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METEOROLOGICAL INDICATORS ANALYSIS OF THE TAMBUKAN LAKES AREA
AS A BASIS FOR UNDERSTANDING THE FORMATION
OF THEIR WATER-SALT BALANCE

Nikolay V. Dotsenko *, Valeria N. Gabova, Yuri A. Fedorov, Irina V. Dotsenko

Institute of Earth Sciences, Southern Federal University, Rostov-on-Don, Russia

Due to the lack of a dedicated meteorological station in the Tambukan Lakes area, alternative approaches are required to obtain reliable climate data. This study addresses this gap by applying spatial interpolation techniques. The methodology is further complicated by the region's intricate topography, which significantly affects local temperature distribution. The article presents the results of reconstructing mean annual air temperatures in the Tambukan Lakes area due to the absence of local meteorological station (MS) data. Using geoinformation technologies based on the LLRA (Linear Lapse Rate Adjustment) method, observations from seven nearest MS (1955–2025), and the Shuttle Radar Topography Mission (SRTM) digital elevation model, the adjusted mean annual air temperatures for the lakes have been calculated. A comparison of the obtained values with the MS network data using Pearson's correlation coefficient has revealed the highest similarity with the station "Mineralnye Vody". Notably, the analysis demonstrated that despite the relatively short distance between the lakes and the "Mineralnye Vody" MS, systematic temperature differences persist due to elevation and local microclimatic conditions. This finding underscores the importance of elevation-based corrections rather than relying on raw station data. A detailed analysis has shown that the Tambukan Lakes area is systematically colder by 0.74°C, with a root mean square error of 0.8°C, which is considered acceptable. Annual precipitation totals have not been used as a primary criterion due to the complex relief of the Ciscaucasia Region, which influences air mass transport. The feasibility of using data from the "Mineralnye Vody" MS, for subsequent calculation of the water-salt balance of the lakes has been substantiated.

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- References:** Fedorov Yu.A., Potapov E.G. *Expeditionary Studies of the Tambukan Lakes within the Framework of the Russian Science Foundation (RSF), Project No 17-17-01229 "Therapeutic Mud of the South of the European Territory of Russia: Formation Patterns, Assessment of Recreational Resources, and Development of a Monitoring System"*. Southern Federal University (2018).

* **Corresponding Author:** Nikolay V. Dotsenko, Postgraduate Student, Institute of Earth Sciences, Southern Federal University, R. Zorge St., 40, Rostov-on-Don, Russia. E-mail: nickvd@mail.ru