# Open PHAROS workshop

*(organised by LUCIFS)*

# Sediment and carbon fluxes under human impact and climate change

University of Bern, Switzerland

July 28–30, 2011

*Second Circular*

## 1. Rationale and workshop aims

The emission of $CO_2$ into the atmosphere through the combustion of fossil fuels and global land use changes is a major determinant of global environmental change. The vertical carbon fluxes have been intensely investigated during the last 30 years. However, the study of lateral sediment-burden carbon fluxes has been largely neglected. Only recently, the connection of sediment and lateral carbon fluxes was studied with a strong focus on human induced soil erosion. These studies mainly focus on hillslopes and are limited to relatively short time scales (e.g. the last 50 years). Studies that consider sediment-burden carbon fluxes beyond hillslopes (e.g. in larger river systems) and/or extend the time scales to $10^3$ years remain sparse. As a result, this is a missing link when we try to budget the global carbon cycle, and thus we fail to fully understand the potential changes in this cycle under future climate and land use conditions, certainly on the larger spatial and temporal scales. To kick off research in this field, it is necessary to bring together researchers working on long term sediment fluxes with those scholars working on terrestrial carbon fluxes. This PHAROS (Past Human-Climate-Ecosystem Interactions) workshop provides a platform to discuss research results and ideas on sediment and associated carbon fluxes in all terrestrial environments. The workshop is organised by the LUCIFS group (Land Use and Climate Impacts on Fluvial Systems), which gained a very good knowledge on longer-term fluxes of sediment in the landscape. PAGES provides financial support for the organisation of this workshop.

The **major aims** of the workshop will be

1. to bring together both leading and early-career scientists from disciplines focusing on lateral carbon and sediment fluxes (soil-hillslope-fluvial-limnic),
2. to discuss perspectives for long-term studies on sediment-burden carbon fluxes, and
3. to establish the relationships between carbon and sediment fluxes, and to identify concepts, methods and regions that are well suited for long sediment-carbon fluxes.

## 2. Workshop structure and further information

The workshop is organised to run immediately after the INQUA meeting in Bern. Please note that there is a LUCIFS session at the INQUA meeting (session # 58), which is scheduled for the second half of the INQUA congress, to facilitate attendance of both the congress and the workshop. The workshop aims to provide a stimulating working environment in which priority will be given to discussions on the sediment and carbon fluxes. In working groups, the following **questions** will be addressed:

- What is the fate of soil organic carbon, which has been removed through soil erosion?
- What happens with carbon when it is transported on hillslopes and in channels?
- What are the major sources of carbon in fluvial and limnic sedimentary sinks?
- How does allochthonous and autochthonous carbon differ in these sinks? How stable is carbon when it is deposited?
- How can we quantify these fluxes as part of the long term carbon cycle

The workshop will include two morning sessions with oral and poster presentations, which are both followed by working groups in the afternoon (see below for a preliminary program). The third day of the workshop is a field visit to the Luzern area, just east of Bern (see below for preliminary excursion program). Please visit the workshop website for information about LUCIFS and this workshop (http://www.lucifs.uni-bonn.de/).

## 3. Registration, abstract submission, and costs (UPDATE!)

Your attendance would be most appreciated. Registration and abstract submission is still possible until the 7th of July 2011. The registration fee for the workshop is 100 CHF (ca. € 82,-) which includes participation in the field trip, but does not include lunch, dinner and accommodation. *The fee must be paid in cash at registration in Bern.* We are aiming for ca 40 participants, and the first-come-first-served rule applies, so please register as soon as possible.
To register, send an e-mail with your contact details to Thomas Hoffmann: thomas.hoffmann@uni-bonn.de, and indicate if you will be joining the fieldtrip. If you wish to present a paper, please send your abstract (max. 1 A4 page) together with your registration, and indicate your preferred presentation form (poster or oral). We explicitly welcome contributions that link sediment with carbon dynamics, or otherwise meet the workshop focus.

## 4. Keynote speakers (UPDATE!)

We are happy to confirm seven outstanding key-note speakers:

**Rolf Aalto** (University of Exeter, United Kingdom)
*TBA*

**John Boyle** (University of Liverpool, United Kingdom)
*Lake sediment records of terrestrial carbon fluxes*

**John Dearing** (University of Southampton, United Kingdom)
*PAGES Focus 4 PHAROS: Soils, Sediment and Carbon research*

**Jed Oliver Kaplan** (Swiss Federal Institute of Technology, Lausanne, Switzerland)
*TBA*

**Simon Mudd** (The University of Edinburgh, United Kingdom)
*Quantifying long term soil production and biogechemistry for use as a baseline for modern soil processes*

**Kristof van Oost** (University of Louvain, Belgium)
*Eroding the carbon cycle: a short-term perspective*

**Jane Willenbring** (University of Pennsylvania, United States)
*Lost in transit? Quantifying long-term carbon loading from anthropogenic erosion*

## 5. Preliminary program (UPDATE!)

**July, 28th 2011**

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| Morning | Welcome and workshop opening, 4 keynote lectures, 5 regular lectures, poster session |
| Afternoon | Discussions in working groups |
| Evening | Conference dinner (not included) |

**July, 29th 2011**

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| Morning | 3 keynote lectures, 6 regular lectures, poster session |
| Afternoon | Discussions in working groups, final discussion, LUCIFS business meeting |

**July, 30th 2011**

Excursion starts and ends in Bern, and is organised around the theme 'The erosional response to the glacial conditioning in the Alps: Inner gorges and landslides'. Excursion topics include: sub-glacial erosion and formation of Alpine inner gorges (stop at Flühli, close to Luzern), hanging tributary valley and trunk valleys formed by glaciers, formation of knick zones and erosion in the Alps (Glaubergen), erosion rates across a gorge. The excursion will be supervised by Prof. dr. Fritz Schlunegger (Institute of Geological Sciences, University of Bern).

## 6. Venue, accommodation and travel (UPDATE!)

The city of Bern is the capital of Switzerland, and is conveniently situated in the centre of the country. The venue of the workshop is the UniS building of the University of Bern, which is located close to the city centre, next to the central railway station. Bern can be reached by air via the international airports at Geneva and Zurich (both with direct train connections to Bern City), and via the regional airport Bern-Belp. There are train connections from all over Europe to Bern. The main train station is located in the city centre within walking distance of many hotels and sightseeing spots. Bern offers you a wide range of accommodation, from 5 star luxury hotels to youth hostels. However, we recommend that you proceed with your hotel reservation as soon as possible because of holiday bookings.

## 7. Organising committee

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