



VNIVERSITAT
DE VALÈNCIA



***Jornada Copernicus España:
Servicio de Vigilancia Terrestre y Visión general del Programa***

Servicio Lake Water Quality

Antonio Ruiz-Verdú

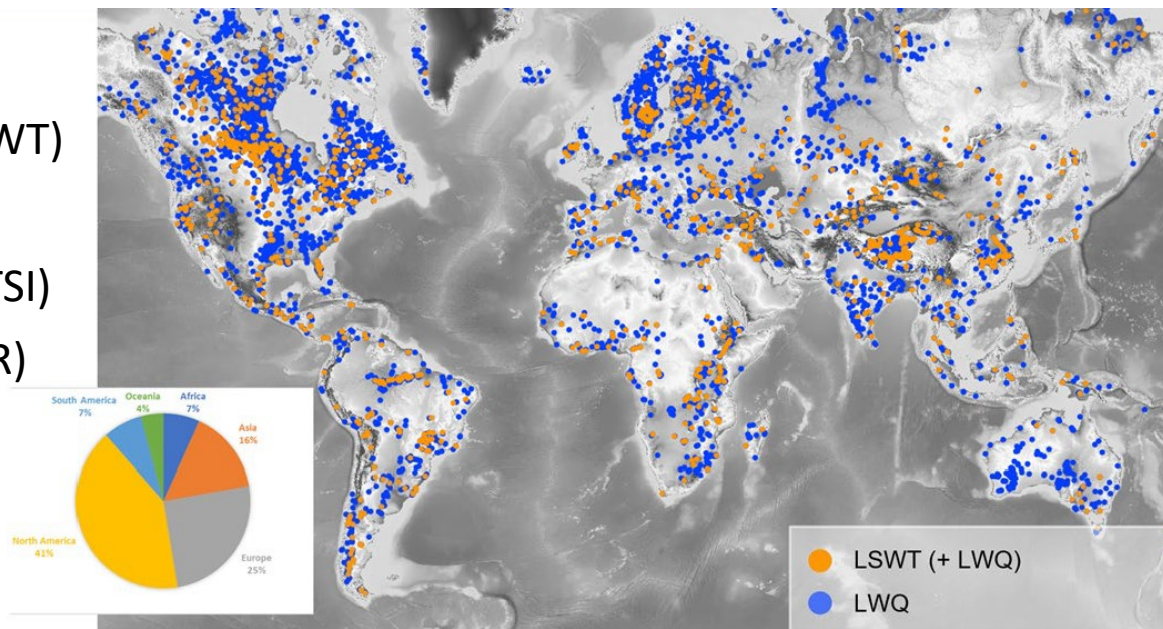
Instituto Geográfico Nacional (IGN). Madrid, 10 de diciembre de 2024





<https://land.copernicus.eu/global/products/lwq>

- Conjunto de bases de datos raster globales, disponible en el *CLMS Portfolio*
 - Bio-geophysical Parameters → Water Bodies → Lake Water Quality
- Selección de masas de agua de tamaño mediano-grande, incluidas en la *Global Lakes and Wetlands Database (GLWD)*
- Variables medidas (V1):
 - Temperatura del agua (LSWT)
 - Turbidez (TUR)
 - Índice de Estado Trófico (TSI)
 - Reflectividad del agua (LSR)
- Nuevas variables (V2)
 - ✓ [Clorofila-a]
 - ✓ TSM
 - ✓ Probabilidad Cianobacterias



Resolución espacial:

- 1km (LSWT) → global
- 300m (LWQ 300m) → global
- 100m (LWQ 100m) → Europa y África

Frecuencia:

- Promedios de 10 días para LSWT, TUR, TSI
- Mejor espectro para LSR

Periodo cubierto:

- 2002-2012 (MERIS + AATSR)
- 2016-actualidad (OLCI + SLSTR)
- 2019-actualidad (S2)

Disponibilidad:

