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Using the principal component analysis to construct regression models for estimating the average regional winter wheat yield for separate regions of the Central Chernozem Administration for Hydrometeorology and Environmental Monitoring / Kleshchenko A.D., Savitskaya O.V. // Hydrometeorological Research and Forecasting, 2022, no. 4 (386), pp. 114-129.

The results of the forecast model development based on the principal component analysis for calculating the expected winter wheat yield for the regions of the Central Chernozem Administration for Hydrometeorology and Environmental Monitoring (AHEM) were shown. Satellite, meteorological and statistical data were used as input information. Satellite data included the NDVI and VCI indices, and meteorological data included average air temperature for one and three 10-day periods, total precipitation per one and three 10-day periods, average air humidity deficit for one and three 10-day periods, Selyaninov hydrothermal coefficient. The results of calculating the average winter wheat yield for the selected groups of separate regions on the territory of the Central Chernozem AHEM were presented. The calculations were based on the integration of satellite and ground-based information for the period from 2012 to 2021 and on the developed forecast models using the principal component analysis.

Key words: satellite data, principal component analysis, orthogonal projections to latent structures, winter wheat, average regional yield

Tab. 5. Fig. 3. Ref. 20.