Evolution of Ecosystems

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Department of Earth Sciences – Geology Institute
Biogeosciences

High Altitude Research is “IN” again

Dear MRI Community,

High mountains were on the agenda at the World Meteorological Organization in Geneva earlier this month, when I attended a meeting to develop a White Paper for the WMO's High Mountains Strategy in collaboration with mountain research experts. The White Paper is a key input to be presented at the WMO Congress in June, and later as part of the WMO High Mountains Summit in October 2019, at which the MRI will be present as the event's Co-Chair.

In March, the discussion of high mountains will continue during the IPCC Fourth Lead Author Meeting for SROCC. Over the course of this six-day meeting, I will be working with my fellow authors to improve the High Mountains chapter of this report by taking into account the valuable comments submitted by the mountain research community during the review phase.

Later in the month, I'll be attending a workshop in Munich that aims to capitalize on the results of the ESPON project Alps 2050, which developed spatial perspectives and scenarios for the Alpine region towards the year 2050. Then it's off to Rome for the next Mountain Partnership Steering Committee meeting, before heading back to Geneva for the WMO's Ninth Session of the Executive Council Panel of Experts on Polar and High Mountain Observations, Research, and Services – during which we'll be framing the Polar and High Mountain Agenda for the next WMO Financial Period (2020-2023).

All in all, a busy March ahead!

Enjoy your read,

Carolina

Dr. Carolina Adler
MRI Executive Director

Mail February 28, 2019

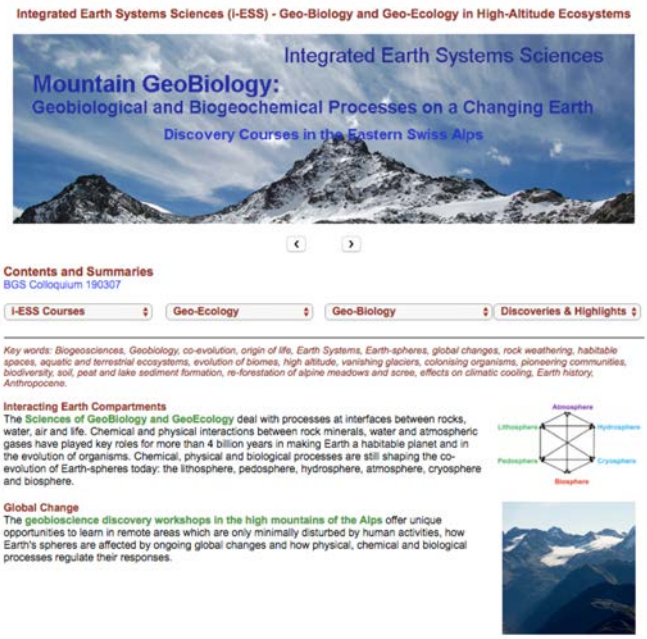
Short History of high-Altitude Research in Switzerland
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#history

http://www.mountainresearchinitiative.org/en/

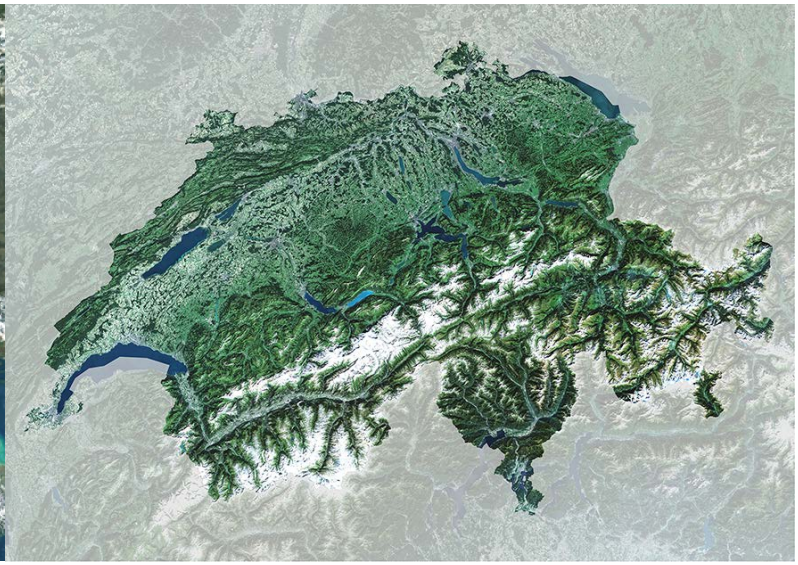
Swiss Polar Institute (SPI), established at EPFL in 2018