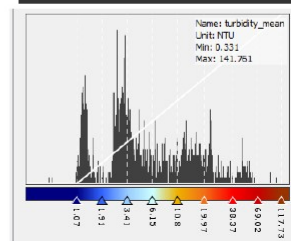
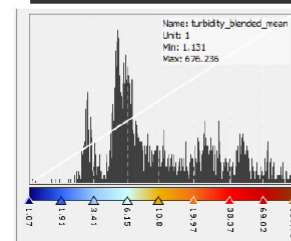
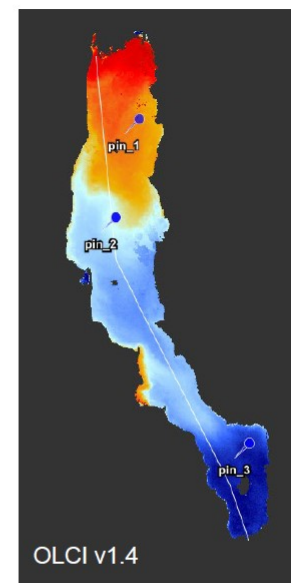
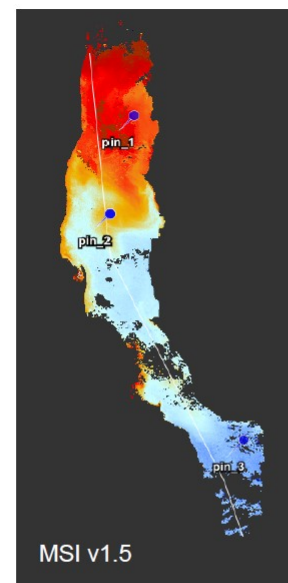
- 3 días después del final de cada decena

Equipo de producción:

- PML & BC (LWQ)
- University of Reading (LSWT)

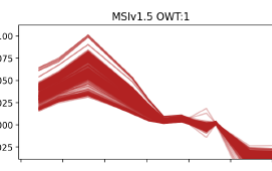
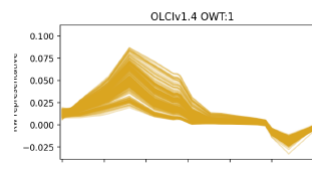
Lake Turkana

