



# Earth Systems Sciences - Mountain Geo-Biology

## The Role of the Alps in the global Carbon Cycle in High-Altitude Environments of the Biogeoscience Arena Jöri-Silvretta

For University Students and Interested Guests world-wide

*Courses are taught in English or German*

**September 4 to 9 (Saturday to Thursday), 2021**

Kurt Hanselmann<sup>3</sup>, Tim Eglinton<sup>1</sup>, Adrian Gilli<sup>1</sup>, Jakob Zopfi<sup>2</sup>

<sup>1</sup> ETHZ, Dept. for Earth Sciences, Geology / Biogeosciences, <sup>2</sup> University of Basel, Dept. of Environmental Sciences, Aquatic and Stable Isotope Biogeochemistry, <sup>3</sup> swiss i-research & training.

<b>Locations</b>	<b>Biogeoscience Arena Silvretta.</b> Lower Engadin Window: Scuol-Tarasp - Fuschna - Nairs – Clozza – (Sinestra) - Rablönch. Davos – Klosters – Alvaneu: Weissfluhjoch – Totalp – Gotschna - Silvretta. Wägerhus – Jöri glacial Lake Catchment.
<b>Topics</b>	<b>Geo-Ecology:</b> New landscapes in barren glacial retreat areas, development of mountain lakes and soils. Interactions between geology and hydrochemistry, soil and vegetation development. Carbon sequestration and nutrient cycling, <b>Geology:</b> Lower Engadin Window: shale, outgassing of ancient CO <sub>2</sub> , formation of travertine / tufa deposits, Ela nappe: dolomite, gypsum, Totalp intrusion: past serpentinization. Gotschna: radiolarite deposits. <b>Biogeochemistry:</b> Erosion, carbonic and air pollution acids weathering, basin deposition. Buildup and fate of organics in clay sediment and soils; flood plains and river deltas as local carbon sinks. <b>Geobiology:</b> Microbial biofilms as primary C-scavengers, Low temperature geobiochemistry in sulfur and iron dominated mineral springs. Nutrient cycling by microbial ice and snow communities. <b>Applied and economic aspects</b> of Geo-Ecology: Alpine water resources, natural disasters, geomedicine, modern mineral water wellness, geomicrobiological and geobotanical toxins. Global change impacts. For more details see <a href="https://lms.uzh.ch/url/RepositoryEntry/16318464010?quest=true&amp;lang=en">https://lms.uzh.ch/url/RepositoryEntry/16318464010?quest=true&amp;lang=en</a>
<b>Deliverables</b>	<b>Preparation</b> , Saturday evening, September 4. <b>Presentation of results:</b> Thursday morning, September 9, in Davos. Course ends late afternoon on September 9.
<b>Accommodation</b>	Youthpalace, Davos Dorf, 5 nights.
<b>Meeting Points</b>	<b>Saturday</b> , September 4: 18:00 for Dinner. Preparation: Topics, projects, sampling equipment. Course ends on Thursday afternoon: Return from Davos Dorf, after summary presentations (latest departure 17 hrs)
<b>Costs</b>	CHF 490 (reduced for ETH D-ERDW students). Includes 5 nights, breakfast, dinner, all local bus / mountain train trips with ½ Tax or GA. <b>Not included:</b> back pack lunches, travel to Davos and back, to Wägerhus by Postal Bus and from Davos to Val Sinestra and back by train and Bus. <b>Cancellation</b> fees apply after July 8.
<b>Fitness</b>	Walking on rough mountainous terrain and working in the field for 7-9 hrs daily
<b>Clothing</b>	Good mountain walking boots, layers of clothes for warm as well as for rainy, cold weather.
<b>Insurance</b>	Is the responsibility of each participant, also Alpine Air Rescue (REGA)
<b>Prerequisites</b>	Interest and the ability to delve into a field course topic.
<b>Preparation</b>	Pre-excursion preparation with field guides online on OLAT for enrolled participants, available after cancellation date. Researching a course topic for presentation at the end of the course, organization of materials for sampling.
<b>Credits</b>	ECTS 2 credits (ETHZ, UZH) others according to institutional practice, includes preparation (15 hours), field work and reporting (65 hrs).
<b>Enrolment</b>	Until June 27 via e-mail to <a href="mailto:kurthanselmann9@gmail.com">kurthanselmann9@gmail.com</a> Later: enrollment in OLAT for access to field guides <a href="https://lms.uzh.ch/url/RepositoryEntry/16318464010?quest=true&amp;lang=en">https://lms.uzh.ch/url/RepositoryEntry/16318464010?quest=true&amp;lang=en</a>
<b>&amp; Information</b>	After June 27 please inquire for open places via e-mail to <a href="mailto:kurthanselmann9@gmail.com">kurthanselmann9@gmail.com</a>
<b>Participants</b>	15 max (waiting list). Alternative course in case of overbooking: 30. August - 4 September