

Title: *Past Climate lesson for future*

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Fieldwork: Facies analysis, distribution, vertical and lateral variations of sedimentary intervals. Some selected areas and strategic geological intervals will be considered as case histories.

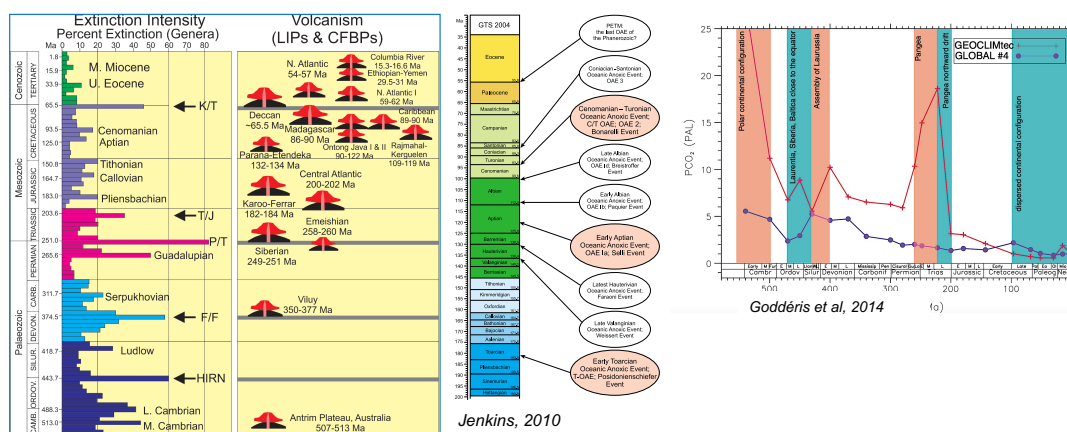
Laboratory activity: Laboratory analyses will be performed on representative samples. The approach will comprise multidisciplinary analysis and proxies: physical (i.e.: sediment composition, texture, structure, magnetic properties); biological, continental (pollen, spores, charcoal) and marine fossils (foraminifers, calcareous algae, dinoflagellates cysts, corals); chemical: stable Isotopes, elemental analyses, biomarkers, biogenic silica; geochemistry, by X-ray Computed Tomography (XRCT) analysis, X-ray Powder Diffraction (XRPD) analysis, among others.

Prerequisites: It is preferred (but not mandatory) have been attended the course on Sedimentary Petrography.

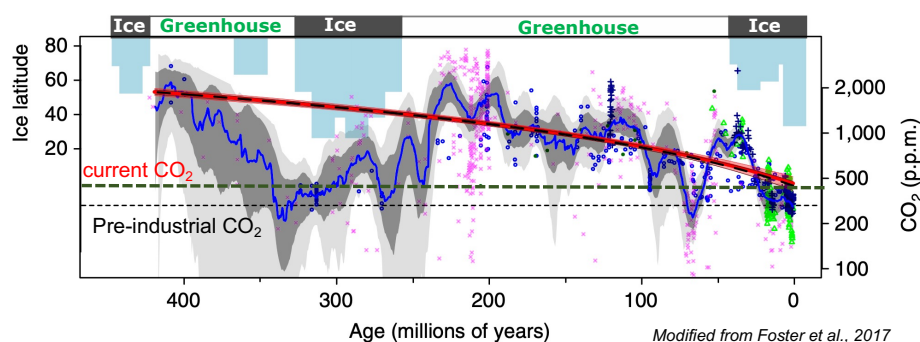
Brief description of the planned research

Earth's history includes past climates that hold lessons for the future. Information achieved from the geological record are increasingly relevant for improving our understanding of how key elements of the climate system are affected by greenhouse gas levels and for fully anticipating how ecosystems will respond to the fast rates of current warming. Both paleo and present climatic shifts share the same combination and sign of environmental changes (e.g rise atmospheric CO₂, global warming, deglaciation, sea level rising, decreasing in dissolved O₂ at the surface water ocean, enhanced water stratification, anoxia).

The research aims to reconstruct the tempo and mode of resilience in marine and continental paleoecosystems when tipping-points triggering permanent modifications were reached. The sedimentary successions will be investigated in order to reconstruct the paleoecosystems before - and throughout disturbed conditions and during recovery.



Modified from Keller, 2005



Modified from Foster et al., 2017