

## Lessons from the deep – recent advances climate history

Tuesday 17 April, 11:00 – 12:00

**Recent Ocean, and Continental drilling, carried out through the international IODP and ICDP programs in which more than 20 countries participate, has yielded spectacular new insights in ancient climates, climate dynamics, extinctions and evolution of life on Earth.**

Session CL39 presents studies focusing on the recent past that produce unprecedented high resolution information on the direct coupling of atmospheric CO<sub>2</sub> levels, atmospheric and ocean circulation, and surface (and ocean) temperatures. This is evident from recent SE Pacific IODP drilling.

The first ever shallow tropical reef drilling off Tahiti is producing the most detailed record of Holocene sea level change, and how CO<sub>2</sub>, temperature and sea level are intrinsically related.

The first ever central Arctic IODP drilling has already drawn much public attention. The scarce previous fuzzy data have been carefully reinterpreted on the basis of the drilling results. This is now yielding revolutionary new insights in the Cenozoic tectonic history of the Arctic Basin, including new ideas on the timing of closure and opening of the basin.

Further back in the past, the recently drilled Walvis Ridge IODP cores allow the construction of a new high resolution geological timescale using ancient orbital cyclicity. The results clearly indicate relationships between orbital cycles and the early Eocene hyperthermals, the warmest episodes of the past 100 Ma.

Latest ICDP drilling of the Cretaceous/Tertiary Chuxulub impact structure in Mexico, responsible for the demise of the dinosaurs, finally allows detailed reconstruction of this mass destruction event. Lessons taught include the short – and notably the longer term – consequences of a large extra-terrestrial impact, reasons behind the selectivity of extinctions, evolution, and how ecosystems and biota coped with the greatest catastrophic event of all times.

The above makes clear that the international drilling programs are exciting, alive and kicking, generating much needed information of obscure sectors of the planet like the Arctic Ocean, and/or yield key climatic information of the past environments to better understand future climates.

**Session: CL039 Marine and terrestrial paleoclimate records - recent advances in IODP and ICDP | [>>programme](#)**

Dr Matt O'Regan  
Graduate School of  
Oceanography  
University of Rhode Island  
Narragansett, RI, USA  
[oregan@gso.uri.edu](mailto:oregan@gso.uri.edu)

Dr Thomas Westerhold  
DFG Research Center for  
Ocean Margins (RCOM)  
Bremen University, Germany  
[tho@uni-bremen.de](mailto:tho@uni-bremen.de)

Dr Flavio Anselmetti  
ETH Zurich, Geological  
Institute, Zurich, Switzerland  
[flavio.anselmetti@erdw.ethz.ch](mailto:flavio.anselmetti@erdw.ethz.ch)

Dr Frank Lamy  
AWI-Bremerhaven  
Bremerhaven, Germany  
[flamy@awi-bremerhaven.de](mailto:flamy@awi-bremerhaven.de)

Dr Henk Brinkhuis  
Department of Biology,  
Laboratory of Paleobotany and  
Palynology  
Utrecht University  
The Netherlands  
[H.Brinkhuis@uu.nl](mailto:H.Brinkhuis@uu.nl)