exercise	E 2	Physics of the Solid Earth I	L 2		
6 SWS		6 SWS		4 SWS	

Chemical Principles of Geosciences II		Physical Principles of Geosciences II		Mathematical Principles of Geosciences II	
Introduction to Geochemistry	L 4	Physics for Natural Science II	L+E+P 4	Fundamentals of Mathematics for Geosciences II	L+E 6
General Chemistry Lab Practice	E 2	Physics of the Solid Earth II	L 2	(Huhn, Kasemann)	
6 SWS		6 SWS		4 SWS	

1st year: marine geoscientific basics

Principles	Evolutionary Processes of Earth and Ocean		Materials and Structures of the Earth	
	English/German		English/German	
Modules Sem. 1	Introduction to Earth Dynamics		From Atoms to Minerals - Mineralogy and Crystallography	
	Title, Form, CP Lect. 1	Earth Dynamics L 2	From Atoms to Minerals L+E 6	
	Title, Form, CP Lect. 2	Identification of Rocks E 2		
	Title, Form, CP Lect. 3	Introduction to Geoscientific Fieldwork F 2		
	6 SWS		4 SWS	
Modules Sem. 2	Evolution of Earth and Life		Structural Geology and Tectonics	
	Title, Form, CP Lect. 1	Earth and Life History L 2	Structural Geology L+F 3	
	Title, Form, CP Lect. 2	Basics of Biology L 3	Regional Geology L 1	
	Title, Form, CP Lect. 3	Introduction to Fossils E 1	Geological Maps E 2	
	5 SWS		6 SWS	

Bachelor Marine Geosciences-from 2nd year on

- marine geoscientific Basics (continued)
 - Geology and Stratigraphy of marine Sediments; multidisciplinary Sediment Core Project; physical, chemical and biological Oceanography; Principles of applied Geophysics; Rock-forming Processes
- marine geoscientific Specializations (elective subjects)
 - 3 out of 7 Specialty Subjects, 3 Modules in each
- interdisciplinary Skills
 - field trips, digital Competences, professional Internship, interdisciplinary Competences
- Bachelor Thesis
 - nine-week thesis + defense/colloquium

Specializations: 3 out of 7 Minors

2. Year SuSe

Core field MarGeo 1

Core fields (choose 3 out of 5)

Sedimentology

Geochemistry

Core field MarGeo 2

Paleontology

Paleoceanography

Core field MarGeo 3

Geoinformatics

3. Year WiSe

Core field MarGeo 1

Core fields (choose 3 out of 5)

Sedimentology

Geochemistry

Core field MarGeo 2

Paleontology

Paleoceanography

Core field MarGeo 3

Geoinformatics

3. Year SuSe

Core field MarGeo 1

Core fields (choose 3 out of 5)

Sedimentology

Geochemistry

Core field MarGeo 2

Paleontology

Paleoceanography

Core field MarGeo 3

Geoinformatics

or choose 1 core field from BSc Geosciences

Geodynamics

Exploration Geophysics

Bachelor Marine Geosciences-from 2nd year on

- Marine geoscientific minors

- Exploration Geophysics
- Geochemistry
- Geodynamics
- Geoinformatics
- Paleoceanography
- Sedimentology
- Paleontology