Centre interdisciplinaire de recherche sur la montagne.
Université de Lausanne, established 2018

The GeoBio Website

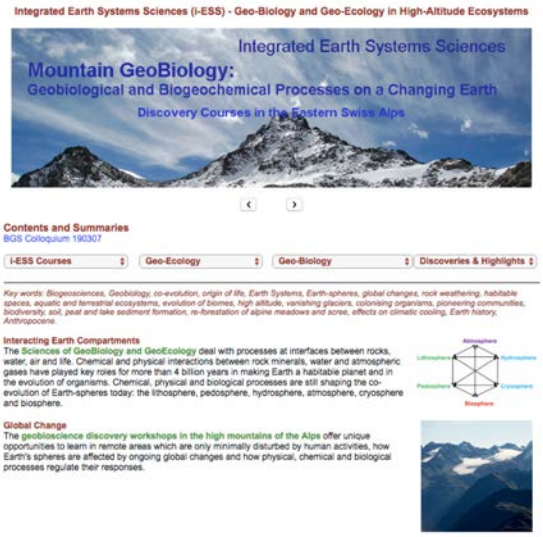


Where we are

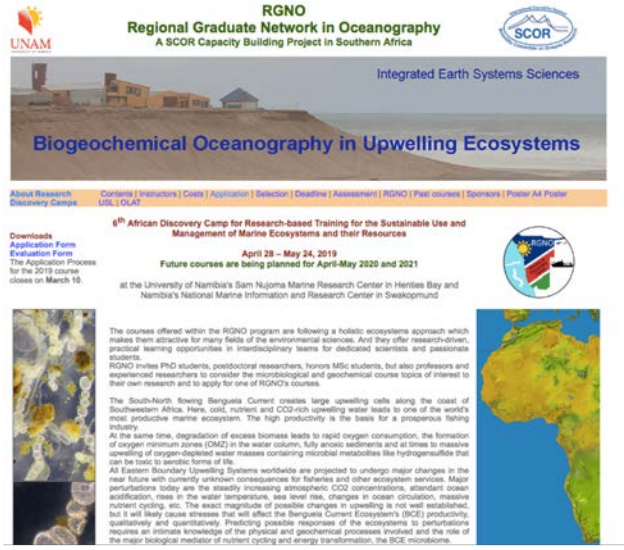


A Course Concept: End Members of the Carbon Cycle

Initial Carbon Sequestration

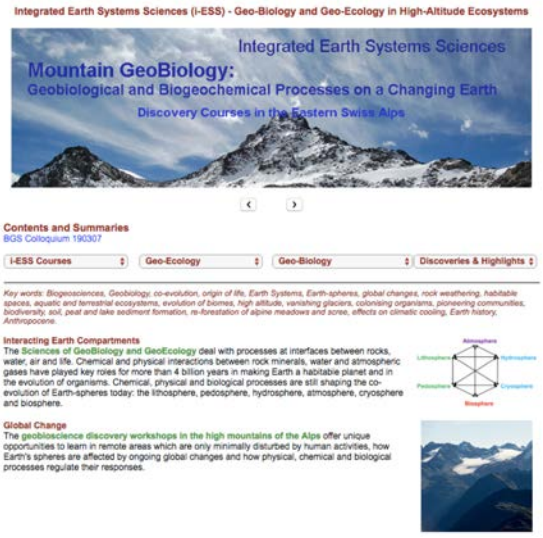


Final Carbon Deposition



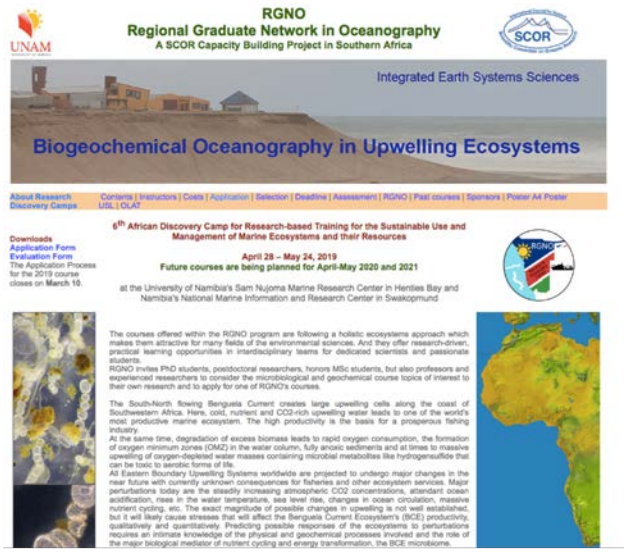
A Course Concept: End Members of the Carbon Cycle

