



On the age and extent of the Serra da Peneda glaciation, NW Portugal

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Geomorphological vestiges in the mountains of NW Portugal testify a low altitude, sheltered, and precipitation-driven glaciation. These vestiges have already been characterised in several works, with emphasis on mapping and delimitation of the extent of glaciation, especially in the Serra do Gerês. In Serra da Peneda, the glacial reconstitution is not so comprehensive. Previous works have identified erosional and accumulation landforms, as well as various types of tills. However, the maximum extent of glaciation still raises some doubts and the spatial discontinuity of vestiges could suggest different episodes of glaciation. To detail the extent of the glaciation in the Serra da Peneda, an identification of glacial and periglacial landforms and deposits was performed, based on field surveys, aerial photography analysis, and LiDAR imagery processing and interpretation. Moreover, ¹⁰Be cosmogenic nuclide dating of moraine granite boulders exposure age was carried out in the Alto Vez valley, the area where the main glacial vestiges occur. Samples were collected from the uppermost erratic boulders of Senhora da Guia, at 1000 m asl., pointing to a Last Glaciation Maximum (LGM) age whereas the moraine boulders of the valley floor, at 900 m asl. indicate a Younger Dryas age. These are the first glacial dating results for this region and are in contrast to others previously published for exposure ages of glaciated surfaces in the Serra do Gerês, which raises the possibility that different Pleistocene glaciations may be represented in the mountains of NW Portugal. To reconstitute the history of glaciations in the region, similar dating in other moraines of the Peneda and Gerês mountains is in progress.