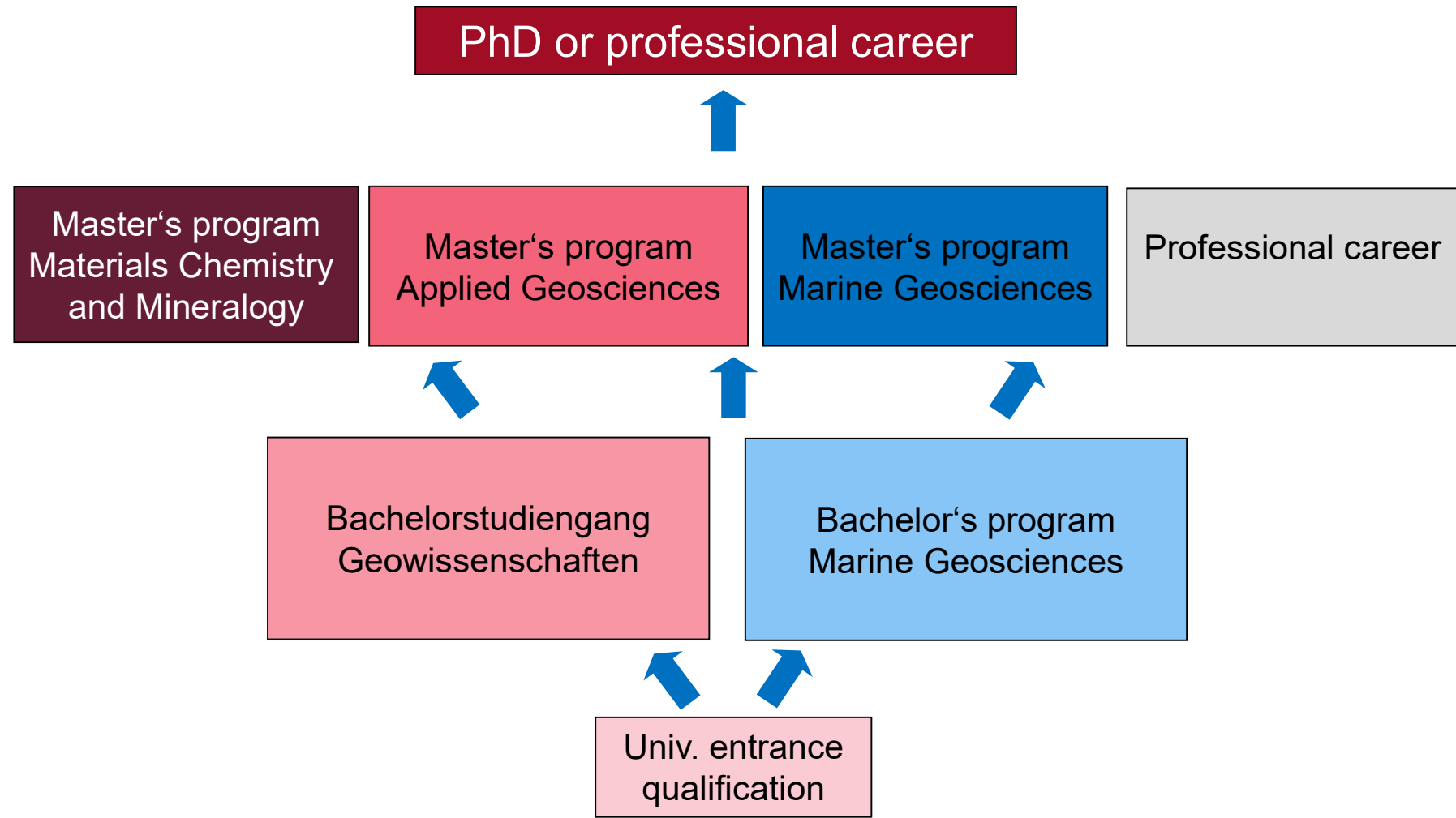
BSc Marine Geosciences

Requirements

- university entrance qualification
- enthusiasm for the earth at our feet!
- interest in Science
- solid fundamentals in physics, maths and chemistry
- good spatial imagination
- weather resistance and ability to work hard in the field
- ability to work individual and in a team (no contradiction!)
- very good knowledge of English (B2 (CEFR))
- German language knowledge A1 (CEFR)



Geosciences Education at University of Bremen





What makes us attractive to prospective students

- cutting-edge research in marine science/climate change
- interdisciplinarity
- internationality (English-taught programs)
- practical relevance (field exercises)
- excellence in research opens up a wide range of opportunities for students (participation in exciting expeditions, etc.)
- numerous cooperation professorships with AWI, thus also polar research and glaciology in the study program
- geoscientific collection with diverse outreach activities



“Geosciences play an essential role in solving societal challenges”

Climate neutral energy production

- building site exploration for wind farms
- "new" raw materials (high-tech elements)
- efficient use of hydrocarbons
- use of geological formations as storage (CO₂, H₂, NH₃)

Recognize and help to avoid natural risks

- volcanism
- earthquakes
- landslides/mudslides

Recognize and minimize consequences of human interventions in geosphere

Climate and ocean dynamics

- understanding climate change
- generating knowledge to act
- coastal protection

Natural science basics for sustainable use of resources

Materials science

- corrosion protection
- recycling of raw materials



What is actually the USP of the geosciences in Bremen?

