Deep Learning techniques for remote sensing data

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With the latest missions launched by ESA or NASA, such as Sentinel or Landsat, equipped with the latest technologies in multispectral sensors, we face an unprecedented amount of data with spatial and temporal resolutions never reached before. Exploring the potential of this data with state-of-the-art Artificial Intelligence techniques such as "Deep Learning" could potentially change the way we understand the Earth system and how to protect its resources.

The DEEP-hybrid-datacloud project, funded by the European Commission H2020 program, aims to prepare a new generation of e-infrastructures and provide research communities with new tools based on Deep Learning and other intensive computer techniques to exploit very large data sources in a friendly manner. It provides a framework to access accelerator-based systems like GPU capable to handle Deep Learning models. These new technologies enable new methods to process remote sensing data in order to get valuable information from big data sources automatically. One of the Use Cases proposed in DEEP-Hybrid-DataCloud aims to explore the applications of the Deep Learning techniques in satellite data, ranging from applying atmospheric corrections to the images to remote object detection or terrain segmentation. The Use Case applies Deep Learning techniques in order to simplify diverse stages during the data pre-processing. It includes atmospheric corrections, which aims to determine the real reflectance value of the Earth's surface from the apparent reflectance measured by the sensor, becoming one of the most important parts of the data pre-processing.

The proposed poster will detail how the DEEP-hybrid-datacloud products can be applied to satellite data pre-processing and how to train Deep Learning models to obtain valuable scientific knowledge.