

LATE QUATERNARY GLACIERS AND GLACIAL DEPOSITS OF TURKEY

[CINER, Attila](#)¹, ZREDA, Marek², BAYARI, Serdar¹, and SARIKAYA, M. Akif¹, (1) Dept. of Geological Engineering, Univ of Hacettepe, Beytepe-06532, Ankara, Turkey, aciner@hun.edu.tr, (2) Hydrology and Water Resources, Univ of Arizona, Tucson, AZ 85721

We are evaluating the extent of the influence of North Atlantic climatic events and of continental ice sheets on the paleoclimate of Turkey. Here, we report on our mapping of glaciers and glacial deposits, and on the assessment of their suitability for dating by cosmogenic nuclide accumulation and for extraction of paleoclimatic information.

Quaternary glaciers and glacial deposits occur in three broadly-defined regions:

1. The Taurus Mountains (Mediterranean coast and SE Turkey): Two thirds of the modern glaciers are in the SE part, where Mount Cilo (4135 m) alone supports more than ten large glaciers. In the Central part, Aladag (3756 m) and Bolkardag (3524 m) have small glaciers and well developed moraine systems in several valleys. Even though there is evidence of past glacial activity in mountains such as Akdag (3016 m), Beydag (3070 m) and Sandiras (2295 m), no glaciers are present in the Western Taurus Mountains today. In general, glacial deposits in this region are well preserved and suitable for cosmogenic dating because of the combination of high altitudes, low to moderate tectonic activity, and dry to moderately wet climate.
2. The Pontic Mountain Range (Eastern Black Sea coast): On the Mount Kaçkar (3932 m) five glaciers are present. Although several other mountains, such as Verçenik (3709 m) and Göller (3560 m) contain glacial valleys, the glacial depositional record is poor. Where moraines are present, they are generally unsuitable for cosmogenic dating. They are poorly preserved because of the combination of rapid tectonic uplift and extremely wet climate, both resulting in high erosion rates and destruction of landforms.
3. Volcanoes and independent mountains of the Anatolian Plateau: Mount Ararat (5165 m), near the Armenian border, supports an ice cap covering approximately 10 km² and several valley glaciers. The Mount Süphan (4058 m) near Lake Van, and Mount Erciyes (3917 m) in Cappadocia also show evidence of glacial activity and active glaciers. Several other mountains in Central Anatolia, such as Uludag (2543 m), Kesis (3549 m), Mount Mercan (3368 m), Mount Mescid (3239 m), and Balik Lake (2100 m) also bear traces of past glacial activity. The glacial deposits are generally well preserved, and, on some mountains, include several different glaciations.

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