- MARUM - Centre for Marine Environmental Research
Research Field "Ocean and Climate"
with the excellence cluster „Oceanfloor“
- International Core Repository with ocean sediments
(one of three institutions in the world)
- GLOMAR graduation qualification "Ocean & Climate„
physical oceanography, paleoceanography, climate- and ocean modelling
- international graduate college ArcTrain
processes and effects of climate change in the North Atlantic and the Canadian arctic
- international graduate college SLATE
Submarine landslides and their effects on the coastal areas in Europe



Home>> Global Ranking of Academic Subjects 2020>> [Oceanography](#)

ShanghaiRanking's Global Ranking of Academic Subjects 2020 - Oceanography







2020

World Rank	Institution*
1	University of Washington
2	University of California, San Diego
3	Sorbonne University
4	University of Southampton
5	Oregon State University
6	Utrecht University
7	University of Bergen
8	University of Bremen

Place 15 in 2019

Home>> Global Ranking of Academic Subjects 2020>> [Earth Sciences](#)

ShanghaiRanking's Global Ranking of Academic Subjects 2020 - Earth Sciences

World Rank	Institution*	Country/Region	National/Regional Rank	Total Score
26	The Australian National University		1	225.2
27	Imperial College London		5	223.0
27	The University of Tokyo		1	223.0
29	University of Bremen		1	220.9
39	University of Bremen		1	236.9
41	University of Bremen		1	69.3