20210701

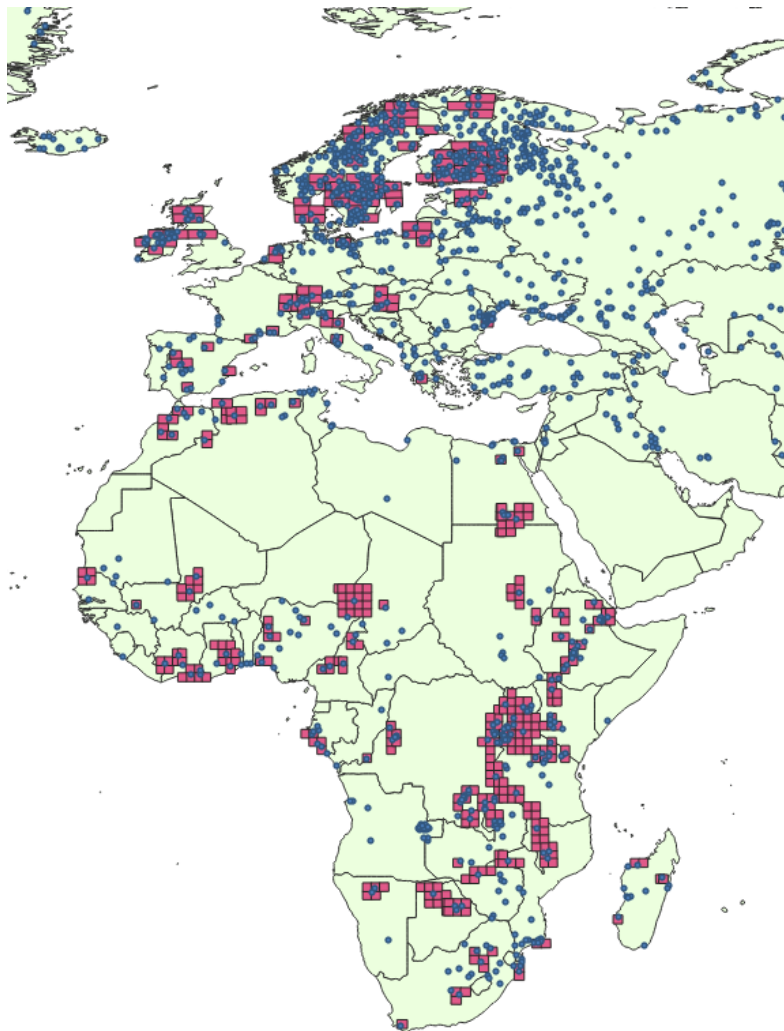


300m OLCI

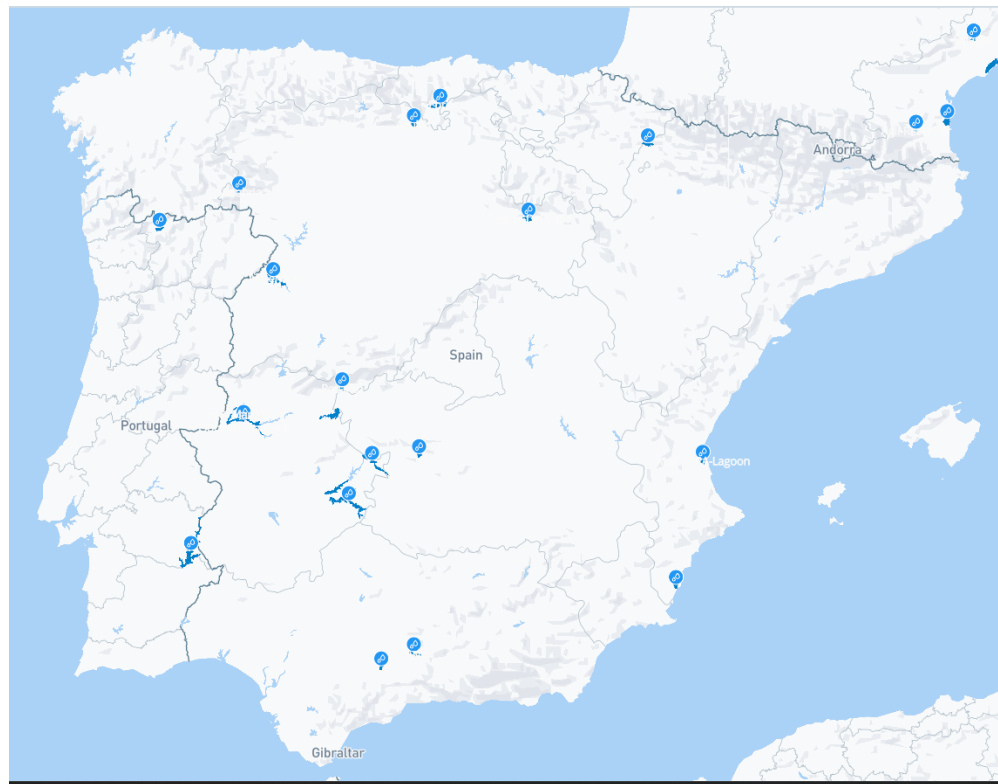
100m MSI



Steltzer et al. LPS 2022



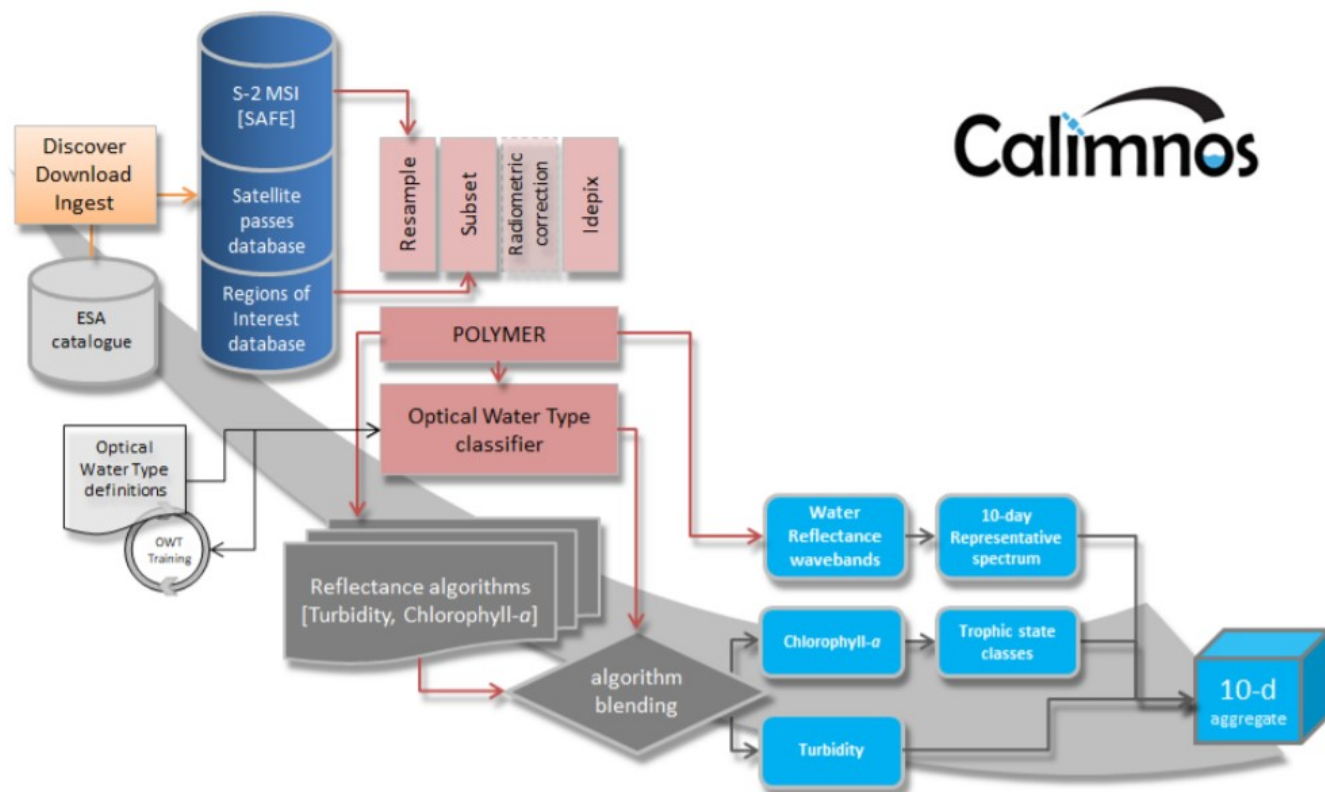
LWQ 100: 225 gránulos de S2
Todas las masas de agua
incluidas en cada gránulo



LWQ 300: 19 masas de agua en la península
ibérica

- A partir de S-2 (100 m) o S-3 y MERIS (300 – 1000 m)
- Promedios de 10 días. Mapas continuos
- Utiliza el estado del arte de los algoritmos mejor adaptados a las aguas continentales:

- Pre-proceso (ESA)
- Identificación de píxeles de agua (Idepix)
- Corrección atmosférica (POLYMER)
- Clasificación en tipos ópticos de aguas (OWT)
- Selección de algoritmos para [Chl-a] y turbidez



