

## Master of Science in Geography

Options:

- Dynamics in Glaciology and Geomorphology
- Nature, Society and Politics

# Welcome!!!

Credit points: **120 ECTS**

Duration: **4 semesters**

Language: **English**

Options:

- **Dynamics in glaciology and geomorphology**
- **Nature, Society and Politics**
  
- Specialized MSc. for non-geography students

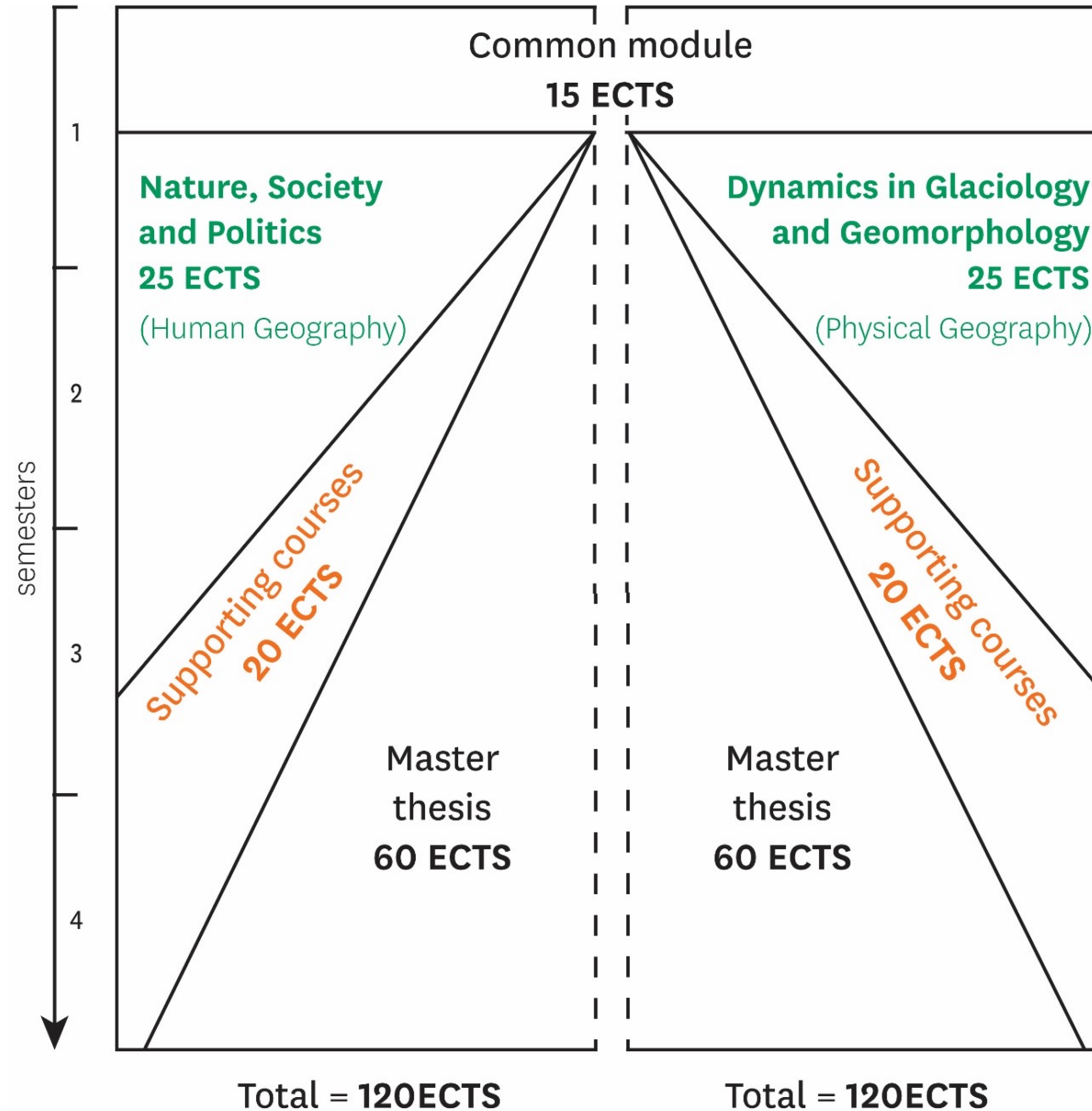
Validation deadline for the BSc. Thesis (TR): **15 October**

