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ABSTRACT BOOK

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TALK

Multiproxy reconstruction of Eurasian Megalakes connectivity and isolation patterns during Neogene-Quaternary times - PNRR C9 I8 Project code 97/2023

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Earth science has made significant progress in understanding the triggers, drivers, and mechanisms of climate change in the oceans (Westerhold et al., 2020). However, our knowledge about these processes on the landmasses - continents and continental interiors is scarce. Eastern Europe and Middle East represent a major challenge in climate models, due to a scarcity of information about the drivers and the mechanism of climate change in geologic time (Kukla, 1989). This is due to the limitation of constructing long climate record for the continental sedimentary records compared to the long-lasting, homogenous and climate-sensitive marine records (Westerhold et al., 2020). This project aims to investigate geological records of the Paratethys and Euxine (Black Sea) megalakes, by using a multidisciplinary approach, which integrates high-resolution biostratigraphy, organic geochemistry and geochemical proxies, combined with geochronology, palaeomagnetism and Ar/Ar dating. A consistent part of the project refers to the study of occurrence and disappearance of endemic macro-, microfaunas and nannofloras, including their adaptation and survivability patterns after long or short episodes of isolation and the way they were replaced by cosmopolitan organisms. The onset and the demise of the Paratethyan Lake will be investigated in representative successions of Eastern and Southern Europe (i.e., Romania, Croatia, Greece, and the Slovenian corridor); similar events will be pointed out for the Euxinian megalake on existing core samples, available at the host institution. The final goal is to decipher implications of the observed palaeohydrological changes, beyond the Paratethys-Euxine region and to perform comparison among the Paratethys and Euxine megalakes with open sea systems, i.e., the Mediterranean. We will develop a first-time systematic investigation of megalake records using a multidisciplinary "marine methodology" combined with novel proxies. We will investigate the endemic faunas of the megalakes from macro-, micro- and nannofossil point of view, combined with geochemistry (Strontium and Osmium isotopic) and standard geological techniques (e.g., sedimentology, petrography, mineralogy, geochronology, geomorphology, inorganic and organic geochemistry). This integrated approach will allow us to obtain high resolution palaeoenvironmental and palaeoclimatic records from the megalakes' onset up to their demise.

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