European Association of Geochemistry

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EUROPEAN, AMERICAN AND CHINESE GEOSCIENTISTS TACKLE GLOBAL SOIL THREATS

Damma Glacier CZO. R. Smittenberg, ETH-Zurich

Scientists from Europe, USA and China have established an international network of Critical Zone Observatories to study and protect soils. The SoilTrEC (Soil Transformations in European Catchments) project will find out how to protect soil against the threats posed by climate change and an increasing demand for food and energy from a growing human population. The project is coordinated by the University of Sheffield and brings together 15 partners, including universities, research organisations and the European Commission's Joint Research Centre.

SoilTrEC is funded by the European Commission. It will support scientific research in the EU and China, with additional support provided by existing research projects. The new funds also include support for EU and Chinese teams to link with researchers of the 6 sites funded by the U.S. National Science Foundation's Critical Zone Observatory Program. The project aims to provide scientific evidence that will be used as a basis for a new European policy for protecting its soils, the services soils provide to ecosystems, and the value of these services ($50 billion annually) to the European economy[1]. Global soil threats include erosion, which washes soil from the land surface into rivers; loss of organic matter, which is a store of nutrients and an essential glue for keeping soil in place; and loss of biodiversity and key soil organisms. Another major threat is loss of soil fertility due to pollution, compaction during intense farming, sealing over by expanding cities and deposition of salt from evaporating irrigation water in dry regions.

The project develops 4 major field research stations in the EU. The aim is to understand and predict how soil provides ecosystem services, such as filtering contamination from water, storing carbon, providing food and fibre, providing habitat for a myriad of microbes and larger organisms, and helping maintain the biodiversity and gene pool of our planet.

This research builds on a major new approach to terrestrial geoscience research by establishing field sites as Critical Zone Observatories. These act as international focal points to concentrate scientific effort. Researchers will assemble scientific evidence on land-use practice that will protect the central role of soil in the Earth's Critical Zone (see *Elements* issue on Earth's Critical Zone, volume 3, number 5, 2007). The critical zone is the thin layer at the Earth's surface that extends from the top of the tree canopy to the lower reaches of drinking water aquifers. This zone is often only tens of metres thick, but within it, bedrock is slowly converted by the action of water and organisms into soil. This valuable resource nourishes land plants and humanity, and supports a major part of the global economy.

The international teams include soil and water specialists, geologists, ecologists, engineers, management scientists and computer teams. These scientists will work with land-management experts to improve land use policy and practice.

The four European Critical Zone Observatories are at the Damma Glacier Forefield, Switzerland; the Lysina Catchment, Czech Republic; the Fuchsenbigl Agricultural Station, Austria; and the Koiliaris Watershed, Crete.

1 Commission of the European Communities (2006) Thematic Strategy for Soil Protection, http://ec.europa.eu/environment/soil/pdf/com_2006_0231_en.pdf

SoilTrEC Information: http://soiltrec.eu
NSF news release, March, 2010: www.nsf.gov/news/newsletter/mar_10/index.jsp

EAG SHORT COURSE SERIES

Tools in Environmental Biogeochemistry Opportunities and Limitations

University of Tübingen, Germany, 7–11 August 2011

This 4-day workshop will present and discuss the application of several spectroscopic and microscopic techniques in environmental biogeochemistry. The course will cover the background principles of these techniques, as well as applications from the fields of biogeochemistry, environmental chemistry and geomicrobiology. The focus will be on organic matter and microbe–mineral interactions (with special emphasis on iron oxides), soils and sediments, toxic metals (e.g. As, Cu) and organic contaminants.

Topics

Scanning transmission X-ray microscopy (STXM)
Synchrotron-based X-ray absorption techniques (e.g. XANES, EXAFS)
Mössbauer spectroscopy – transmission electron microscopy (TEM)
Scanning electron microscopy (SEM) with focused ion beam (FIB) milling

Target group

The workshop is aimed at PhD students and postdocs with a strong interest in biogeochemical processes (the maximum number of participants is 20). The presentations will be given in English by leading international experts in the field. The price is 250 euros, which includes food and accommodation. If you are interested in participating, please contact Andreas Kappler (andreas.kappler@uni-tuebingen.de). The registration deadline is 31 January 2011.

This course is organized by Andreas Kappler (University of Tübingen), Thomas Borch (Colorado State University, USA) and Ruben Kretzschmar (ETH Zürich).

It is co-sponsored by the **European Association of Geochemistry**, the Research Network Program of the **European Science Foundation** and the **U.S. National Science Foundation**.

INTERESTED IN ORGANIZING A SHORT COURSE SPONSORED BY THE EUROPEAN ASSOCIATION OF GEOCHEMISTRY?

Short courses for PhD students and postdocs are expected to be 3–5 days in length with at least 10 participants; they focus on special topics or techniques from the broad field of geochemistry. The EAG can provide a total amount of up to 5000 euros to EAG members participating in or presenting at the short course.

If you are thinking of developing an EAG short course for the year 2011, your proposal should be submitted to the Chair of the EAG Program Committee by 31 October 2010 via the EAG business office (office@eag.eu.com). This will give time for the committee to consider your proposal and make a recommendation to the EAG Council. If all goes well, your proposal will be approved before 1 December.

In your submission, briefly describe the goals of the short course and provide a proposed short course schedule, a list of suggested presenters, and information regarding the location and infrastructure required. Online information is available at www.eag.eu.com/.