Place 39 in 2019
Place 41 in 2018

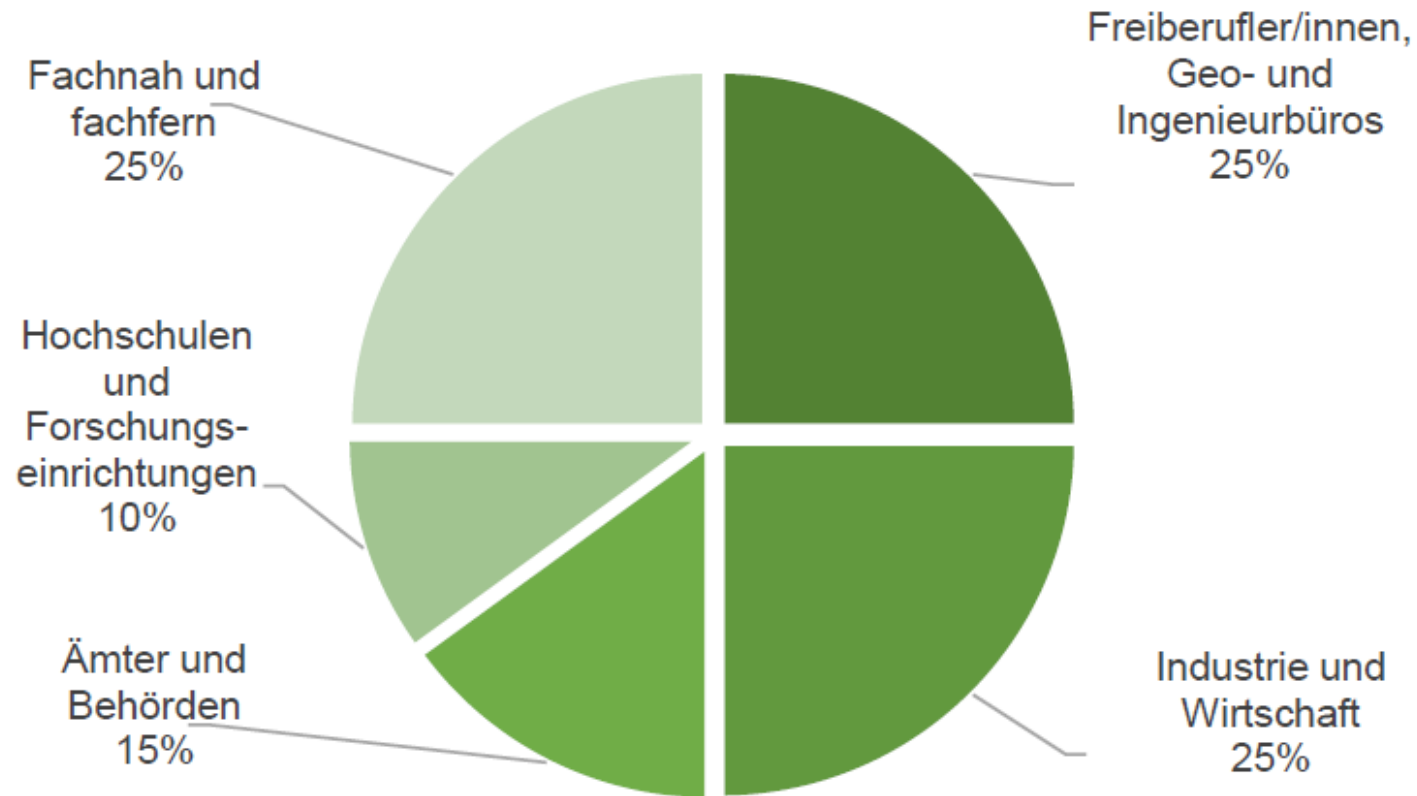


Professional fields of Marine Geosciences

- analysis and remediation of contaminated sites
- data analyzing and modelling services
- energy, water and soil management
- investigations for environmental and climate protection
- marine geotechnics
- marine research
- marine resources industry
- natural hazards forecast and protection
- various tasks in administration, media and PR



Hauptbeschäftigungsbereiche von Geowissenschaftler/innen



Quelle: BDG 2020

Geosciences Department



Founded: 1986

Staff: 18 professorships

150 research assistants

45 non-research staff

Study offer

2 B.Sc. and 3 M.Sc. study programs

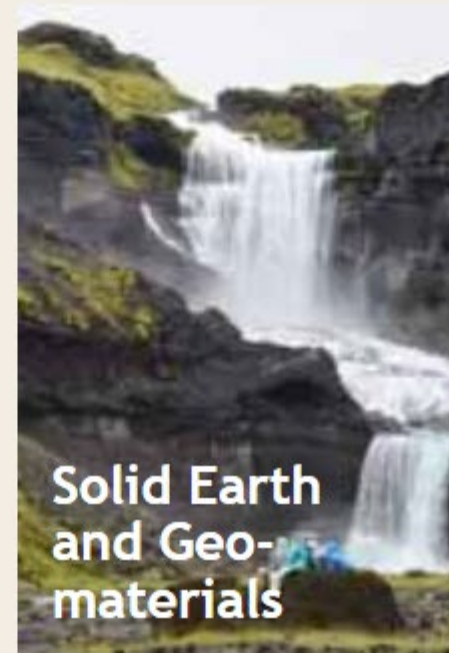
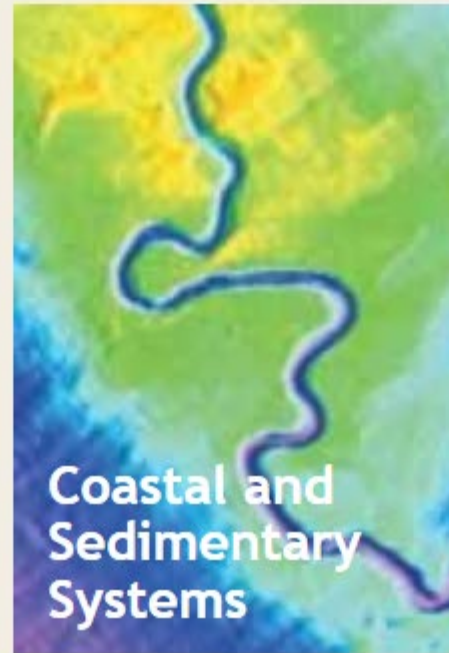
PhD-Training (about 80 students)

