

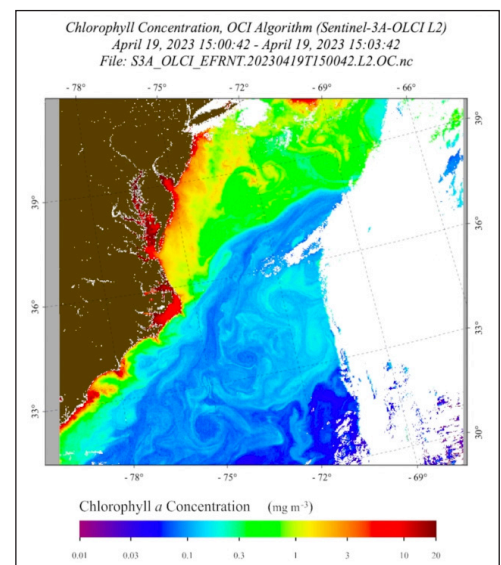
Water Quality Products

Satellite Needs Working Group - Solution Fact Sheet

The Ocean Biology Processing Group (OBPG), at NASA's Goddard Space Flight Center, produces analysis-ready ocean color products using observations from the Ocean and Land Colour Instrument (OLCI) aboard the Sentinel-3A/B satellites. OLCI provides information on the optical properties ("coloration") of water bodies affected by constituents such as phytoplankton, sediment, and organic matter. Along with other funding sources, the Satellite Needs Working Group (SNWG) enabled the OBPG to develop additional Level-2 and gridded Level-3 OLCI ocean color data. There are now 44 water quality products encompassing:

- Ocean Color (OC)
- Inherent Optical Properties (IOP)
- Chlorophyll (CHL)
- Diffuse Attenuation Coefficient for Downwelling Irradiance (KD)
- Remote Sensing Reflectance (RRS)

Products are produced using NASA ocean color algorithms and calibration approaches that minimize the bias between OLCI products and the standard NASA ocean color time-series from the SeaWiFS, MODIS, and VIIRS instruments. Level-2 and Level-3 processing capabilities of OLCI ocean color data are also available through the SeaDAS open source software package.



This figure shows chlorophyll concentrations in April 2023 for the Chesapeake Bay and was created in SeaDAS using Sentinel-3A OLCI Level-2 Earth-observation Full Resolution (EFR) Ocean Color (OC) data.

Credit: NASA Goddard Space Flight Center

Societal Benefit

- Provides ocean color data that is compatible with ocean color data processing and analysis software such as SeaDAS
- Offers crucial insights into the function and health of aquatic ecosystems, including through monitoring of harmful algal blooms
- Improves our understanding of the effects of climate change and ocean acidification on marine ecosystems
- Supports the monitoring and management of coastal water quality, fisheries and aquaculture, and marine protected areas

Water Quality Products

Water Quality Products	Ocean Color Data (OC)	Inherent Optical Properties (IOP)	Chlorophyll (CHL)	Diffuse Attenuation Coefficient for Downwelling Irradiance (KD)	Remote Sensing Reflectance (RRS)
Number of available SNWG products	6	14	8	8	8
Platform	Sentinel-3A/B				
Instrument	Ocean and Land Colour Instrument (OLCI)				
Sensor Type	Visible/Near-Infrared Imaging Spectrometer				
Processing level	2	2 & 3	3		
Temporal coverage	April 25, 2016 - present (Sentinel-3A) April 25, 2018 - present (Sentinel-3B)				
Revisit time	< 2 days <i>Note: Sentinel-3A/B combined for OLCI</i>				
Latency	Near real-time: 1-4 days Final: ~45 days <i>Note: NRT is not available for 300m (full resolution) L2 OC and IOP products</i>				
Spatial coverage	Global				
Spatial resolution	300 m & 1200 m (original swath)	L2: 300 m & 1200 m (original swath) L3: 4.6 km (binned) or 4 km & 9 km (mapped)	4.6 km (binned) or 4 km & 9 km (mapped)		
Data format	NetCDF4				

How do I access this data?

The water quality data products are distributed by NASA's OB.DAAC, including data access and documentation.



NASA OB.DAAC

Where can I find more information?

More information on the Water Quality Products is available on this solution's webpage and the OB.DAAC Ocean Color website.



Water Quality Products Webpage



OB.DAAC Ocean Color Website

Background Image Credit: NASA OB.DAAC