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The significance of tectonism in the glaciations of Greece

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In Greece, Middle to Late Pleistocene mountain glaciations appear to have been quite extensive, along the mountain range of Pindus, on Mt. Olympus and in the highlands of Peloponnesus. This study focuses on the Middle to Late Pleistocene glaciations based on the examination of cirque formations and their elevation changes due to vertical tectonism, in certain parts of Greece, namely Pindus, Mt. Olympus and Peloponnesus.
An initial spatial database of these glacial forms was created including their location and mean elevation. Some of the glaciated sites have been taken from previous literature and others were recorded from topographic maps, air photos and field work. ArcGIS 10 software was used to process the glaciated sites. A map depicting the glaciated areas of Greek regions was compiled with over 230 cirques. A cirque's top, lip and margins of each location were mapped. So altitudes of apex and lip and mean altitude of each cirque ([apex+lip]/2), were calculated.
A total number of 239 inactive cirques was recorded with limestone as the dominant lithology. As one moves to the south, in the case of Pindus range and its extension in the Peloponnesus, the number of cirques decreases.
These glacial forms occur at altitudes varying from 2,770 to 1,600 m.a.s.l. Thus the preservation of ice for longer periods of time is more likely at altitudes higher than 1,600 m.a.s.l.
Concerning the distribution of the mean elevations of cirques one should take into consideration the tectonic activity of the study area. Especially in the Pindus range, Mount Olympus, and Peloponnesus this process is in the form of uplift. This has increased the mean elevation of the cirques in every following ice age. So, in older times many cirques were a few hundred meters lower than the more recent glacial period.