

Copernicus
supporting the
Marine Strategy
Framework Directive
Copernicus for Local and Regional Authorities















Copernicus EU



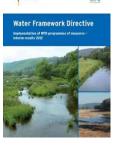
### European Directives on coastal areas

- ✓ Water Framework Directive (WFD)
- Marine Strategy Framework Directive (MSFD)
- **✓** Recommendation on Integrated Coastal Zone Management
- ✓ Bathing Water, Habitats (Natura2000), ...



MSFD: Good Environmental Status of EU marine waters by 2020

















# Evaluation of the water/environmental good status by evaluating/monitoring:

- > environmental indicators in coastal waters, up to 12 n.m. (WFD)
- > 11 status descriptors on marine waters from 1 n.m. (MSFD)

### Identified gaps after the first assessment/monitoring cycles:

- ✓ Very large marine areas to monitor.
- ✓ In situ measurement/sampling costly and time/space limited
- ✓ Importance of cooperation between bordering Member States







### WFD and MSFD implementation

### MSFD implementation into national laws ->

- Appointing of a <u>national referent</u>
- Definition of a national monitoring strategy
- Bodies responsible for performing at sea monitoring

#### Representative example: Italian implementation

- National referent/coordination: Environment Ministry
- EU reporting and scientific guidance: <u>ISPRA</u> (National Institute for Environmental Protection and Research)
- ISPRA defined practices and parameters to be measured
- Monitoring mainly by regional bodies: <u>ARPA</u> (Regional Agency for the Environmental Prevention and Protection)



### Remote sensing of Water Quality

20 years of water quality measurements from Earth Observation (EO)

Large area coverage

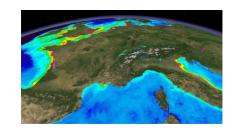
High temporal frequency

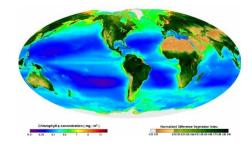
Scientific community recognizes its value for complementing in situ measurements









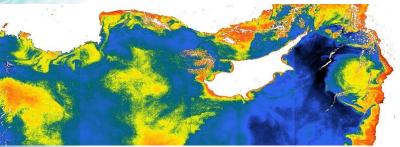




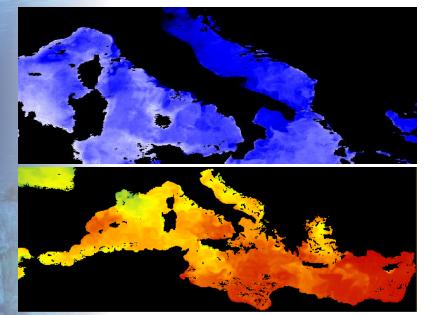




### Useful data







Water transparency

Sea surface temperature







## **DEMO**





### Software used:

**ESA -SNAP** 





#### DEMO

#### Data used:

- Chlorophyll concentration
- Sea Surface Temperature
- Diffuse absorption coefficient (Kd490)



#### **ONLINE CATALOGUE**

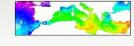
CATALOGUE PDF

FIRST VISIT





**MEDITERRANEAN SEA HIGH RESOLUTION AND ULTRA HIGH RESOLUTION SEA SURFACE TEMPERATURE ANALYSIS** 



BACK TO SEARCH

CART





Metadata provided by CMEMS Credits: Copernicus Marine Service

INFORMATION



DOCUMENTATION

SERVICES

PRODUCT IDENTIFIER

SST\_MED\_SST\_L3S\_NRT\_OBSERVATIONS\_010\_012

OVERVIEW

For the Mediterranean Sea- The L3S data consist of supercollated (merged-multisensor) L3P SST data remapped over the Mediterranean Sea at high (HR=1/16 deg.) spatial resolution, representative of night SST values (00:00 UTC).

The L3S data are produced selecting only the highest quality input data from input L2P images within a strict temporal window (local nightime), to avoid diurnal cycle and cloud contamination. Consequently, the L3S processing is run daily, but L3S files are produced only if valid SST measurements are present on the area considered.

