AQUASCOPE: Aquatic Earth-Observation service for Belgian North Sea users

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High-quality satellite-based ocean colour and thermal products can provide valuable support and insights in the management and monitoring of coastal ecosystems. Today's availability of Earth Observation (EO) data is unprecedented including traditional medium resolution ocean colour systems (e.g. Sentinel-3/OLCI) and high-resolution land sensors (e.g. Sentinel-2/MSI, Landsat-8,9). Each of these sensors offers specific advantages in terms of spatial, temporal or radiometric characteristics, enabling the provision of different types of ocean colour and sea surface temperature products.

In the AQUASCOPE project (2025-2028), RBINS and VITO are collaborating to such aquatic satellite products to the Terrascope portfolio (https://terrascope.be) and provide a satellite data service (satellite data archive, web viewer, EOPlaza) to Belgian North Sea users. AQUASCOPE will provide for the Belgian North Sea and surrounding waters (49°N-53°N, 2°W-5°E), satellite data products at spatial resolutions from 10m to 500m (including fusion products), from 2015 up to Near Real Time (latency 24 hours) at different timescales (daily, monthly, yearly, long-term and with anomalies) for the following parameters: Suspended Particulate Matter (SPM), ISO Turbidity (TUR), Chlorophyll a (CHL), Algal Bloom and Eutrophication (AB/EUTRO), Sea Surface Temperature (SST) and Floating Objects/Vegetation (FO/FV) in addition to true color (RGB) imagery.

The AQUASCOPE EO products differ from the European Copernicus Marine coastal products (https://marine.copernicus.eu/nl) in several key aspects resulting in a service which is optimized for Belgian End Users.

The key differences are:
Spatial Resolution: The proposed products will have a higher spatial resolution of 10m compared to the European Coastal products, which have a spatial resolution of 100m for Sentinel-2.

Spatial Extent: The proposed products will cover a complete Belgian Coastal Zone (BCZ), whereas the European Coastal products only cover a 20km coastal strip for Sentinel-2.

Product Coherency: The proposed products will ensure coherency between Sentinel-2 and Sentinel-3 products, which is not the case with the European Coastal products.

Optimized Ocean Color Products: The proposed products will be optimized for Belgian waters, aligning with the products officially used by the OSPAR commission which are not available through the Copernicus Marine service.

Data Fusion Products based on coherent Sentinel-2 and Sentinel-3 data products are not available through the Copernicus Marine Service.

We aim to demonstrate the AQUASCOPE EO products and their usefulness for the Belgian marine community giving interested parties the opportunity to provide us with their data requirements allowing us to align the AQUASCOPE service and products to their needs and expectations. With this project we aim to support federal (Health and Environment, Maritime Security, Defence) and regional (Coastal Service, Maritime Rescue) government services; the marine science community, including modellers and users of the Belgica and Simon Stevin Research Vessels; and private companies, e.g. associated with aquaculture, commercial diving and dredging activities.

Keywords
Ocean Colour; Earth Observation; Coastal Ecosystem; Marine Monitoring