Initial Carbon Sequestration



A Course Concept: End Members of the Carbon Cycle

Final Carbon Deposition



Evolution of Ecosystems (Orientation)

Download from
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html

GeoBio-Science Arena Silvretta
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#arena

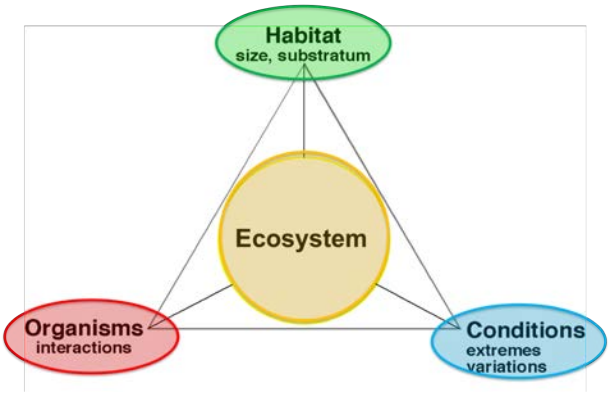
The Great Diversity of Study Sites
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#study_topics

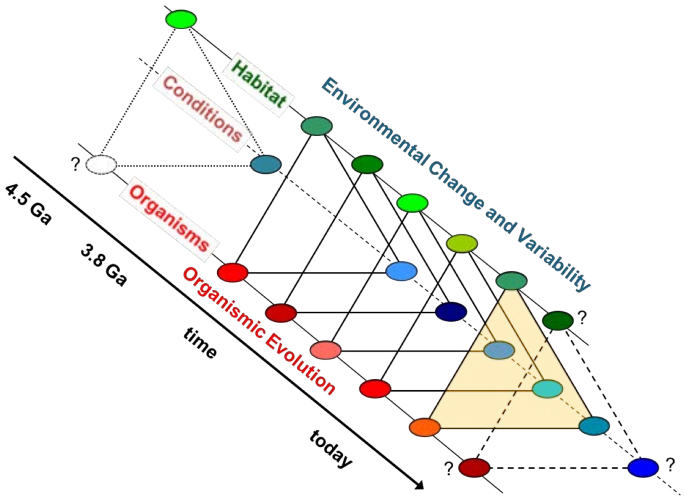
From Ecology to Geology-based Economy
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#humangeo

New Landscapes and Natural Disasters
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#disaster1
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#disaster2

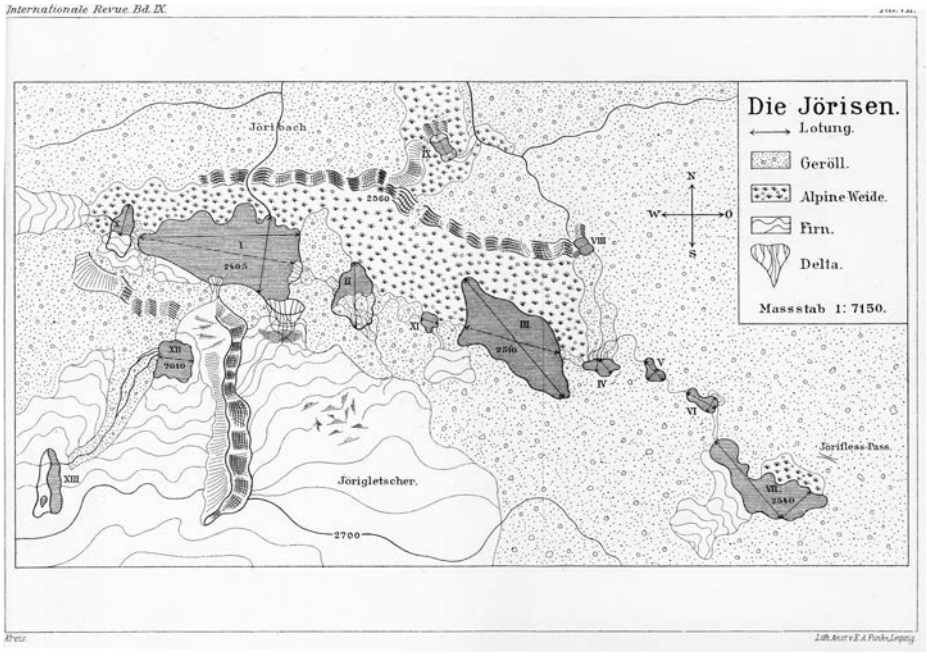
Opportunities for Study Preferences
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#study_opportunities

