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Typology of moraine construction and its significance in the understanding of the cosmogenic ages on glacial evolution of the Iberian mountains

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The recent information about glacial evolution of different mountains in the Iberian Peninsula (The Pyreenes, Cantabrian Range, NW mountains, Central Range, Sierra Nevada) coming from dating of Surface Cosmogenic Exposition (SCE) of moraine boulders has demonstrated that, during maximum extension of the last glaciation, the glacial fronts left many morainic ridges, that can be of very different ages (from 60 until 18/17 ka) or only one moraine with ages much more limited, mainly younger than 23 ka. The proposed hypothesis of this paper defends that this diversity is due to previous valley topography: the glaciers, in the case of reaching open and flat spaces, leave multiple morainic ridges, attached to each other, during the several pulsations; but in the case that the glaciers finish into deep valleys with steep slopes, leave only one poligenic moraine, which aggregate new material during each pulsation. When a SCE dating method is apply, the results could be very different in both valley types, which could be interpreted of coming from external origin, like different climatic environment. The conclusion is that previous topography and geomorphology dynamic can be considered in the interpretation of SCE ages in the knowledge of Iberian mountain glacial evolution.