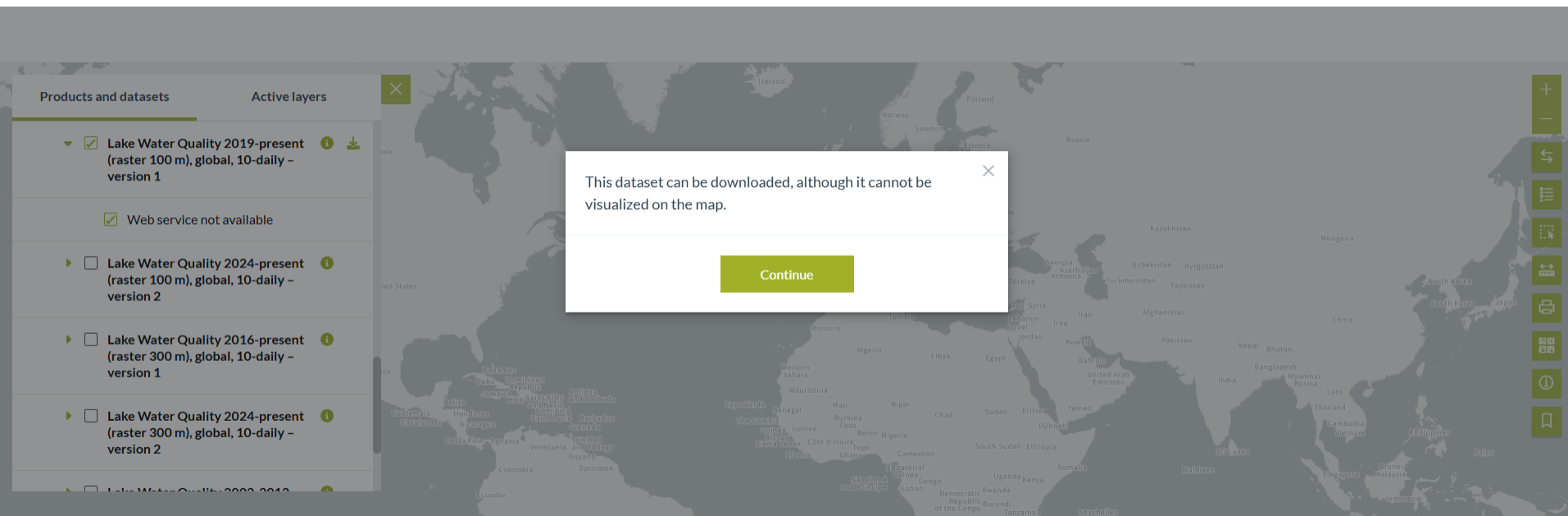
Calimnos

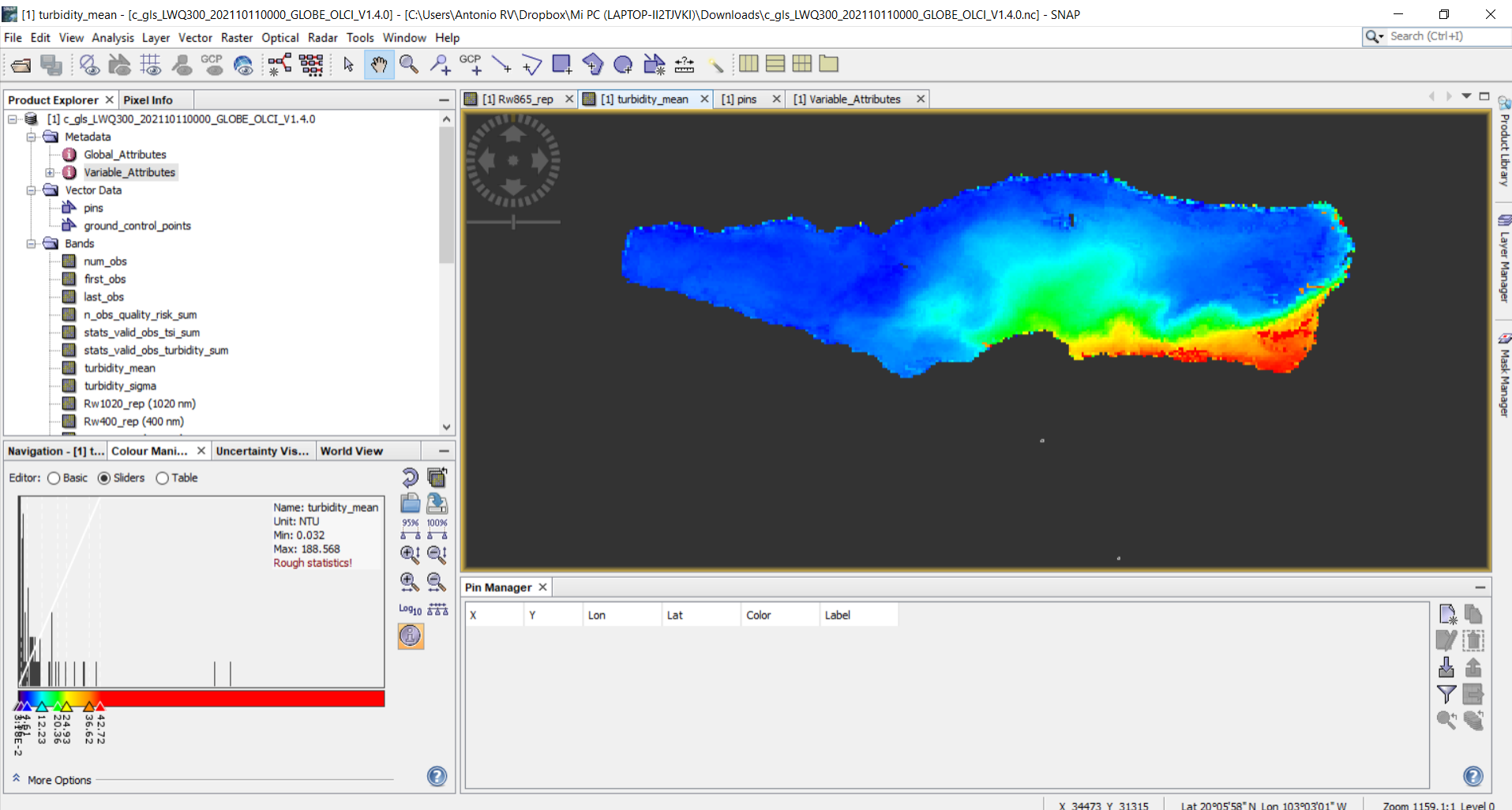
Main elements	Reference
Retrieval of Level-1 TOA reflectance from Sentinel2-MSI	
Pre-processing including - Resampling of all MSI Bands to 100m - Pixel identification using Idepix	
Atmospheric correction using Polymer algorithm to produce normalized water-leaving reflectance	Steinmetz, F. et al. (2011) Warren et al. (2019)
Classification of the optical water type to select best suitable algorithms for retrieval of water constituent concentrations.	Moore, TS. et al. (2001) Moore, TS. et al. (2009)
Algorithm tuning and blending - Algorithms designed to be best suitable to describe chlorophyll-a and turbidity of that water type are blended on a pixel-by-pixel basis. - A weighted average of turbidity and Trophic Static Index (TSI, derived from Chl-a) is then produced based on the membership functions.	Warren, M.A. et al. (2021) OC2: see NASA Ocean Color 708/665 ratio: Gilerson et al. (2010) NIR-Red Band algorithm: Gons et al. (2005) Turbidity: Nechad et al. (2009)
Trophic State Index (TSI) is based on the chlorophyll-a concentration	Carlson (1977)
Turbidity is derived from the suspended matter concentration, with algorithms depending on the optical water type.	Binding et al. (2010) Vantrepotte et al. (2011)
Temporal and spatial aggregation of turbidity and TSI is performed through binning to a 100m grid, eliminating all pixels flagged as invalid and providing the mean and standard deviation for each parameter. For the lake water reflectance, the best representative spectrum is selected. It is defined as the spectrum closest to the median of all spectra observed during the time period.	SNAP Lake Aggregate operator

- Nuevo acceso (desde julio 2024):

<https://land.copernicus.eu/global/products/lwq>

- Se requiere registro
- Un fichero netCDF global por decena
- No se puede previsualizar (solo descarga)
- API disponible