FULL OVERVIEW

VARIABLES

sea surface temperature

GEOGRAPHICAL COVERAGE

46.0

Areas: mediterranean-sea

-18.12



36.25

30.25

SPATIAL RESOLUTION 0.01 degree

VERTICAL COVERAGE from 0m to 0m (CRS=EPSG:5714)

TEMPORAL RESOLUTION Daily mean

TEMPORAL COVERAGE from 2008-01-01T00:00:00Z, still going

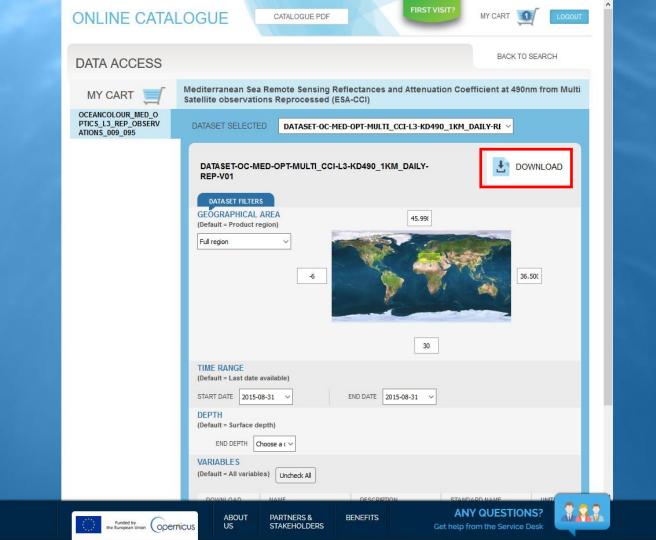
UPDATE FREQUENCY

