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Method for ten-day assessment of the contribution of agrometeorological conditions to expected winter grain crop productivity based on satellite and ground-based information /

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The paper presents a developed and tested method for 10-day assessment of the contribution of agrometeorological factors to winter grain crop productivity. The method is based on an integrated analysis of satellite spectral indices and ground-based meteorological data for the North Caucasus, Volga and Central Black Earth regions. Satellite data from MODIS (Terra satellite) and VIIRS (SUOMI NPP satellite) radiometers were used to calculate the NDVI, VCI, and VCNI vegetation indices. Ground-based information includes meteorological and agrometeorological indicators reflecting temperature and humidity conditions. The algorithm and software modules developed within the study allow for automated tracking of 10-day changes in agrometeorological conditions and quantitative ranking of factors based on their contribution to the expected winter grain crop yield, providing an information basis for informed planning of agricultural measures.

Keywords: agrometeorological conditions, 10-day monitoring, crop yield, meteorological information, satellite indices (NDVI, VCI, VCNI), MODIS, VIIRS

Tab. 1. Fig. 13. Ref. 8.