SNAP

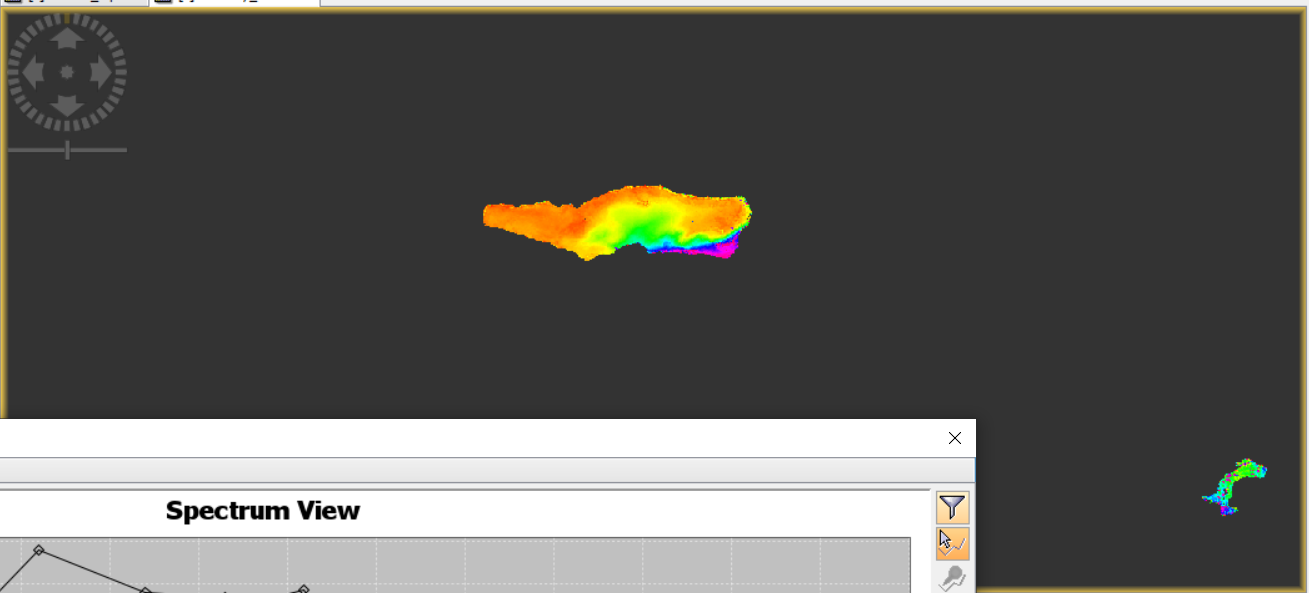
File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

Search (Ctrl+I)

Product Explorer x Pixel Info

[1] Rw865_rep x [1] turbidity_mean x

- Rw510_rep (510 nm)
- Rw560_rep (560 nm)
- Rw620_rep (620 nm)
- Rw665_rep (665 nm)
- Rw674_rep (674 nm)
- Rw681_rep (681 nm)
- Rw709_rep (709 nm)
- Rw754_rep (754 nm)
- Rw760_rep (760 nm)
- Rw764_rep (764 nm)
- Rw767_rep (767 nm)
- Rw779_rep (779 nm)
- Rw865_rep (865 nm)
- Rw885_rep (885 nm)
- Rw900_rep (900 nm)
- Rw940_rep (940 nm)
- RwDayNum_rep
- trophic_state_index

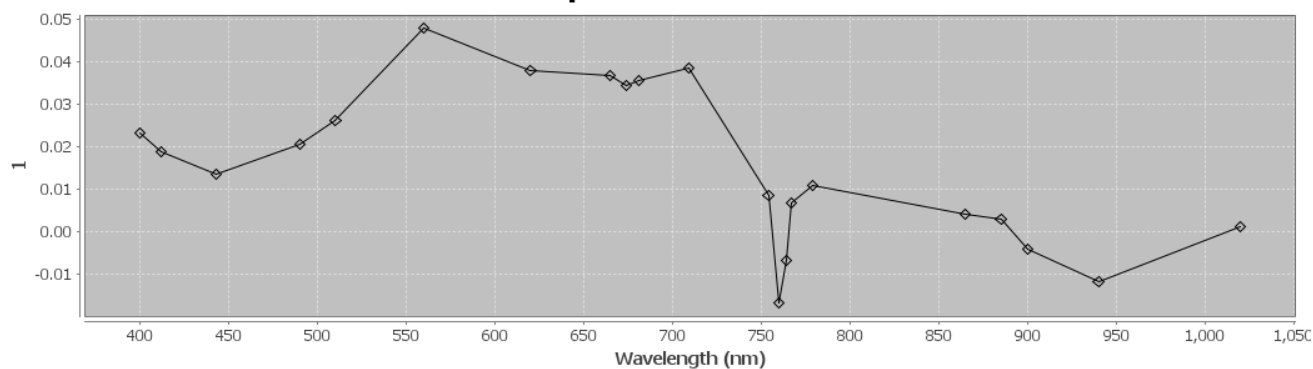


Navigation - [1] t... Color

Editor: ☐ Basic ☒ Slide

Spectrum View x

Spectrum View



48°N Lon 102°55'07"W Zoom 335.7:1 Level 0



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