



Estimation efficiency of usage satellite derived and modelled biophysical products for yield forecasting

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Efficient and timely crop monitoring and yield forecasting are important tasks for ensuring of stability and sustainable economic development [1]. As winter crops play prominent role in agriculture of Ukraine – the main focus of this study is concentrated on winter wheat. In our previous research [2, 3] it was shown that usage of biophysical parameters of crops such as FAPAR (derived from Geoland-2 portal as for SPOT Vegetation data) is far more efficient for crop yield forecasting to NDVI derived from MODIS data - for available data.

In our current work efficiency of usage such biophysical parameters as LAI, FAPAR, FCOVER (derived from SPOT Vegetation and PROBA-V data at resolution of 1 km and simulated within WOFOST model) and NDVI product (derived from MODIS) for winter wheat monitoring and yield forecasting is estimated.

As the part of crop monitoring workflow (vegetation anomaly detection, vegetation indexes and products analysis) and yield forecasting SPIRITS tool developed by JRC is used. Statistics extraction is done for landcover maps created in SRI within FP-7 SIGMA project.

Efficiency of usage satellite based and modelled with WOFOST model biophysical products is estimated.

[1] N. Kussul, S. Skakun, A. Shelestov, O. Kussul, “Sensor Web approach to Flood Monitoring and Risk Assessment”, in: IGARSS 2013, 21-26 July 2013, Melbourne, Australia, pp. 815-818.

[2] F. Kogan, N. Kussul, T. Adamenko, S. Skakun, O. Kravchenko, O. Kryvobok, A. Shelestov, A. Kolotii, O. Kussul, and A. Lavrenyuk, “Winter wheat yield forecasting in Ukraine based on Earth observation, meteorological data and biophysical models,” International Journal of Applied Earth Observation and Geoinformation, vol. 23, pp. 192-203, 2013.

[3] Kussul O., Kussul N., Skakun S., Kravchenko O., Shelestov A., Kolotii A, “Assessment of relative efficiency of using MODIS data to winter wheat yield forecasting in Ukraine”, in: IGARSS 2013, 21-26 July 2013, Melbourne, Australia, pp. 3235 – 3238.