

## An Overview of Copernicus Sentinel-2 Surface Reflectance Products From an Analysis Ready Data Perspective

Valentina Boccia<sup>1</sup>, Rosario Iannone<sup>2</sup>, Ferran Gascon<sup>1</sup>, Philippe Goryl<sup>1</sup>, Enrico G. Cadau<sup>3</sup>, Jérôme Louis<sup>4</sup>, Uwe Müller-Wilm<sup>5</sup>, Bringfried Pflug<sup>6</sup>, Magdalena Main-Knorn<sup>6</sup>, Vincent Debaecker<sup>4</sup>

<sup>1</sup> European Space Agency, ESA

<sup>2</sup> RHEA System S.p.A.

<sup>3</sup> Serco Italia

<sup>4</sup> Telespazio France - A Leonardo and Thales company

<sup>5</sup> Telespazio Vega Deutschland – A Finmeccanica / Thales Company

<sup>6</sup> DLR – German Aerospace Center, Remote Sensing Institute, Berlin, Germany

The Copernicus Sentinel-2 mission is nowadays fully operational, with the two satellites Sentinel-2A and Sentinel-2B down-streaming several terabytes of Earth Observation (EO) data every day, freely available to users. On top of the Level-1C (i.e. Top-Of-Atmosphere and orthorectified) products, also Level-2 (i.e. Surface Reflectance) products are released to the EO user community since March 2018. With a constantly growing data volume, optimizing use and uptake of Sentinel-2 data also by users with limited resources and expertise is a priority in order to maximize the return on investment of the overall Sentinel-2 mission. To do so, specific requirements have been adopted for Sentinel-2 products metadata and for the applied radiometric, atmospheric and geometric corrections in order to facilitate access to, understanding and processing by users of the satellite data itself. In parallel, in the last years a growing number of countries and international organizations have expressed a similar need for efficient and effective access, preprocess, and use of the growing volume of space-based data for local, regional, and national applications and decision-making. In order to answer to this global need, the Committee on Earth Observation Satellites (CEOS) has started the CEOS Analysis Ready Data for Land (CARD4L) initiative, where a CARD4L product is defined as “satellite data that have been processed to a minimum set of requirements and organized into a form that allows immediate analysis with a minimum of additional user effort and interoperability both through time and with other datasets”. Provision of CARD4L products by the several satellite data providers is expected to reduce the burden on global satellite data users and to allow immediate creation of Data Cubes and subsequent enhancement of the scientific value of satellite data. Therefore, in the present paper an overview of the Sentinel-2 Surface Reflectance products is provided and their compliance to the CARD4L Framework and requirements is analyzed.