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PAST GLOBAL CHANGES

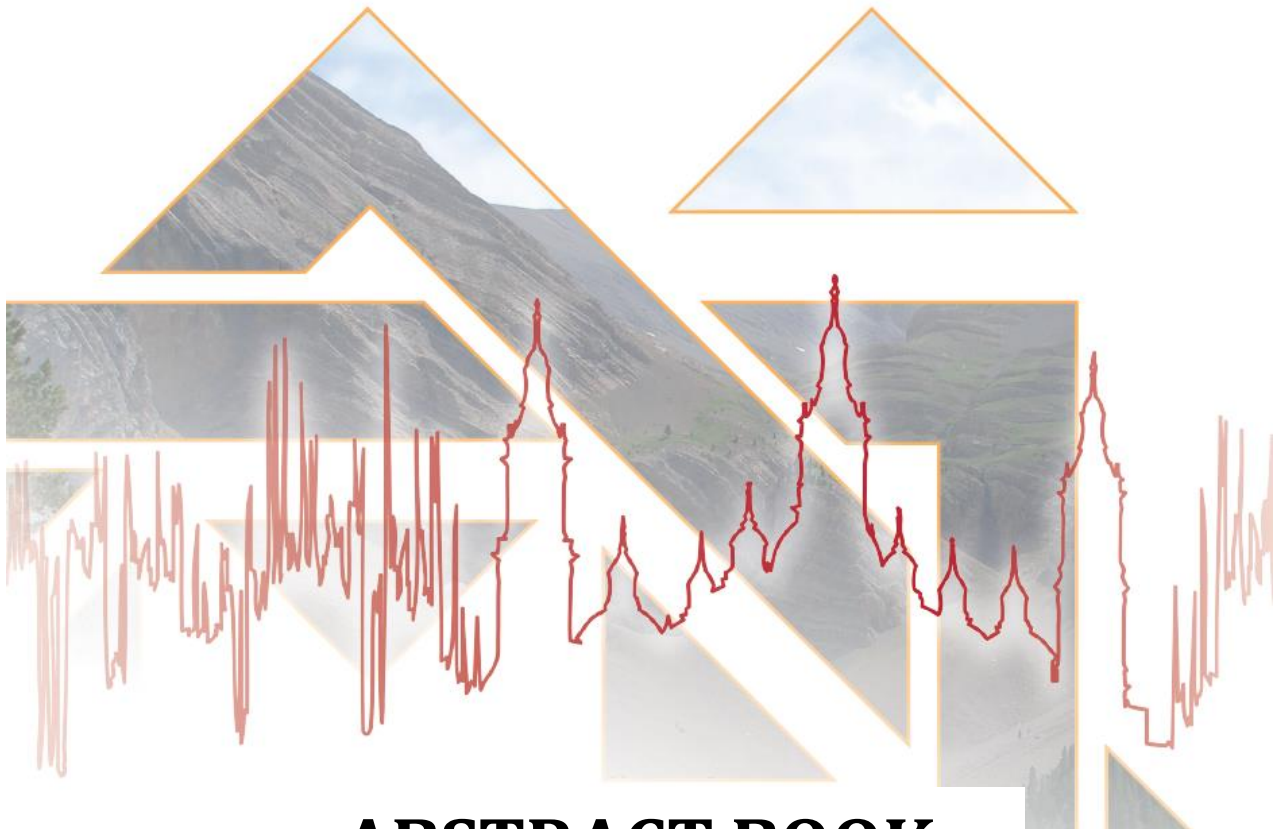


PAGES Zaragoza 2017

5th Open Science Meeting

Global Challenges for our Common Future:
a paleoscience perspective

9 - 13 MAY



ABSTRACT BOOK



**Universidad
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Although the climate forcings were different to today, MIS 5e and 11, along with the early Holocene, can provide important insight into regional biophysical responses in a warmer world. We present temperature reconstructions for these three interglacials from pollen records from New Zealand (NZ) in the southern mid-latitudes, a region under-represented in these records. Quantitative reconstructions for the Holocene and MIS5e are determined using the transfer function approach applied to the NZ pre-deforestation database. Mean annual air temperature (MAAT) at two sites from northern North Island attained modern temperatures early in the Holocene but did not exceed them within errors. An Early Holocene thermal optimum at levels similar to present is also evident in other records from throughout NZ. In contrast, our new MAAT record for MIS 5e from central North Island indicates temperatures at least 1.6 ± 1.5 °C above present, also consistent with most other available evidence. As with the Holocene, a thermal maximum appears to have been reached early in the Interglacial. Although no terrestrial MIS 11 sites have been reported from NZ, we present a new MIS 11 terrestrial pollen record from a marine core taken on the continental shelf offshore southwestern New Zealand. Quantitative pollen-temperature reconstructions are not viable in this setting, but SST estimates from the same core were $\sim 1.5 - 3.0$ °C warmer than present during MIS11, analogous to a likely range of global warming that is currently projected for the end of the 21st century. The pollen assemblages for this interval are derived from the adjacent Westland region, a UNESCO natural World Heritage property. During MIS 11, these temperate rainforests were substantially altered in response to a significantly warmer and more humid climate. These results suggest that NZ's iconic lowland podocarp forests – may be under threat from climate change in the near future.

ID: 01263, 16.- Multidisciplinary reconstruction of paleofloods, (Poster)

Exploring the paleoenvironmental potential of laminated maar sediment in central Vietnam: An archive of regional paleo-flooding?

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Global warming increases atmospheric humidity and will likely affect the monsoon system and the impact of typhoons in Vietnam. It is essential to know the long-term regional climatic history to properly judge modern trends along global climate change. In the absence of a long written history and instrumental records in Vietnam, we rely on geological paleoenvironmental archives. Sediments from East-Asian maar lakes have a demonstrated value as long-term recorders of monsoon strength, for example in China and Cambodia. The landfall of a typhoon would exacerbate regional flooding, as Vietnam experienced in October 2016. Central Vietnam's Pleiku volcanic field features numerous maar lakes and dry maars ranging in age from 2.4 to 0.2 Ma. Their natural sedimentary archives extend from the Anthropocene deep into the Pleistocene. Maar lakes with suboxic bottom waters likely harbor well-preserved and high-resolution laminated sedimentary archives with paleoenvironmental information, including episodes of intense runoff from their generally small catchment areas. Agriculturally utilized dry maars near Pleiku can be cored more easily than lakes, but would not be able to provide high-resolution records up to the most recent past.

In March of 2016 we recovered an exploratory 0.5-m sediment core from Biển Hồ maar lake in central Vietnam at a water depth of ~ 14 m. Go-Pro subaquatic visual coverage of the coring procedure documented an unconsolidated, extremely water-rich sediment surface. The sediment core yielded organic-rich, anoxic, sapropelic sediment below a slightly cohesive microbial mat. After dewatering, the core was split and indicated the presence of sedimentary laminae. Light-gray laminae suggested the presence of distinct flood layers. Renewed coring efforts with improved equipment in a maar lake and a dry maar are planned for December 2016, followed by physical and geochemical characterization.

ID: 01465, 26.- Data Stewardship for Paleoscience, (Poster)

Chinese Pollen Database: Current status and future plans

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The first, national-wide data collection for building up a Chinese Quaternary Pollen Database was conducted in