POS-B07

*PD en Cuaternario: Cambios Ambientales y Huella Humana*

## GEOCHEMICAL ANALYSIS OF THREE ASTRONOMICALLY INFLUENCED EOCENE DEEP-SEA SECTIONS IN THE BASQUE-CANTABRIAN BASIN (WESTERN PYRENEES): INSIGHTS INTO CLIMATIC AND ENVIRONMENTAL CONTROLS ON HEMIPELAGIC SEDIMENTATION

Martínez-Braceras, Naroa-1 Payros, Aitor-1 Francesco Miniati-2

1 Department of Stratigraphy and Paleontology, Faculty of Science and Technology, University of the Basque Country (UPV/EHU), Ap. 644, E48080 Bilbao, Spain. E-mail: naroa.martinez@ehu.eus 2 Dipartimento di Scienze della Terra, Università di Firenze, via La Pina 4, I-50121 Firenze, Italy.

A wide range of sedimentary processes can contribute to the formation of hemipelagic limestone-marl alternations as a consequence of astronomically driven short-term climate change (Milankovitch cycles). The aim of this work is to decipher the environmental factors that governed the formation of three early-middle Eocene hemipelagic successions of the Basque-Cantabrian Basin using a comprehensive set of physical and geochemical data (bed thickness, mineralogy, %CaCO3, δ13C and δ18O). The results show that the significance of several environmental processes varied depending on the paleogeographic setting of each site and the eccentricity-modulated precessional seasonality. In Sopelana, which corresponded to an open marine starved basinal setting, limestones were formed as a consequence of high pelagic carbonate productivity during warm and sluggish oceanic circulation conditions; conversely, marls accumulated when pelagic carbonate productivity decreased during cooler temperature and greater water mixing. In the Gorrondatxe submarine fan fringe, marls accumulated when high annual seasonality led to significant continental rainfall and runoff, producing the dilution of pelagic carbonate sedimentation by terrigenous supplies. In the Oyambre upper slope marls also accumulated when annual seasonality was maximum, as pelagic carbonate productivity decreased due to both the expansion of low-salinity waters on the ocean surface and the increase in continentally derived nutrients, which caused seawater conditions detrimental for calcareous plankton. In all three, limestones accumulated when boreal summer at aphelion caused low annual seasonality, which allowed relatively stable conditions to prevail. At minimum eccentricity, when precession-driven seasonality contrast was subdued, changes in pelagic carbonate productivity were significant in the three sections. On the contrary, at maximum eccentricity, when seasonality peaked due to summer occurring at perihelion, the effects of other environmental processes, such as continental or oceanic currents, became relevant. However, the influence of these processes was minimized when summertime coincided with aphelion at maximum eccentricity and seasonality was weakest.