An Open Source Platform for Utilising EO Data products from the Sentinel Missions in Support of Sustainable Agriculture in Greece

James O' Connor (1) and George P. Petropoulos (2,3)

(1) School of Natural and Built Environments, Kingston University, UK, (2) School of Mineral Resources Engineering, Technical University of Crete, Politexneioupoli, Kounoupidiana, 73100, Crete, Greece, (3) Directorate for Agricultural Research, Ministry of Agriculture, Greece, Department of Soil & Water Resources, Institute of Forage & Industrial Crops, Larisa, Greece (petropoulos.george@gmail.com)

The recent launch of free Earth Observation (EO) data globally from the Sentinel missions offers a unique opportunity to exploit those data and the suite of data products provided in a wide range of applications and scientific investigations. Therefore, the development of tools or platforms that allow timely easy access to those data to be later on manipulated by different end user groups is of paramount importance and a matter of key priority. One such key group consists that of farmers.

In this work we present an open source web application, developed in python, which aims at providing the Greek farmers timely with easy access to EO data from the suite of Sentinel missions, including operationally distributed products currently distributed by the Agency. In the platform, the farmer defines the boundaries of their field by a shapefile of any size and type. Subsequently, there are some customisation options in regards to the actual Sentinel data the farmer wishes to obtain for the defined shapefile. Those include mainly the selection of biophysical parameters to be acquired, the time period of the data acquisition and the format the data is required to be obtained. Next, the EO data selected from the previous step are provided to the end user (farmer) in a format that may be readily interpreted (jpeg or tiff image) or a format that allows those to be further manipulated (e.g. in an image processing software). The platform also has also a subscription option, which allows farmers registered to receive automatically an update of available EO datasets for their given shapefile.

The use of our platform is demonstrated herein at a small scale using a real case scenario of Greek farmers. All in all, our results corroborate the usefulness of the software platform, as a means of providing accurate, reliable, and timely information from the latest EO sensors in space that is useful for planning and managing agricultural areas, assisting also the implementation of sustainable agriculture.

Keywords: earth observation, sentinels, open source, farmers, precision agriculture,