More : <https://www3.unifr.ch/geo/en/studies/geography/master.html>

Study advisor: Luc Braillard ( [geo-scimed@unifr.ch](mailto:geo-scimed@unifr.ch) )



# Master of Science in Geography



# Master of Science in Geography

Master study plan 120ECTS						http://www.unifr.ch/geoscience/geographie/en			
ECTS	1. Autumn semester		2. Spring semester		3. Autumn semester		4. Spring semester		ECTS
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2	SGG.00409 Models, modelling and representation 3 ECTS		SGG.00410 Master thesis preliminary seminar 2 ECTS		SGG.00450 Seminar in climatology and glaciology II 2 ECTS		SGG.00481 Field course II 3 ECTS		2
3									3
4			4						
5	SGG.00426 Climate change: state of the art and debates 3 ECTS		SGG.00441 Applied geophysical methods 3 ECTS		SGG.00471 New approaches in human geography 3 ECTS		SGG.00503 Master thesis		5
6			6						
7			7						
8	SGG.00424 Hazards, risks and vulnerability 3 ECTS		SGG.00443 Project in cryosphere and geomorphology 3 ECTS		SGG.00473 Seminar in global change, development and ethics 3 ECTS		SGG.00503 Master thesis		8
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14	SGG.00444 Alpine Cryosphere 3 ECTS		SGG.00486 Advanced social research methods 3 ECTS		SGG.00448 Modelling of glacier and permafrost 3 ECTS		SGG.00485 Environmental history 3 ECTS		14
15	SGG.00449 Seminar in climatology and glaciology I 2 ECTS		SGG.00484 Seminar in social theories 3 ECTS		SGG.00453 Field course I 3 ECTS		SGG.00480 Field course I 3 ECTS		15
16									16
17									17
18	SGG.00451 Seminar in geomorphology I 2 ECTS		SGG.00487 Issues in environmental ethics 3 ECTS		Supporting courses		SGG.00503 Master thesis		18
19									19
20									20
21	R022.0211 B2-C2 English for master students of science I 3 ECTS		Supporting courses		SGG.00503 Master thesis		SGG.00503 Master thesis		21
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23									23
24	Supporting courses		SGG.00503 Master thesis		SGG.00503 Master thesis		SGG.00503 Master thesis		24
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27	SGG.00503 Master thesis		SGG.00503 Master thesis		SGG.00503 Master thesis		SGG.00503 Master thesis		27
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Common module (15 ECTS)

Physical geography option (25 ECTS)<sup>a</sup>

<sup>a</sup>15 ECTS mandatory courses and 18 ECTS elective courses

Human geography option (23 ECTS)<sup>b</sup>

<sup>b</sup>15 ECTS mandatory courses and 13 ECTS elective courses

Supporting courses module (20 ECTS)<sup>c</sup>

<sup>c</sup> Free choice within the science faculty, the university of Fribourg and other universities.

Master thesis module (60 ECTS)

Contact:  
[geo-scimed@unifr.ch](mailto:geo-scimed@unifr.ch)

SGG.00502 : 25 Geocolloquium sessions can be attended over 4 semesters

# Geocolloquium 2022

Tuesday 4.15 – 6 p.m., Lecturing Hall 026

20/09/2022	no talk	
27/09/2022		
04/10/2022	Prof. Vincent Lam (Unibe): The values of geoengineering strategies: the case for a political philosophy of climate science	Wallimann-Helmer
11/10/2022	Prof. Yulia Soroka (Unifr):	Bichsel
18/10/2022		
25/10/2022		
08/11/2022	Peter Lehmann (Institute of Terrestrial Ecosystems, ETH Zürich) :Characterization of subsurface connectivity at various scales	Hauck
22/11/2022	Prof. David Killick (Univ. Arizona):	Serneels
29/11/2022	Prof Christoph von Hagke (Univ. Salzburg): Why is it difficult to constrain exhumation of the Molasse Basin?	Mosar
06/12/2022	Dr. Joel Fiddes (WSL-SLF)	Hoelzle
13/12/2022	Roger Benson (Oxford University): Sensory adaptations of Dinosaurs	Joyce
20/12/2022	Olivier Ejderyan (ETHZ) : Promissory discourses in geothermal energy development: Performing spaces, publics and futures.	Graefe

