

LST QUALITY EVALUATION SERVICE FOR HETEROGENEOUS EARTH OBSERVATION DATA

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Environmental and climate monitoring requires an analysis of heterogeneous datasets of various modalities. The land surface temperature (LST) is a critical experimental parameter measuring the thermal radiance emission from the land surface where the incoming solar energy interacts with and heats the ground. The extraction of LST is challenging, as it is needed to evaluate various Earth Observation (EO) datasets with different parameters, such as the resolution, temporal resolution, coverage, or indices.

The study aims to propose an LST quality evaluation service linked with heterogeneous EO datasets. The camera of the Operational Land Imager (OLI) and the Thermal Infrared Sensor (TIRS) of the Landsat 8 satellite is used due to the high spatial resolution, while the Visible Infrared Imaging Radiometer Suite (VIIRS) is used due to its high temporal resolution accessible with a minimal delay after the flyby of satellites.

The quality of LST has been evaluated for the territories of Armenia and Belarus based on sixty-nine stationary national meteorological observation points in Belarus operated by "Belhydromet" and forty-one points in Armenia operated by the Hydrometeorological Service of Armenia have been used as observational data for the evaluation.

The analysis indicated that the temperatures of the LST obtained from Landsat 8 adequately reflect the Earth's surface temperature for both countries. At the same time, Landsat data showed high accuracy and spatial resolution, and VIIRS SDR data provided regular operational updates of LST.