

Rock glaciers in the Pyrenees, Spain and France, Version 1

USER GUIDE

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Notice: This data set was first published on the [1998 CAPS CD](#). The text for this document was taken unchanged from that CD.

1 DATA DESCRIPTION

1.1 Coverage of Data Set

1.1.1 Study Location

Pyrenees (Spain, France)

1.1.2 Geographic Extent

Northwestern latitude: 42° 50' N

Northwestern longitude: 0° 20' W

Southeastern latitude: 42° 20' N

Southeastern longitude: 0° 55' E

1.1.3 Period of Investigation

Inventory of rock glaciers: 1990-1997

1.2 Summary Description

Pyrenees is the northernmost range of the Iberian Peninsula, separating the Spanish and French states. The high Pyrenees occupy 365 km² and spread from the upper timberline at 2400 m to the 3404 m Aneto summit, the highest peak. Today the high mountain is deglaciated; it is a rocky high mountain with glacial shapes and cryonival landforms and processes. According to World Glacier Monitoring Service (WGMS), there are forty-one glaciers occupying 8.1 km². The ELA (Equilibrium Line Altitude) is located around 3100 m in northern orientations. The study and inventory of active rock glaciers were carried out by means of the usual techniques used in the study of alpine permafrost. First, the rock glaciers were located by means of aerial photography and field work. Second, a detailed geomorphological map was prepared, to detect the active processes in each rock glacier. This includes geotranssect and surface analysis (clast roundness, clast forms, particle orientation and lichenometric measurements). Third, complementary measurements (water temperature and BTS - bottom temperature of snow - measurements) were carried out. These three studies allowed us to determinate the activity or inactivity of previously detailed landforms, and to classify them as active, inactive or relict rock glaciers. The external landforms, frontal slope, vertical organization, flow forms, absence of lichens and the descriptive parameters of rock glaciers allowed us to classify them as relict or active ones. On the Besiberri, Gemelos and Argualas rock glaciers we have carried out photogrammetric studies, and on the Argualas rock glacier we carried

out a topographic survey from 1991 and also geoelectric soundings (San Jose et al. 1992; Serrano et al. 1995; Fabre et al. 1995).

In the Pyrenees have been detected thirteen active rock glaciers, together with embryonic [emerging?] rock glaciers and active periglacial landforms. The study of rock glaciers allows us to place the discontinuous permafrost limit at 2650-2700 m a.s.l. The active rock glaciers are located in the deglaciated high mountain of the central Pyrenees, and are linked to the recent deglaciation of the high mountain. They remain in a very dynamic periglacial environment associated with its characteristic landforms (snow patches, solifluction, protalus ramparts, debris flow, debris lobes and debris slopes). The rock glaciers are situated in the most massive and highest massifs (Argualas-Infierno, 3171 m, Posets, 3200 m, Besiberri, 3014 m, Aneto 3404 m), in cirques and slopes over 2600 m, and below summits higher than 2950 m. The orientations are north and northwest (93%) and the substratum is diverse. Rock glaciers presence implies a morphogenetic sequence conditioned by the ELA ascent and the enlargement of cryogenic domain, both characteristic processes of the recently deglaciated high mountain. The rock glaciers of the Pyrenees occupy a surface of 1 km² and represent 1.3% of ice reserves in the Pyrenees. Actually the active rock glaciers are located in environments not favorable to rock glaciers. The genesis of rock glaciers in the Pyrenees high mountain is related to the transition between a residual glacial environment of altitude and the periglacial environment in the cryonival belt. The activity of the Pyrenees active rock glaciers is, primarily, a heritage of past environmental conditions and the result of a slow response to recent environmental changes.

1.3 Current Storage of Data

CD-ROM	
Paper	X
Spreadsheet	
Wordprocessor file	X
Database	

1.4 Datacenter

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Are your data at risk of being lost? NO

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4 DOCUMENT INFORMATION

4.1 Publication Date

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