# Master seminar (final) SGG.00503

Mondays 3.15. p.m., room 226

20 minutes presentations followed by a Q&A session of 10 minutes

**Dates : 24.10.22 and 19.12.22**

# Master seminar (preliminary) SGG.00410

Organized on demand in each research group

# Excursions and field courses

GG.0453/454 or GG.0480/481

Dates and destination still tbd !



Bike tour 2018

## Supporting courses

### Dynamics in glaciology and geomorphology

- Other groups/departments at UNIFR:  
Geology, Physics, Mathematics, Informatics
- Other Swiss universities:  
**UZH** : Glaciology, Remote sensing and GIS  
**UNIL**: Remote sensing and quantitative methods in geomorphology, Geoheritage  
**UNIBE**: Climatology, hydrology  
**UNINE**: Hydrogeology
- Further:  
**UNIS** (Svalbard) and **University of Oslo** : Glaciology, Permafrost, Geophysics and Remote Sensing

### Nature, Society and Politics

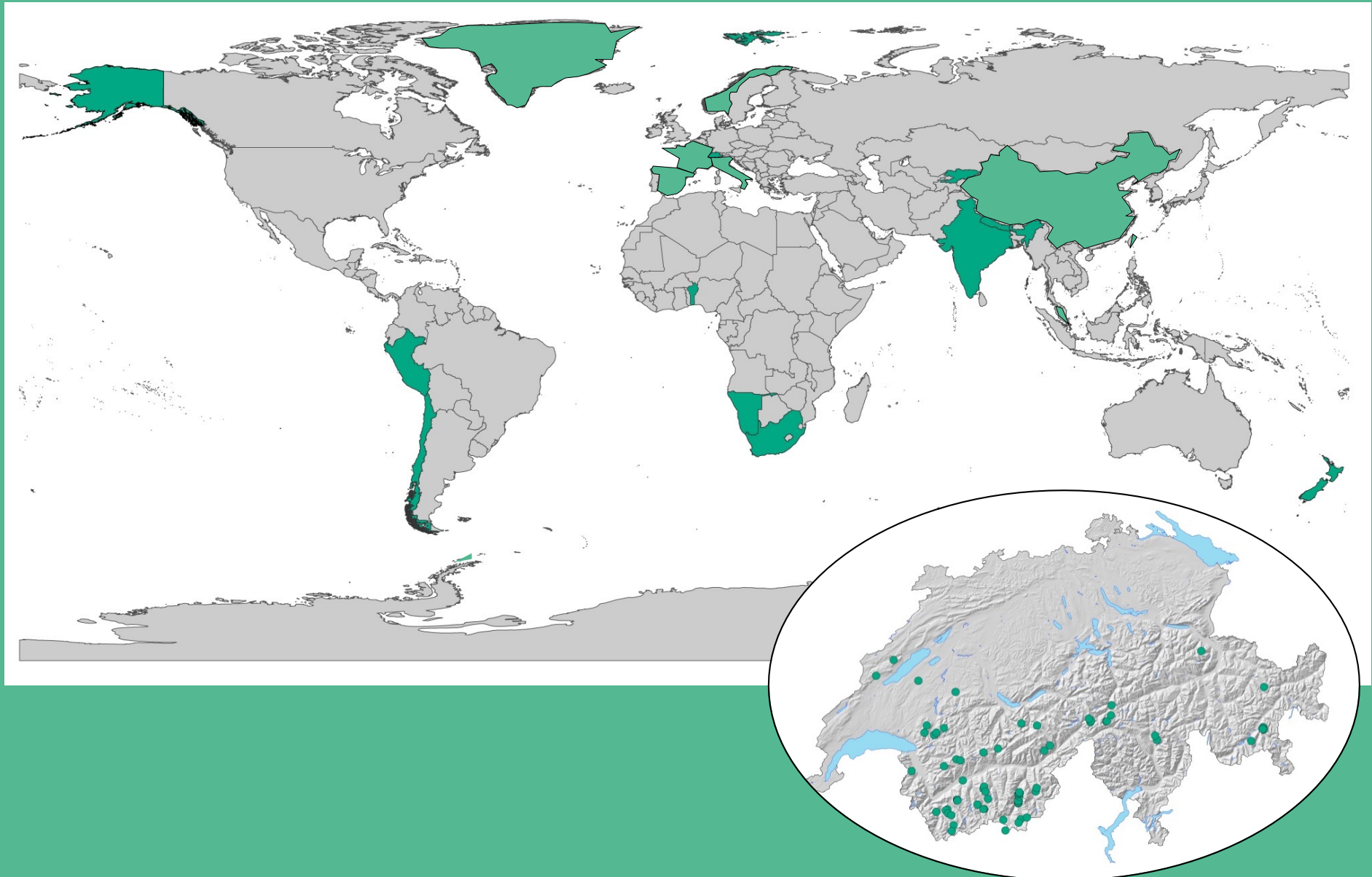
- Other departments at UNIFR:  
Social sciences, Anthropology, Economy etc.
- Other Swiss universities:  
**UNIGE**: Political and cultural geography  
**UZH** : Geographies of Global Change: Resources, Markets and Development  
**UNIL**: Urban and regional planning  
**UNIBE**: Economic, Social and Environmental History  
**UNINE**: Migrations and current challenges
- Further: **ERASMUS**