Evolution of Ecosystems: What GeoBioScience Questions to ask

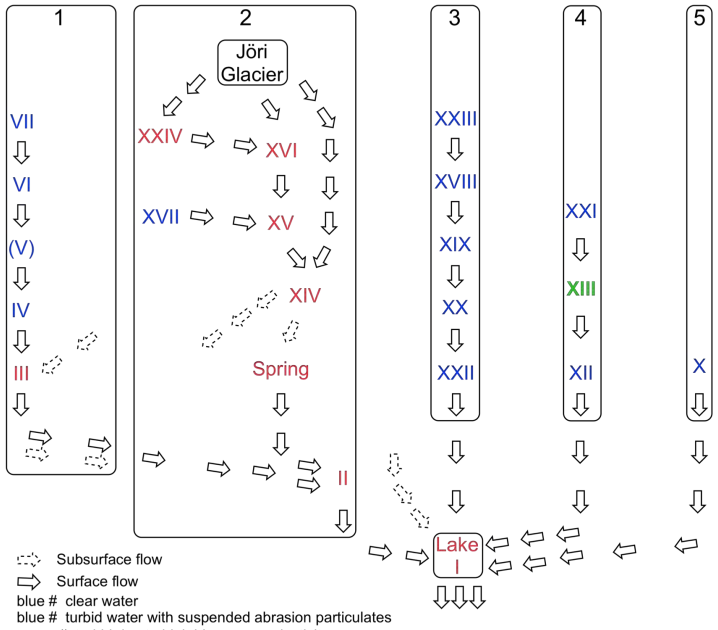


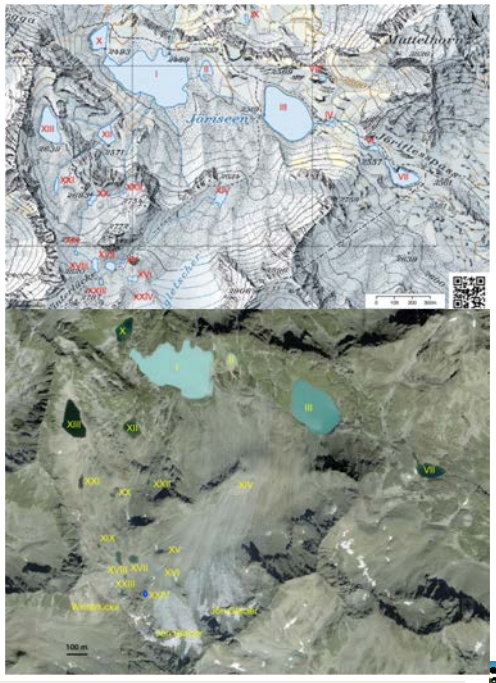


What began 100 years ago with the Dissertation of Hans Kreis is “Third Polar” Research today



The 5 Sub-Catchments in the Jöri Area





High-Altitude Research, Selection: Glacial Forefields, Community Evolution, Geochemical Cycles

Environmental Science & Technology

Oxygen Isotopes Unravel the Role of Microorganisms in Phosphate Cycling in Soils

Federica Tamburini,*,† Verena Pfahler,† Else K. Bünemann,† Kathi Guelland,‡ Stefano M. Bernasconi,§ and Emmanuel Frossard†

Speciation of Phosphate in Iron Rich Mineral Deposit in a High Mountain Lake Environment, a Study at the Micron Scale at the LUCIA Beamline

D. Vantelon[1], A. Hofmann[2], K. Hanselmann[3], A.M. Flank[1]

Microb Ecol
DOI 10.1007/s00248-011-9991-8

ENVIRONMENTAL MICROBIOLOGY

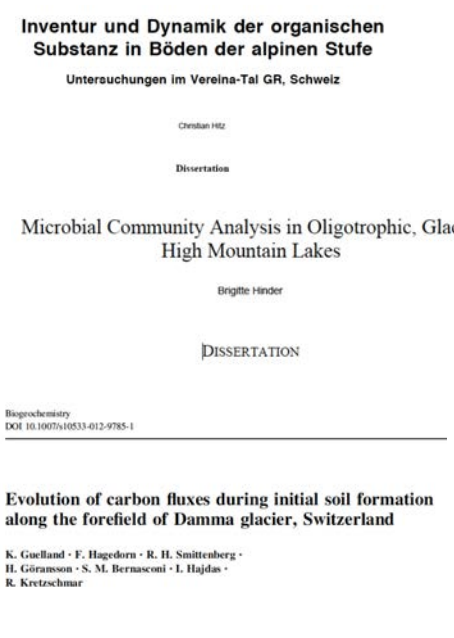
Bacterial, Archaeal and Fungal Succession in the Forefield of a Receding Glacier

