



13.-15. September 2017, University of Bern

Radiocarbon dating of various environmental materials are widely applied and extremely valuable for reconstructing global (paleo)climate dynamics, anthropogenic environmental changes, ecosystem distributions, and hominin evolution. This workshop will discuss and focus on innovations and developments of radiocarbon analyses with the *Mini-Carbon-Dating-System (MICADAS)* and research advances that have been made owing to this system.

SCOPE OF THE CONFERENCE

Switzerland has been playing a crucial role in advancing radiocarbon dating, also by developing a MICADAS within the last decades. This system allows radiocarbon analyses of ultra-small samples ($\geq 2 \mu\text{g C}$) that are smaller than those required for conventional (i.e. graphitization) methods by a factor of ~ 100 . This permits to circumvent long persisting issues such as a poor preservation and/or reduced availability of carboniferous or carbonaceous material in climate archives, thereby opening unprecedented research avenues. With the installment of an MICADAS at the University of Bern, the Oeschger Center of Climate Change Research and the University of Bern takes an active part in pushing this innovation forward. This workshop will foster the scientific exchange and networking within the MICADAS community in Bern and the wider local area, in particular among early career scientists and experts from the analytical and application sides, in a relaxed and open atmosphere.

FORMAT AND SESSIONS

The workshop will focus on three sessions; each will include a keynote lecture by our invited experts. In addition, there will be contributed talks and a poster session dedicated to each session:

ORAL PRESENTATIONS

Session 1: Technical developments and improvements of radiocarbon analyses

Keynote Speaker: Dr. Lukas Wacker (Laboratory of Ion Beam Physics, Swiss Federal Institute of Technology, Zurich)

This session invites contributions on all technical aspects, i.e., possibilities, challenges and limitations, of radiocarbon analyses, in particular with the MICADAS: updates to the AMS system, radiocarbon background and -contamination analyses, sample preparation methodology, choice of gas versus solid source and measurement strategies.

Session 2: Radiocarbon application for studying paleoclimatic/Holocene/anthropogenic changes and in numerical models

Keynote Speaker: Prof. Gesine Mollenhauer (Marine Geochemistry Division, Alfred-Wegener-Institute for Polar and Marine Research, Bremerhaven)

This session encourages contributions that highlight and discuss the wide range of applications of radiocarbon analyses in the (paleo-)environmental sciences, in particular for reconstructing the ocean carbon cycle, for determining transport pathways of carbon in various terrestrial systems, for environmental monitoring (air, seawater and sediments), for evolutionary and archaeological studies and for elucidating atmospheric dynamics.

Session 3: Establishing consistent and accurate chronologies for climate archives based on radiocarbon

Keynote Speaker: Fabian Rey (Institute of Plant Sciences, University of Bern)

This session invites contributions that discuss advances and challenges for establishing radiocarbon-based chronologies. These may address age reversals within the sedimentary record, the choice of atmospheric calibrations, strategies for dealing and reconstructing artifacts such as sediment mixing and -transport processes, statistical approaches and the determination of disequilibrium effects.

PRACTICAL ON STATISTICAL APPROACHES FOR ESTABLISHING ACCURATE CHRONOLOGIES

A practical training on statistical approaches for radiocarbon-based age calibrations will take place on the third day of the workshop. This practical is optional for the workshop participants. We ask interested attendees to express interest in participating in the practical during their registration. More details on the practical will be made available in due course.

POSTERS

Posters will be on display during the whole duration of the conference, allowing for ample time for discussion and scientific exchange. The dedicated poster sessions will take place on the first day of the meeting.

LABORATORY TOUR

The workshop attendees are invited to take part in a tour of the MICADAS laboratory at the University of Bern. They are asked to express interest during the registration process on the registration website.

CALL FOR ABSTRACTS

We strongly encourage contributions that are related to any aspect of MICADAS- or radiocarbon-based research. Abstracts for oral and poster presentations should be submitted to the conference organizers via the abstract submission website. Slots for oral presentations are 20 min. Posters will be A0 size. Please also register for the workshop when submitting a contribution (both free of charge).

Abstract submission deadline: 31. July 2017.

CONFIRMED SPEAKERS

Keynote-Speakers: Dr. Lukas Wacker (Laboratory of Ion Beam Physics, Swiss Federal Institute of Technology, Zurich), Prof. Gesine Mollenhauer (Marine Geochemistry Division, Alfred-Wegener-Institute for Polar and Marine Research, Bremerhaven), Fabian Rey (Institute of Plant Sciences, University of Bern)

Solicited contributions: Prof. Martin Grosjean (Institute of Geography, University of Bern), Dr. Theo Jenk (Laboratory for Radiochemistry and Environmental Chemistry, Paul Scherrer Institut), Dr. Gary Salazar (Department of Chemistry and Biochemistry, University of Bern), Mirco Brunner (Institute of Archaeological Sciences, University of Bern)

GENERAL INFORMATION

The workshop runs from Wednesday to Friday (13.-15.09.2017). It will take place in the Department of Chemistry and Biochemistry, University of Bern, Freiestrasse 3, 3012, Bern, **Lecture Hall S481**. Talk schedules will be published in due course on the workshop website, and will be distributed via email.

REGISTRATION

The registration for the conference and abstract submission are free of charge, and can be completed on the the workshop registration website. Oral and/or poster contributions are strongly encouraged. Multiple contributions are possible, for which abstracts need to be submitted separately. Coffee, lunches and conference dinner/apero will be provided. Students (B.Sc., M.Sc. and PhD) are particularly encouraged to submit an abstract and to participate. Expenses for travel and accommodation, if applicable, may only be covered in exceptional cases (subject to the previous arrangements with the organizers). For questions and enquiries, please get in touch with the organizers.

ORGANIZING COMMITTEE

Dr. Julia Gottschalk (Paleoceanography, Institute for Geological Sciences and Oeschger Center for Climate Change Research; julia.gottschalk@geo.unibe.ch)

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Prof. Dr. Samuel L. Jaccard (Paleoceanography, Institute for Geological Sciences and Oeschger Center for Climate Change Research; samuel.jaccard@geo.unibe.ch)

We look forward to a fruitful workshop!

Julia Gottschalk, Sönke Szidat and Samuel Jaccard

The workshop is supported by:



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