For teaching oriented students (DEEM): you **cannot** validate a course **twice**, once in your supporting courses module and in your BC+30 (BC30 or BC60) module!!!

Please collect the registration form for the supporting courses at the secretariat.



# Where do we work ?

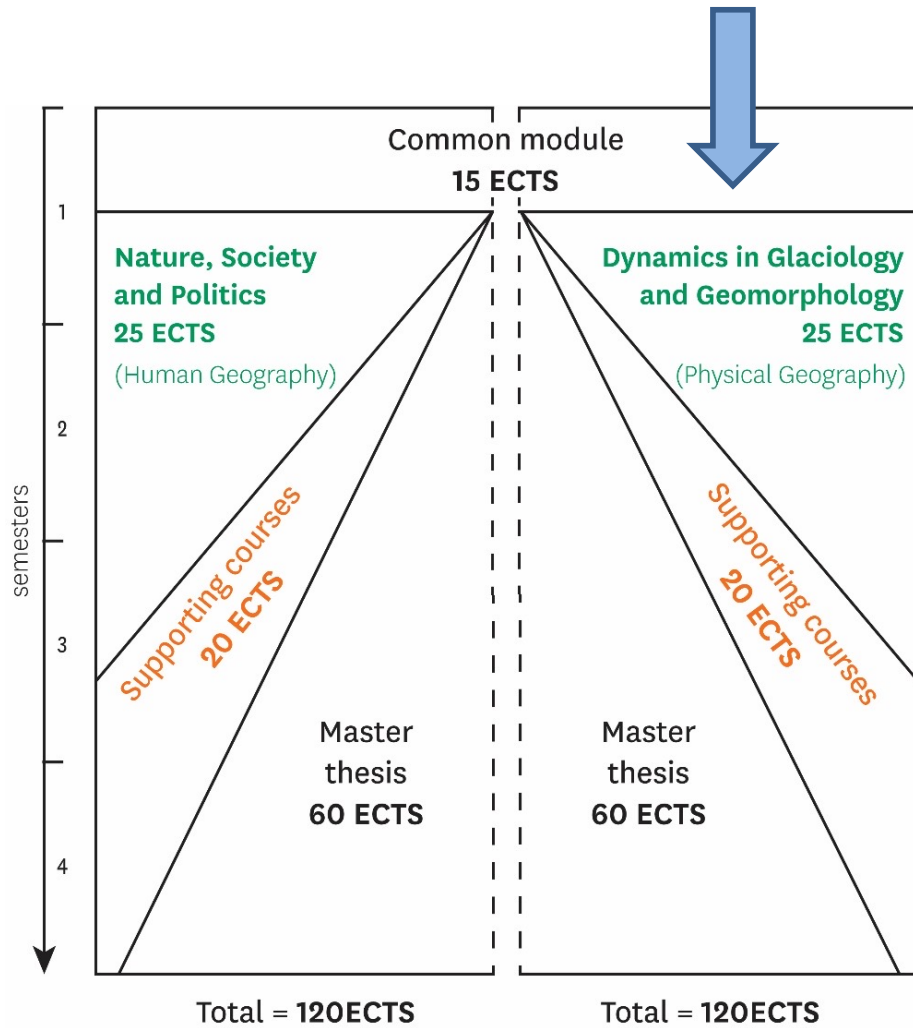


# Master of Science in Geography

Option:

## Dynamics in Glaciology and Geomorphology

# Option: Dynamics in Glaciology and Geomorphology



Master study plan 120ECTS <http://www.unifr.ch/geoscience/geographie/en>

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9	SGG.00451 Seminar in geomorphology I 2ECTS	SGG.00485 Environmental history 3ECTS	Supporting courses	9	
10	SGG.00487 Issues in environmental ethics 3ECTS	SGG.00453 Field course I 3ECTS	Supporting courses	10	
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# What are the aims of this Master programme ?

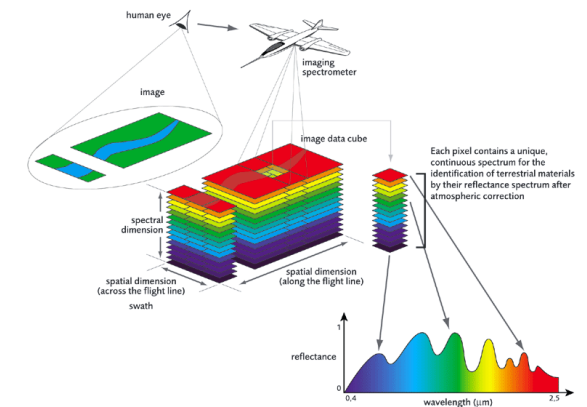
Comprehensive knowledge of processes in **Glaciology (Cryosphere)**  
Comprehensive knowledge of processes in **Geomorphology**  
Comprehensive knowledge of the **Climate System and its changes**

## Methods & techniques

gather extensive experience in the following state of the art techniques:

