Hydrological modeling of mountain river runoff using remote sensing

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The objective of the study is to create hydrological model of mountain river runoff using European Space Agency (ESA) satellite data, including precipitation and air temperature databases. The modeling is performed using the HEC-HMS hydrological modeling program developed by the US Army Corps of Engineers. The study additionally uses a NASA digital elevation model and data from a gauging station on the Dzama River.

The integration of satellite data, gauging station data and the HEC-HMS program allows for accurate determination of runoff dynamics, which is important for water resources management. The study also promotes the use of innovative technologies in hydrological modeling and includes practical applications for achieving sustainable development goals.

References

1. European Space Agency data (ERA5 hourly data on single levels from 1940 to the present) Extended NETCDF4 gridded dataset. Total precipitation (tp/Total precipitation) and air temperature at a height of 2 m above the surface (t2m/2 meter surface temperature);
2. NASA and the Ministry of Economy, Trade and Industry of Japan databases (DEM/ASTER Global Digital Elevation Map);
3. HEC-HMS 4.1.1 hydrological modeling software;
4. ArcGIS geographic information system;
5. Zama River - daily discharges of the Zhugederi gauge station (1970-1980).