

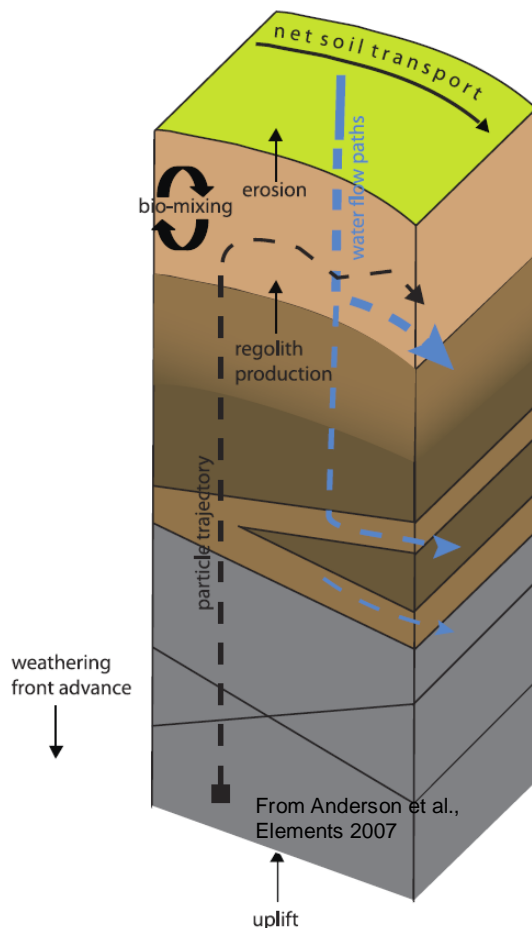
# EUROPEAN EARTH SURFACE PROCESS GROUP



## Workshop

### Relations between Physical Erosion and Chemical Weathering

Potsdam, Germany, 1.- 4. July 2010



Geochemists and geomorphologists have long recognized a correlation between rates of physical denudation and chemical weathering; however, the control mechanisms underlying this connection remain debated. In the conversion of bedrock into soil, chemical weathering provides a substrate for life and a long-term sink for atmospheric CO<sub>2</sub>.

New field methods, measurements of rates and mass balance of erosion and weathering, theory, and modeling have significantly advanced this topic in the past years. Several major questions motivate much of this work:

- (1) Is chemical weathering a prerequisite for physical erosion and hence sets its pace, or is the rate and degree of weathering a consequence of erosion?
- (2) To what degree do chemical and physical denudation reflect the influence of external forcings, such as climate and tectonics, on landscape evolution?
- (3) How strong are the internal feedbacks between erosion and weathering and how are they expressed? For example, is there a topographic signature of chemical weathering?
- (4) Conversely, is there a chemical signature of topography and the physical processes that move soil and sediment?
- (5) Where in a vertical column is the highest chemical mass flux being generated? Along deep fractures guiding dissolution? During conversion of bedrock to saprolite? In

well-mixed topsoils rich in organic carbon where the solute flux is accelerated by plants?

- (6) Can we identify and quantify the expression of these feedbacks at multiple spatial scales (grain-scale mineral transformations, soil-saprolite profiles, hillslopes, drainage basins, continents)?

The European Surface Process Group invites you to address these questions in a two-day workshop followed by a field trip.

**Speakers:**

Jérôme Gaillardet, IPG Paris  
*Balancing the solid and dissolved flux in large rivers*

Heather Buss, USGS Menlo Park  
*Coupling physical and chemical denudation by oxidation, dissolution, and fracturing of rock*

Page Chamberlain, Stanford  
*Predicting global weathering and CO<sub>2</sub> drawdown rates*

Jeannie Dixon, GFZ Potsdam  
*Erosion-weathering feedbacks: From deep saprolites to rocky slopes*

**Schedule:**

Thursday July 1: Arrival of participants, Icebreaker  
Friday July 2: Three invited talks and discussion, poster session and dinner at the lake side  
Saturday July 3: One invited talk, short presentations by participants, general discussion  
Sunday July 4: Field Trip, returning around 4pm

**Venue:**

Kongresshotel Potsdam, a lakeside hotel easily accessible from Berlin with public transport  
Am Luftschiffhafen 1  
D-14471 Potsdam  
Tel +49-331-907 75 113  
Fax +49-331-907 75 777  
[www.kongresshotel-potsdam.de](http://www.kongresshotel-potsdam.de)

We have reserved single rooms at the special rate of 59.00 Euros (double room 79.00 Euros) per night. Please organise your own reservation by May 1., stating the keyword "Earth Surface Workshop".

**Cost & Registration:**

Professionals: EUR 100.-; Undergraduate and graduate students: EUR 30.-  
Field Trip: EUR 20.- per Person.  
Payment shall be done in cash at checkin.

Please register by May 1., 2010 (with or without field trip) to [carola.ocholt@gfz-potsdam.de](mailto:carola.ocholt@gfz-potsdam.de)  
<https://gfz-potsdam.de/~ochi/espg.htm>

**Field Trip:**

We will be visiting a field laboratory operated by the University of Technology Cottbus, with partners from University of München and ETH Zürich, devoted to the development of soils, vegetation, drainage systems, and subsurface hydrology approximately 150km south of Berlin. The development of an early ecosystem is monitored in an artificial catchment located in a recultivated open-cast lignite mine. [http://www.tu-cottbus.de/sfb\\_trr/eng/index.htm](http://www.tu-cottbus.de/sfb_trr/eng/index.htm)

**Organisation:**

*Friedhelm von Blanckenburg (GFZ Potsdam, [fvb@gfz-potsdam.de](mailto:fvb@gfz-potsdam.de))*

and the European Surface Process Group (Committee: Niels Hovius, Dimitri Lague, Alex Denmore, Fritz Schlunegger, Sean Willett, Mike Ellis, Friedhelm von Blanckenburg)

With the German Research Center for Geosciences GFZ Potsdam, University of Potsdam, Free University of Berlin, the University of Technology Cottbus, and the DFG Leibniz Center for Surface Process and Climate Studies.