- **Programming and analysis of geo- and remote sensing data**
- **Field techniques** in Glaciology and Geomorphology (mass balance, geodetic surveying (D-GPS), Terrestrial Laser Scanning, Ground-Penetrating-Radar (GPR), geoelectric and electromagnetic methods, seismic surveying, energy balance measurements, etc.)
- **Numerical modelling** (glacier mass balance, empirical-statistical models, energy balance models, geophysical models, soil models, permafrost models, natural hazards)
- **Geographical Information Systems (GIS)**
- **Remote sensing**

Teaching staff: M. Hoelzle, R. Delaloye, C. Hauck, H. Machguth, L. Braillard, E. Pohl, C. Hilbich, A. Tedstone, M. Huss, C. Barboux, C. Mollaret, C. Pellet, M. Guidicelli, M. Kronenberg, S. Morard, T. Maierhofer, J. Wee, S. Balasubramanian, T. Mathys, D. Amschwand, N. Clerx, N. Jullien, E. Mattea



# What will you do within the Master programme ?

## Lectures:

- **Alpine Cryosphere** (incl. 2 day excursion to the Swiss Alps)
- **Mountain geomorphology** (incl. mountain excursions)
- **Hazards, risk & vulnerability** (incl. external lecturers from federal/cantonal offices, risk/hazard modellers etc)