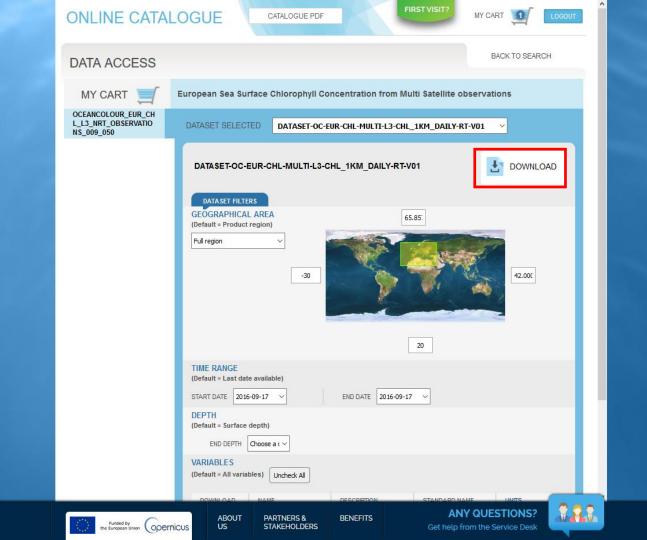


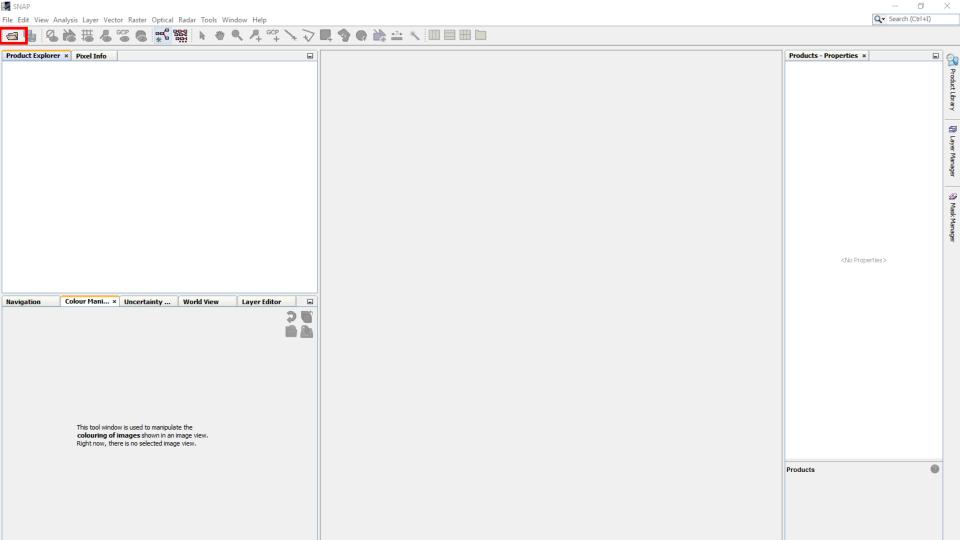
**ABOUT** 

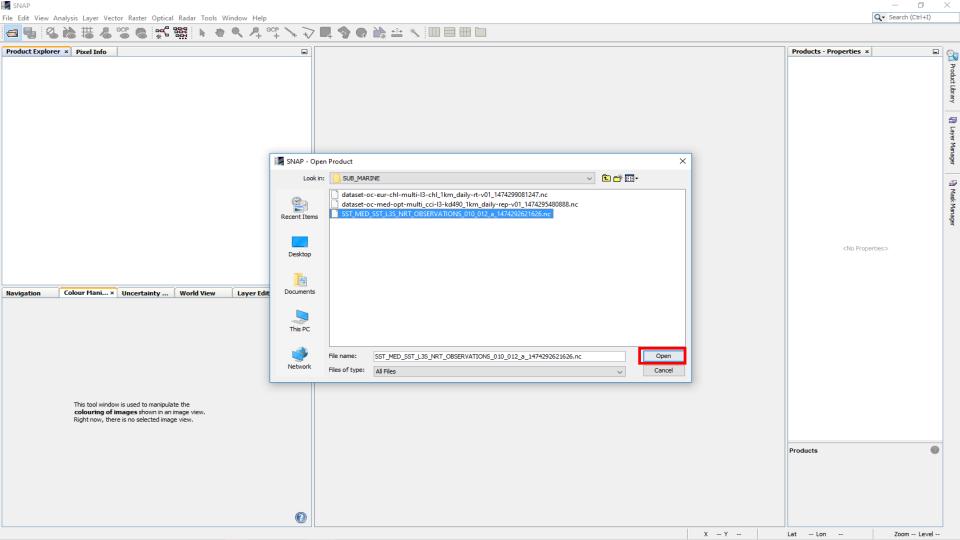
US

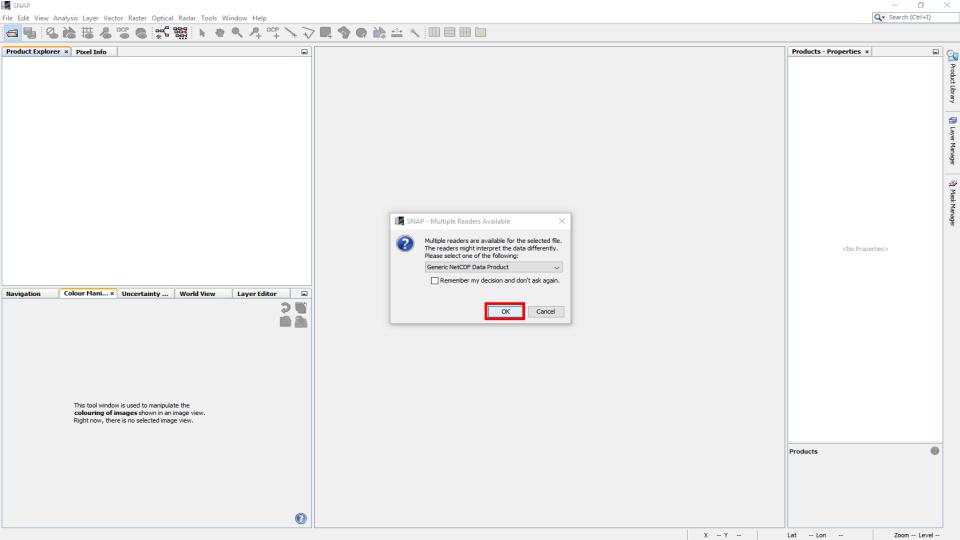


