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Methodology for Sustainable Development Goal indicators calculation with Vlab implementation

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During the project ERA-PLANET Horizon 2020 there is a need for the development of intelligent systems and data processing chains to calculate essential variables for indicators of Sustainable Development Goals. For our study we choosed indicators “15.3.1 Proportion of land that is degraded over total land area” and “2.4.1. Proportion of agricultural area under productive and sustainable agriculture”. There is a methodology for evaluating land productivity as productive, sustainable and degraded, which includes three subindicators: the trend of land cover change, the trend of VI and the trend carbon stocks change, that combined by rule "One Out, All Out" [1]. Also in project GEOESSENTIAL was developed Ecopotential Vlab like a new efficient and perspective way for scientists to carry out research aimed at the use of large satellite and in-situ measurement data supplied by GEOSS Platform. Using cloud computing resources, with direct access to data of GEOSS Portal, Vlab has the ability to introduce workflows to count and monitor essential variables of water, food and energy and, accordingly, to calculate indicators of sustainable development goals for different countries around the world.

Using this methodology, the indicators for 2016 and 2017 were calculated using the high resolution regional data[1]. Our land cover classification map for the territory of Ukraine was built using the methods of deep learning developed in NSAU-NASU Space Research Institute[2] on data of Sentinel-1 and Sentinel-2 with a resolution of 10 m [3]. NDVI trend map for 5 years , built on the basis of the images of Sentinel- 2 and Landsat-8. This workflows also, implemented for use in the framework ECOPotential Vlab. So it can be used for any country, receiving on the entry a classification map built up regionally with high resolution or global land cover map with low resolution, along with the time series of satellite images of Sentinel-2 and Landsat-8. This is an important step towards the establishment of a unified and standardized environmental and resources monitoring system that can be used for any territory in order to achieve the Sustainable Development Goals in ERA-PLANET Project

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