## Hands-on practical work:

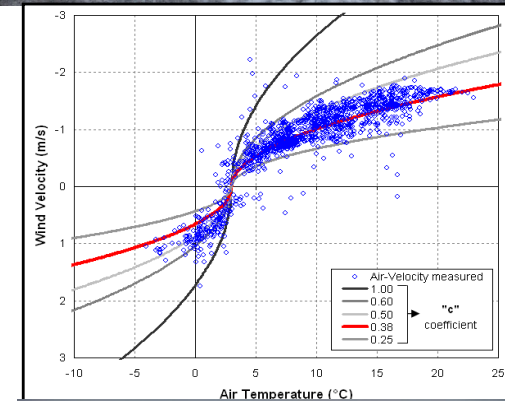
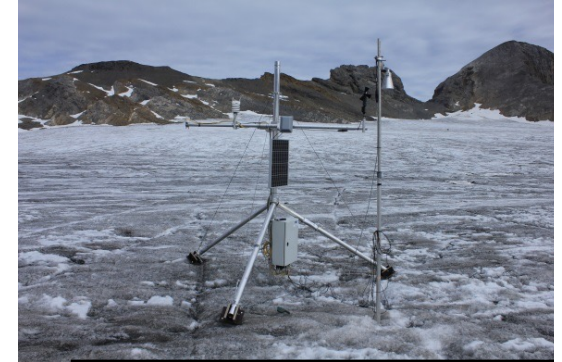
- **Data and methods for environmental analysis** (computer lab)
- **Applied Geophysical Methods** (1-week field course)
- **Modelling of Glaciers & Permafrost** (computer lab)
- **Field Course/Excursion** (destination changes every year)

## Seminars:

- **Climate Change: state of the art and debates**
- **Seminar in Climatology and Glaciology I & II** (literature reading and analysis, yearly changing topics)
- **Seminar in Geomorphology I & II** (incl. practical work & excursions, yearly changing topics)

## Projects:

- **Project in cryosphere & geomorphology**
- **MASTER THESIS**



## Examples of topics for Master thesis

**The connection between atmospheric circulation and melt extent on the Greenland ice sheet (remote sensing, ice sheets) – Horst Machguth**

**Glacier runoff dynamics in Central Asia and its connection to meteorological drivers (climate, hydrology, time series analysis) - Eric Pohl**

**Glacio-hydrological modeling of selected glaciers in Central Asia using the SPHY model (hydrology, numerical modeling, python) - Eric Pohl**

**The hydro-climatology in Central Asia from space and reanalysis: Comparing current remote sensing, and reanalysis data regarding precipitation and temperature (remote sensing, reanalysis, number crunching, statistics) - Eric Pohl**

**World-wide analysis of geoelectrical data on permafrost over time to detect thawing hotspots (permafrost, geophysics) – Christin Hilbich, Coline Mollaret**

**Water storage in a rock glacier complex above Cervinia/Italian Alps (natural hazards, climate change, soil moisture) – Christian Hauck**

**Where does the water go – is thawing permafrost becoming wetter or drier? (permafrost, hydrology, geophysical methods) – Christian Hauck**

**Rock glaciers and ice content in Pamir (Cryosphere Central Asia, permafrost) – Tamara Mathys/Martin Hoelzle**

**Englacial temperature measurements on Central Asian glacier – Martin Hoelzle**

**Topics within geomorphology – quaternary research group – Reynald Delaloye/Luc Brailard**



**Master of Science in  
Geography**

Option:

