components, e.g., carbohydrates, humic substances, silicates and carbonates. This information is of particular interest for paleolimnological studies because lake sediments are commonly composed of a mixture of various organic and minerogenic compounds originating from the fossilization of tissues and skeletons of aquatic organisms and from the erosion of lake soils. Analysis for a suite of metals rather than just target anthropogenic metals (e.g., Pb, Cu, Zn, Mn, Cd, Fe) was performed by using an iCAP™ Q ICP-MS and allows for interpretations about the sources for different chemicals. High content of several elements including Cu, Fe and Zn in sediment samples is correlated with their sources and it is possible to identify situations that are a priori favorable or not for tracing of these elements using the isotopic approach

46-P A long-term multi-proxy record of varved sediments suggests climate-induced mixing-regime shift in a large hard-water lake ~5000 years ago.

Walter Finsinger [1], Thierry Fonville [2], Emiliya Kirilova [3], Andrea Lami [4], Piero Guilizzoni [4], André F. Lotter [5]

ISE-M (UMR 5554), CNRS, University Montpellier, Montpellier, France [1], Palaeoenvironmental Laboratory of the University of Southampton (PLUS), Geography and Environment, University of Southampton Highfield, Southampton, United Kingdom [2], Palaeoecology, Department of Physical Geography, Utrecht University, Utrecht, Netherlands [3], Institute for Ecosystem Study. ISE CNR, Verbania, Italy [4], Institute of Plant Sciences and Oeschger Centre for Climate Change Research, University of Bern, Bern, Switzerland [5]

The long-term terrestrial and aquatic ecosystem dynamics spanning between approximately 6200 and 4800 cal BP were investigated using pollen, diatoms, pigments, charcoal, and geochemistry from varved sediments collected in a large stratified perialpine lake, Lago Grande di Avigliana, in the Italian Alps. Marked changes were detected in diatom and pigment assemblages and in sediment composition at ~4900 cal BP. Organic matter rapidly increased and diatom assemblages shifted from oligotrophic to oligo-mesotrophic planktonic assemblages suggesting that nutrients increased at that time. Because land cover, erosion, and fire frequency did not change significantly, external nutrient sources were possibly not essential in controlling the lake-ecosystem dynamics. This is also supported by redundancy analysis, which showed that variables explaining significant amounts of variance in the diatom data were not the ones related to changes in the catchment. Instead, the broad coincidence between the phytoplankton dynamics and rising lake-levels, cooler temperatures, and stronger spring winds in the northern Mediterranean borderlands possibly points to the effects of climate change on the nutrient recycling in the lake by means of the control that climate can exert on mixing depth. We hypothesize that the increased P-release rates and higher organic-matter accumulation rates, proceeded by enhanced precipitation of iron sulphides, were possibly caused by deeper and stronger mixing leading to enhanced input of nutrients from the anoxic hypolimnion into the epilimnion. Although we cannot completely rule out the influence of minor land-cover changes due to human activities, it may be hypothesized that climate-induced cumulative effects related to mixing regime and P-recycling from sediments influenced the aquatic-ecosystem dynamics.

46-P Paleoenvironmental reconstruction of two karst lakes in the northern neotropics using multiple aquatic bioindicators.

Paula Gabriela Echeverría Galindo [1], Fernanda Charqueño [1], Lizeth Carolina Pérez Alvarado [2], Socorro Lozano [2], Alexander Correa Metrio [2], Itzel Sigala [3], Minerva López [3], Mark Brenner [4], Jason Curtis [4], Sergio Cohuo [5], Laura Macario [5], Antje Schwalb [5]

Instituto de Ciencias del Mar Y Limnología, Universidad Nacional Autónoma de México, México, Df, Messico [1] - Instituto de Geología, Universidad Nacional Autónoma de México, México, Df, Messico [2] - Instituto de Ciencias Biológicas, Universidad Nacional Autónoma de México, México, Df, Messico [3] - Department of Geological Sciences, University of Florida, Gainesville, Fl, United States [4] - Institut für Geosysteme und Bioindikation, Technische Universität, Antje Schwalb, Germania [5]

Lake Amarillo (830 masl) in the Lacandon forest, southern Mexico and Lake Petén Itzá (110 masl), northern Guatemala, are located in one of the largest karst regions of the world. These aquatic ecosystems lie at different elevations and display unique combinations of environmental variables, which explain their high diversity. Both water bodies are well suited to study past climate and environmental change in the Neotropics, given their locations, depths, relatively rapid sedimentation rates, and the fact that both are “closed-basin” lakes. Previous environmental