



Timing of Pleistocene glacial oscillations recorded in the Cantabrian Mountains (North Iberia): correlation of glacial and periglacial sequences from both sides of the range using a multiple-dating method approach

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The Cantabrian Mountains is a coastal mountain range up to 2648 m altitude located at 43°N latitude and directly influenced by the North Atlantic climate oscillations. Although nowadays it is fully deglaciated, glacial sediments and landforms are clearly preserved elsewhere above 1600 m. Particularly, glacial evidence in the central Cantabrian Mountains suggests the formation of an icefield in the headwaters of the Porma and Esla catchments drained by glaciers up to 1-6 km in length in the northern slope and 19 km-long in the southern slope, with their fronts at minimum altitudes of 900 and 1150 m asl respectively (Rodríguez-Rodríguez et al., 2014). Numerical ages obtained from the base of the Brañagallones ice-dammed deposit and one of the lateral moraines that are damming this deposit suggest that the local glacial maximum was prior to ca 33.5 cal ka BP in the Monasterio Valley (see data compiled in Rodríguez-Rodríguez et al., *in press*).

Currently, our research is focused on developing a full chronology of glacial oscillations in both sides of the range and investigating their paleoclimate significance and relationship with glacial asymmetry through the combined use of surface exposure, OSL and radiocarbon dating methods. In this work, we present 47 ¹⁰Be surface exposure ages obtained from boulders in moraines, glacial erratic boulders and rock glaciers in the Monasterio and Porma valleys. The glacial record of these valleys was chosen because of: (i) its good preservation state; (ii) the occurrence of a quartz-rich sandstone formation; and (iii) the availability of previous ¹⁴C and OSL numerical ages. Sampling sites were selected considering the relative age of glacial stages to cover as complete as possible the history of Pleistocene glaciations in the studied area, from the glacial maximum stage to the prevalence of periglacial conditions. Preliminary results suggest the occurrence of several glacial advances of similar extent at ca 150 - 50 ka followed by a deglaciation sequence that changed gradually to periglacial conditions during the Lateglacial (16 - 12 ka). Radiocarbon and OSL sampling campaigns have been recently developed to complement and cross-check these preliminary results, which are compared with other paleoclimate proxies in this contribution.

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