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## Net accumulation rates estimated from the Elbrus ice core (Caucasus) and its relationship with atmospheric circulation

### Content

Annual accumulation with seasonal resolution was reconstructed for a period from 1774 to 2009 using a 181.8-m ice core from the Western Elbrus Plateau in the Caucasus, Russia. Annual horizons were identified on the basis of seasonal variations of ammonium ions, oxygen-18, and succinic acid. High accumulation rate and sampling resolution enabled identification of seasonal layers in the ice core. Analysis of meteorological information for the Caucasus showed that the ice-core records representative for the region with a radius of up to 100 km. A method for separating the winter and summer seasons using the convective available potential energy was proposed. The distribution functions and spectral densities revealed an unambiguous resemblance between the annual precipitation series at the meteorological stations in the Caucasus and ice-core records. The reconstruction of accumulation on the Western Plateau corresponds to the precipitation. Precipitation varied with a period of about 10 and 40 years corresponding to the typical quasi-decadal variability. Precipitation changes on the Western Plateau is demonstrated to be driven primarily by the summer season, with the contribution of summer precipitation decreasing over 245 years. A statistically significant relationship between recent changes in precipitation in the Caucasus and fluctuations of the NAO index was also revealed. This work was supported by the Megagrant project (agreement № 075-15-2021-599, 8.06.2021)

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