



The plateau glacier of Los Pelados-El Nevero (Sierra de Guadarrama National Park). Reconstruction and chronology

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The Macizo de Los Pelados-El Nevero forms part of the Montes Carpetanos (central sector of the Sierra de Guadarrama, Iberian Central System). This recently reactivated mountain massif (Alpine Orogeny), with mean height 2100 m, is formed by a basement of pre-Ordovician crystalline rocks (essentially gneiss) and superficial Quaternary deposits of fluvial, glacial, and periglacial origin (Pérez-González et al., 1991).

The morphostructure of this massif is characterized by the dissymmetry of its mountain-blocks (tilted block: steep southern-face and gentle northern-slopes) and a plateau-type summit surface tilted to the NW. This topography allowed the formation in this zone of a plateau-type glacier during the last glacial period, the only one of this type identified in the Sierra de Guadarrama (Carrasco et al., 2016).

During its maximum ice extent (local MIE) the total area occupied by the ice was ~ 13 km² and the maximum thickness was ~ 120 m. During the MIE, the maximum length reached by the glaciers in this area was 2294 m and the lower topographic elevation was 1560 m asl, parameters that correspond to the Porrinoso-Peñacabra paleoglacier.

The data obtained using ¹⁰Be-TCN absolute dating in the paleoglacier of Hoyo Grande (Carrasco et al., 2016), establish the following:

- A local MIE, dated around 26 ka BP, synchronous with the global LGM (MIS2). This coincides with data obtained for the MIE of the Peñalara paleoglacier (18 km to the SW; Palacios et al, 2012).
- A minor retreat phase immediately after the MIE, followed by a re-advance phase and another greater stabilization phase. The end of this phase, dated around 17/15 ka BP, marked the start of the deglaciation stages. This evolutive sequence is similar to that established in other areas of the Iberian Central System (Carrasco et al, 2015).
- The only internal moraine arc identified, dated around 5 ka BP, is interpreted as a proglacial rampart formed in one of the climatic transition stages occurring during the Holocene.

References

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