

# Geo-Microbiology and Bio-Geochemistry in Alpine Environments

**Combined Field-Lab Course at geomicrobiologically and  
geohydrochemically interesting Ecosystems in the Eastern Swiss Alps  
followed by biogeochemical Sample Analysis at ETH in Zürich**

**for Geology and Environmental Science Students of the advanced Bachelor and the  
Master Level, and Guests**

**Field Work: Friday, August 29 to Monday, September 1. Laboratory: September 2 - 5, 2014**

Guided by

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<b>Preparation</b>	Friday, August 29, Introduction: Presentation of projects; organization of sampling strategies
<b>Field Locations</b>	August 30: Scuol-Tarasp - Ftan - Fuschna - Nairs – Clozza – Sinestra - Rablönch August 31: Davos Dorf - Weissfluhjoch – Totalp – Davos Platz – Alvaneu - Davos September 1: : Davos Dorf – Wägerhus – Jöri glacial Lake Catchment – Davos → Zürich
<b>Lab-Work</b>	Tuesday to Friday, September 2 to 5 at ETH in Zürich
<b>Presentation</b>	Results will be presented during the semester; date, time and location tbd.
<b>Topics</b>	<b>Geology:</b> Lower Engadin Window (shale, travertine / tufa deposits), Silvretta nappe (gneis), Ela nappe (dolomite, gypsum), Totalp intrusion (serpentinite). <b>Biogeochemistry:</b> Erosion, basin deposition, soil formation. Buildup and fate of organics in soils and sediments in alpine flood plains and river deltas. Carbonate ice formation in CO <sub>2</sub> outgassing zones. Organics and fluid inclusions in peninnic shale deposits. <b>Geomicrobiology:</b> Low temperature geobiochemistry in sulfur and iron dominated microbial habitats of mineral springs. Nutrient cycling by microbial ice and snow communities. Evolution of mountain lakes in glacier retreat areas. Nutrient sequestration and cycling in high altitude aquatic ecosystems by erosion particles and colloids and through coupled Fe-Mn-P-N-cycling. ( <b>Applied and economic aspects</b> of geobiochemistry: alpine water resources, mineral water wellness, geomicrobiological and geobotanical toxins.) More: <a href="http://www.microeco.uzh.ch/geomicro_eth/field_course/welcome_field_courses.html">http://www.microeco.uzh.ch/geomicro_eth/field_course/welcome_field_courses.html</a>
<b>Accommodation</b>	Youthpalace, Davos Dorf, 2 nights, Saturday and Sunday, August 30-31.
<b>Meeting Points</b>	Friday August 29: 09.00 ETHZ NO E-11, Sonneggstrasse 5. Course preparation all day Saturday, August 30: 06.37, Train departs from Zürich HB to Landquart → Scuol-Tarasp. Sunday, August 31: 08.10 Parsenn Mountain Railway – Weissfluhjoch – Totalp - Strela Monday, September 1, Departure by bus at 07.55 from Davos-Dorf, RhB station → Jöri Lakes → Zürich Tuesday, September 2, 09.00, ETHZ, NO E11. Organization of Lab-work
<b>Costs</b>	CHF 200 (geology students enrolled at ETH-Z may apply for subsidies, after they have fulfilled the credit requirements). Cancellation fees apply after May 20. Not included: back pack lunches, travel to Davos / Scuol and back, local bus trips.
<b>Fitness</b>	Walking on rough mountainous terrain and work in the field for 6-9 hrs daily
<b>Clothing</b>	Good mountain walking boots, layers of cloths for warm, sunny as well as for rainy, cold weather.
<b>Insurance</b>	Is the responsibility of each participant, incl. REGA
<b>Prerequisites</b>	Interest and the ability to delve into a biogeochemical topic. Counts 2 CP (full course incl. oral presentation during the Fall Semester).
<b>Enrollment</b>	for ETHZ 651-4044-02 P "Geomicrobiology and Biogeochemistry Field-Lab Course" on "MyStudies" and via ETH geology excursion booking <a href="http://www.conference.ethz.ch/erdw/">http://www.conference.ethz.ch/erdw/</a> or by writing to <a href="mailto:kurt.hanselmann@erdw.ethz.ch">kurt.hanselmann@erdw.ethz.ch</a> , or calling 044 633 9288 or 044 381 4087
<b>Participants</b>	10 (for full course, 2CP) + 10 guests (for field trips only, 1CP)