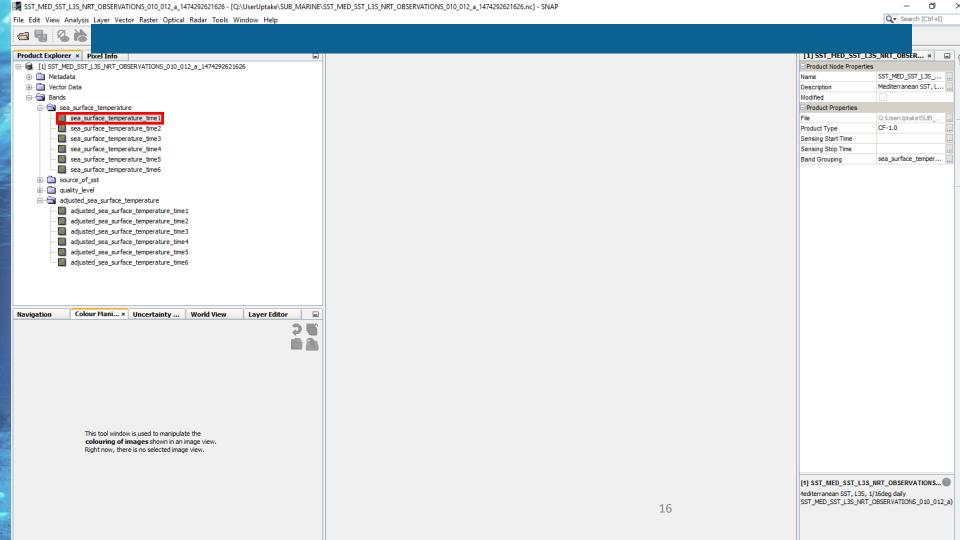


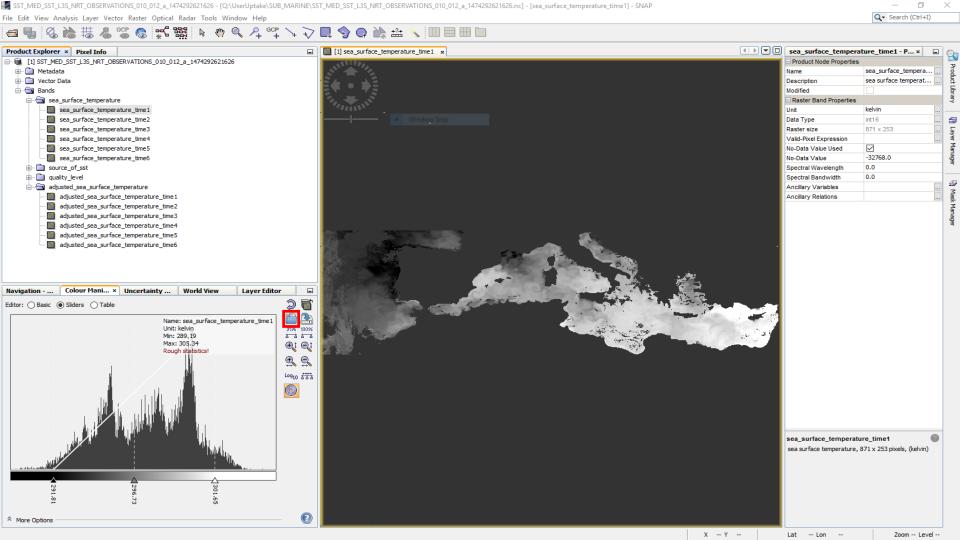


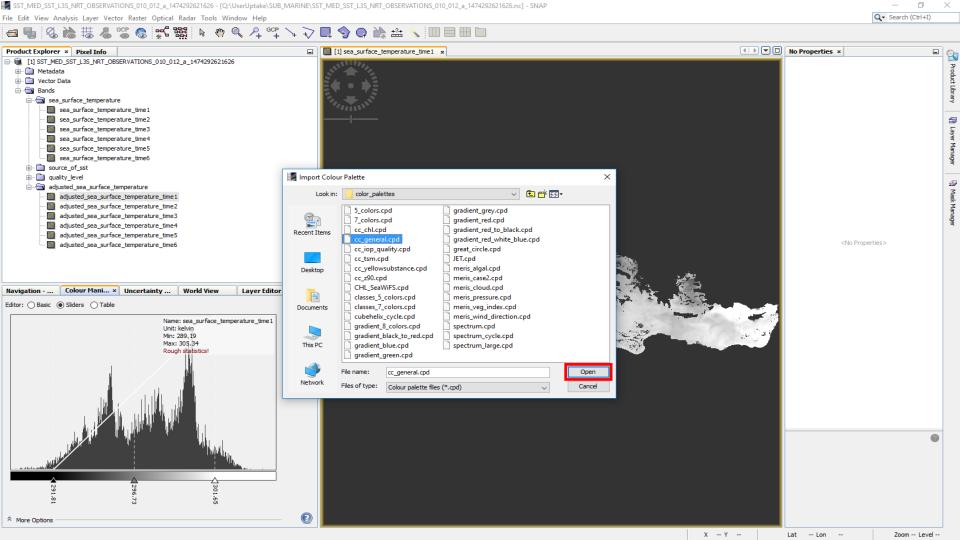


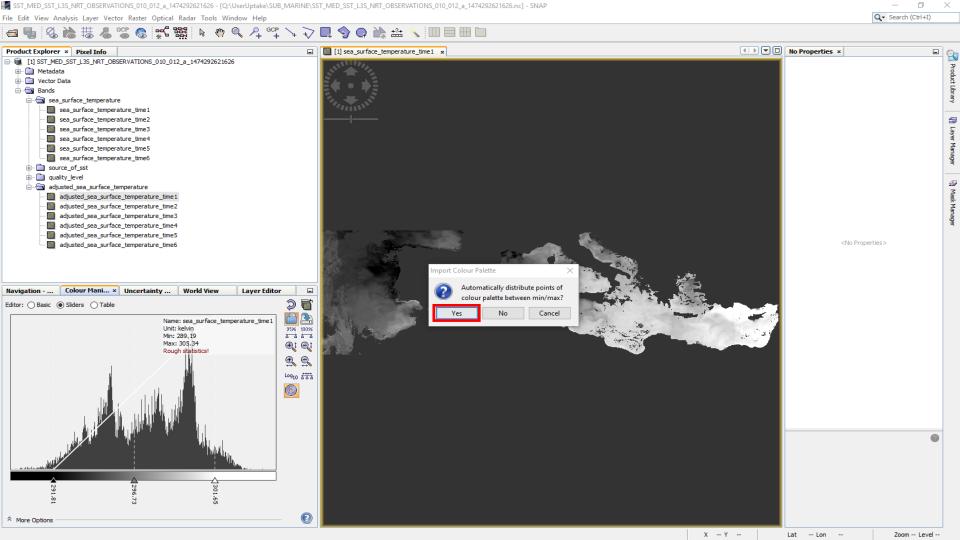


