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Air quality monitoring system in the kyiv city within SMURBS (ERA-PLANET) project

Andrii Shelestov

National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Kyiv, Ukraine

Space Research Institute NASU-SSAU, Kyiv, Ukraine

Along the season crop classification maps based on satellite data is a challenging task for Ukraine because of a large diversity of agricultural crops with different phenology (crop calendars). Traditionally crop maps provided in the end of the vegetation season [1], but early season crop mask maps are essential for accurate crop yield prediction, crop production forecasting in the operational context and flood monitoring [2, 3].

In this study, we investigate feasibility of delivering early and along season crop specific maps based on all available free satellite data. In previous works, we proposed an approach that combines unsupervised and supervised neural networks for missing data restoration and supervised classification, respectively [4, 5]. For this experiment Bilotserkivskiy district in Kyiv region has been selected. For 2013-2015 crop specific maps in the end of the vegetation season with overall accuracy higher than 85% for 13 classes have been obtained. For 2016, we discovered the conditions for obtaining early crop classification map (as soon as possible) with high accuracy and improve it during the vegetation period.

For Bilotserkivskiy district we obtained accurate result for the early season classification, but for bigger territory we could provide so accurate crop maps using SAR data only, due to strong cloud cover of optical data.

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