**Nature, Society and  
Politics**

# Option: Nature, society and politics

Investigates the (spatial) relations of Nature, Society and Politics

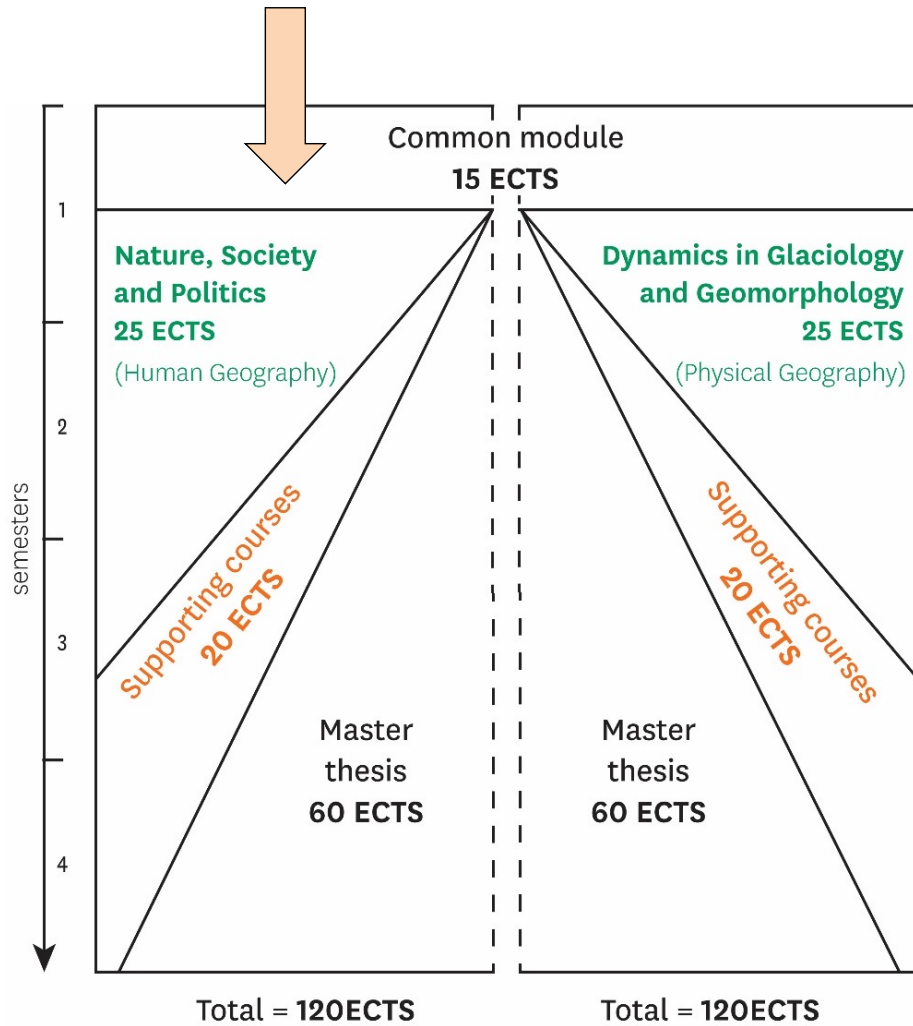
- Seminar in Social Theory
- Environmental History
- Political Ecology
- Global change, development and ethics
- Issues in Environmental ethics
- Field course

Teaching staff and researchers C. Bichsel, O. Graefe, J. Bluwstein, M. Fautras, K. Zäch, J. Zumoberhaus





# Option: Nature, Society and Politics



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# Political Ecology, Environmental history, Geography of Capitalism

## ▪ Example of possible MSc. research projects:

- Wilderness and wildlife conservation in Namibia
- Nature Parks: conservation or economic tool for regional development?
- Overview of rewilding initiatives in sub-Saharan Africa: history, discourse, actors, animals, geography
- NGO-driven militarized conservation in Eastern Africa: NGO- and military actors and networks
- Comparing environmental justice movements and discourses in Latin America and sub-Saharan Africa
- History of “empty spaces” in colonial, development and modernization discourses
- Natural resources – a political history of the term in environmental and geographical discourses
- Oral history for environmental history – methodological explorations on a case study in Switzerland
- Environmental justice and NGO activism in China.
- The political ecology of waste: actors, structures, and discourses.
- More topics under <https://moodle.unifr.ch/course/view.php?id=52652>

**General rules** for Master thesis [https://www.unifr.ch/scimed/fr/studies/master-\(msc\)/master-thesis.html](https://www.unifr.ch/scimed/fr/studies/master-(msc)/master-thesis.html),

# Questions?

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