Anita Zumsteg · Jörg Luster · Hans Göransson · Rienk H. Smittenberg · Ivano Brunner · Stefano M. Bernasconi · Josef Zeyer · Beat Frey

BIOTROPIA VOL. 13 NO. 2,2006 : 85 - 98

BACTERIAL COMMUNITY SHIFTS OF A HIGH MOUNTAIN LAKE IN RESPONSE TO VARIABLE SIMULATED CONDITIONS: AVAILABILITY OF NUTRIENTS, LIGHT AND OXYGEN

MUNTI YUHANA[1], THOMAS HORATH[2] AND KURT HANSELMANN[2]



Inventur und Dynamik der organischen Substanz in Böden der alpinen Stufe

Untersuchungen im Vereina-Tal GR, Schweiz

Christian Hitz

Dissertation

Microbial Community Analysis in Oligotrophic, Glaci High Mountain Lakes

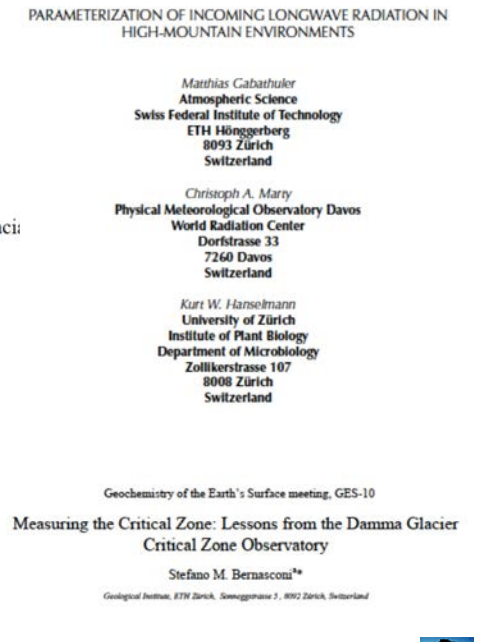
Brigitte Hinder

DISSERTATION

Biogeochemistry
DOI 10.1007/s10533-012-9785-1

Evolution of carbon fluxes during initial soil formation along the forefield of Damma glacier, Switzerland

K. Guelland · F. Hagedorn · R. H. Smittenberg · H. Göransson · S. M. Bernasconi · I. Hajdas · R. Kretzschmar



PARAMETERIZATION OF INCOMING LONGWAVE RADIATION IN HIGH-MOUNTAIN ENVIRONMENTS

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Physical Meteorological Observatory Davos
World Radiation Center
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Kurt W. Hanselmann
University of Zürich
Institute of Plant Biology
Department of Microbiology
Zollikerstrasse 107
8008 Zürich
Switzerland

Geochemistry of the Earth's Surface meeting, GES-10

Measuring the Critical Zone: Lessons from the Damma Glacier Critical Zone Observatory

Stefano M. Bernasconi*

Geological Institute, ETH Zürich, Sonneggstrasse 5 , 8092 Zürich, Switzerland

Evolution of Ecosystems (Topics)

1. **Monitoring Technologies**
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#technology
2. **High Mountains as Geobiological Hotspots of Global Change**
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#hotspot
3. **Evolution of Habitats to Ecosystems**
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#habitat_evolution
4. **Driving Force for Habitability - Geochemical Weathering**
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#weathering
5. **Links between Geo-, Bio- and Atmosphere**
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#geobioatmo
6. **Atmospheric CO2-Sequestration Promotes Ecosystem Fertility**
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#CO2-weathering
7. **Organic Carbon Sequestration in High Altitude Soils and Sediments**
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#C-sequestration
8. **Fertilization and Nutrient Flow in Remote Areas**
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#fertilization
9. **Selection of Organismic Diversity by Habitat Conditions**
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#biofilms
10. **Recycling of Nutrients by Short "Biogeochemical Pumps"**
http://www.microeco.ethz.ch/geobio/GeoBiology_field_courses_Kurt_Hanselmann_ETHZ.html#biopump

Why we are there