graduate qualification training “GLOMAR”

international graduate colleges



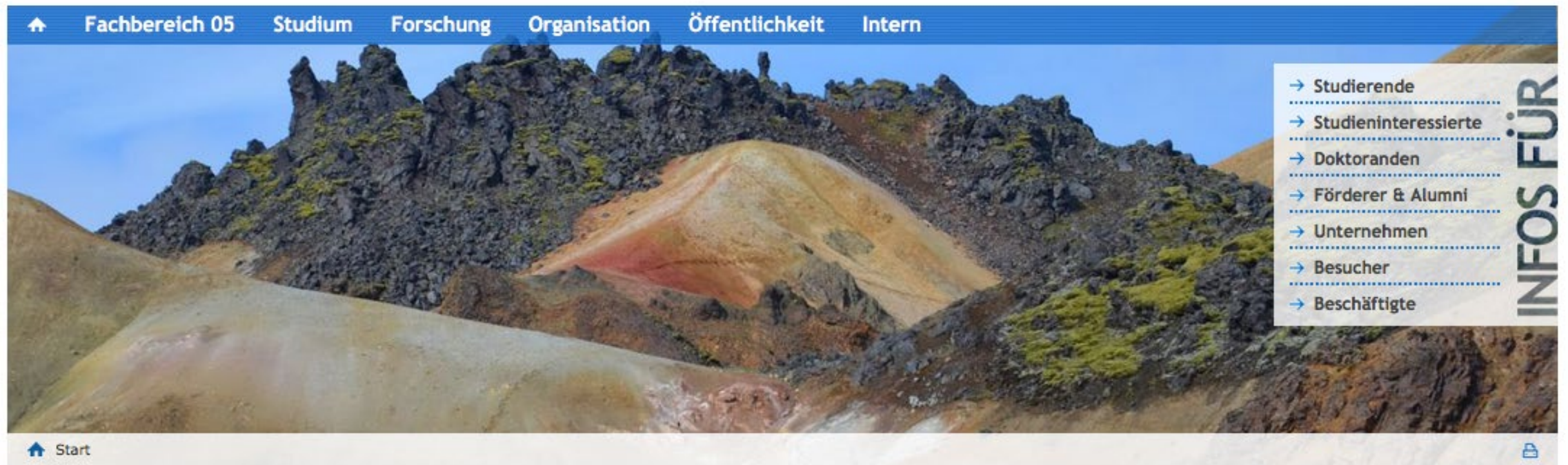
RESEARCH FOCI AND STRUCTURES



- the focus lies on basic research across the breadth of the discipline
- many joint projects, third-part funding, approx. 25 M€/year (with Marum)
- connection to applied research, technology development, georesources, geoanalytics, geotechnics, materials research

www.geo.uni-bremen.de

Fachbereich 05 Geowissenschaften



The screenshot shows the website's header and navigation menu. The header features a blue navigation bar with the following items: a home icon, 'Fachbereich 05', 'Studium', 'Forschung', 'Organisation', 'Öffentlichkeit', and 'Intern'. Below the navigation bar is a large banner image of a colorful volcanic landscape. On the right side of the banner, there is a vertical menu titled 'INFOS FÜR' with the following items: '→ Studierende', '→ Studieninteressierte', '→ Doktoranden', '→ Förderer & Alumni', '→ Unternehmen', '→ Besucher', and '→ Beschäftigte'. At the bottom left of the banner, there is a 'Start' button with a home icon. At the bottom right, there is a lock icon.

MELDUNGEN

[Partnerinstitutionen](#)

[→ Termine](#)

Septemberakademie Vom Kies zum Kontinent



bilingual

get a taste

3-4 days check out, how to
study a geoscientific program

registration via our website
possible from August on

More information wanted?




Have a look at:

Open Campus

Interactive map:

Geo-building and Pagoda
Geosciences (Pagoda no.
13)



Individual Advisory:

by appointment

via studfb5@uni-bremen.de

(Dr. Ulrike Wolf-Brozio, Dr. Barbara Ventura)