Satellite crop monitoring within World Bank project on land management transparency in Ukraine

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In 2018 the International Bank for Reconstruction and Development ("World Bank") opened a tender to support the Program "Supporting Transparent Land Governance in Ukraine". This Program is providing support to the Government of Ukraine aiming at the establishment of preconditions for transparent functioning of agricultural land markets, improving efficiency of land use and establishing the foundations for investments in the rural sector. One of the most important tasks of the program is satellite agricultural monitoring including crop classification and crop conditions assessment. The tender for satellite agricultural monitoring has been won by a private company EOS (https://eos.com/) in collaboration with public institution Space Research Institute NASU-SSAU (SRI) (http://inform.ikd.kiev.ua/).

The main goal of the project is to identify the actual use of agricultural land and cultivation of other land categories in three administrative regions of Ukraine outside of settlements using free satellite imagery and machine learning methods. The objectives of the project are classification of land cover, collection of training and validation samples, crop classification using satellite imagery (Sentinel-1, Sentinel-2, Landsat-8) for recognition of information on actual land use, estimation of NDVI, identification of irrigated lands.

Within the project different open source solutions (GEE, Sen2Agri) [1] and high performance computational techniques [2] will be used for land use/land cover classification and crop mapping, as well as our own methodology of crop classification based on machine learning methods [3].

The main advantage of the proposed approach is the synthesis of scientific methods and results of SRI with high performance cloud technologies and solutions of EOS. It is expected that satellite monitoring of actual land use will substantially improve transparency and accountability of local departments of StateGeoCadastre and local governments. It will also provide authorities involved with land governance, land owners and land users with reliable information on actual use of agricultural land.

References

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