COPERNICUS SENTINEL-2 MISSION: PRODUCTS, ALGORITHMS AND CAL/VAL

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Abstract

The Copernicus programme is a European initiative for the implementation of information services dealing with environment and security, based on observation data received from Earth Observation (EO) satellites and ground based information. Within this context, ESA is responsible in particular, for the implementation of the Copernicus Sentinel missions, feeding the Copernicus services with operational EO data. The Sentinel-2 optical high-resolution imaging mission will be devoted to the operational and systematic monitoring of land and coastal areas.

To maximize the products suitability and readiness to downstream usage for the majority of applications, the Sentinel-2 Payload Data Ground Segment (PDGS) will systematically generate, archive and distribute Level-1C products, which will provide Top-of-Atmosphere (TOA) reflectance images, orthorectified using a global Digital Elevation Model (DEM) and projected on Universal Transverse Mercator (UTM) coordinate system. A Level-1B product will also be available for expert users, providing radiance images in sensor geometry together with an appended geometric model.

Additionally, a complementary atmospheric correction and enhanced cloud screening algorithm is being prototyped. This processor will allow converting the Level-1C TOA reflectance image into Bottom-of-Atmosphere (BOA) reflectance. The processor will be provided as plug-in software of the Sentinel-2 Toolbox that will run on user side.

During the mission operational phase, the Sentinel-2 Mission Performance Centre (MPC), as integrating part of the mission ground segment, will be in charge of ensuring that mission performances are met in terms of data quality through the calibration and validation activities.