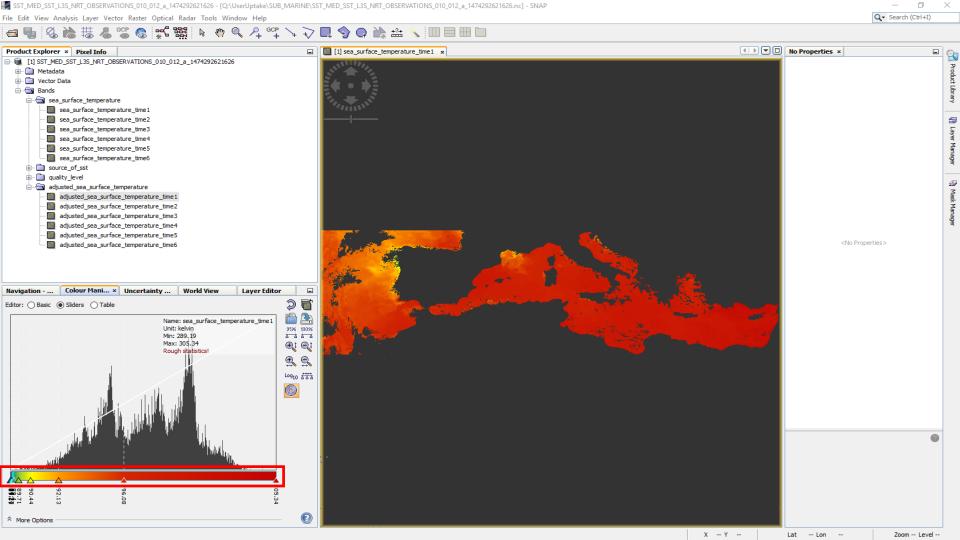


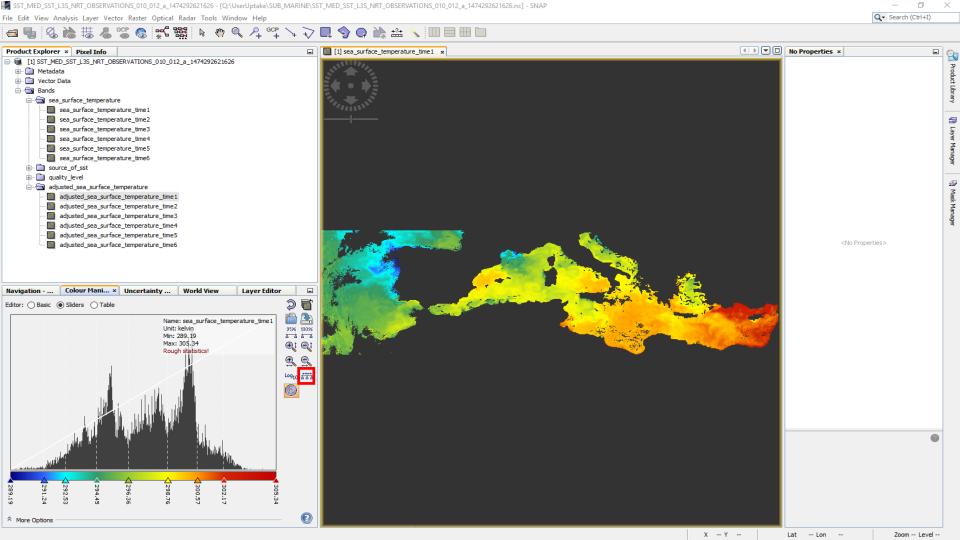


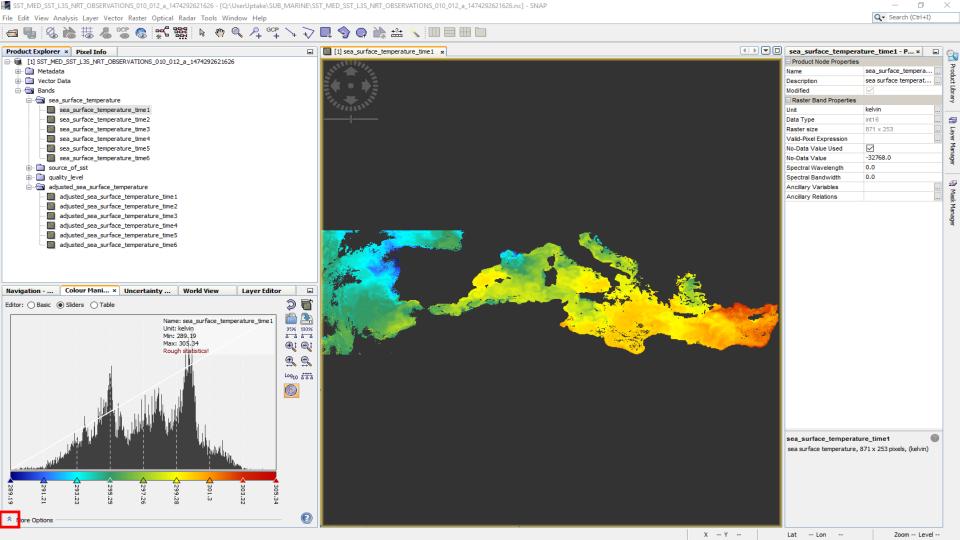


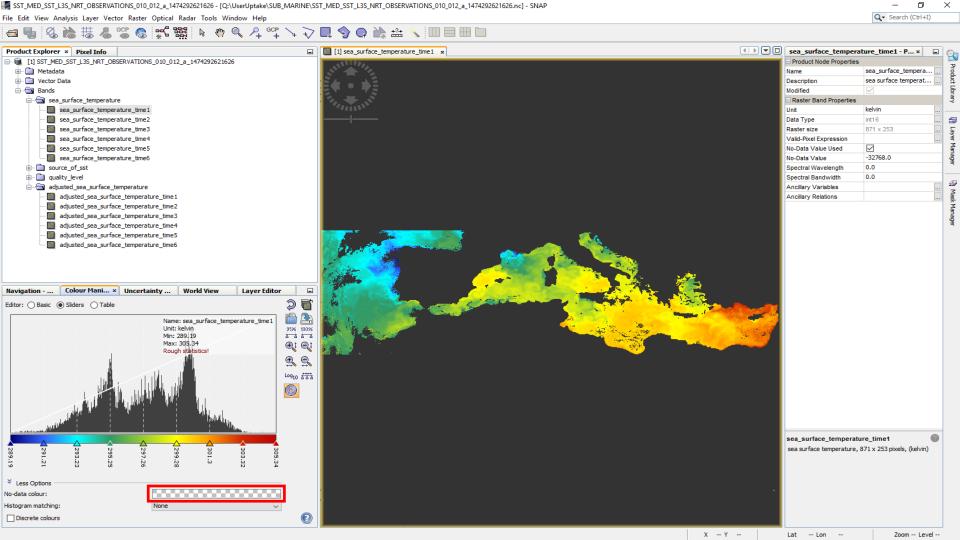


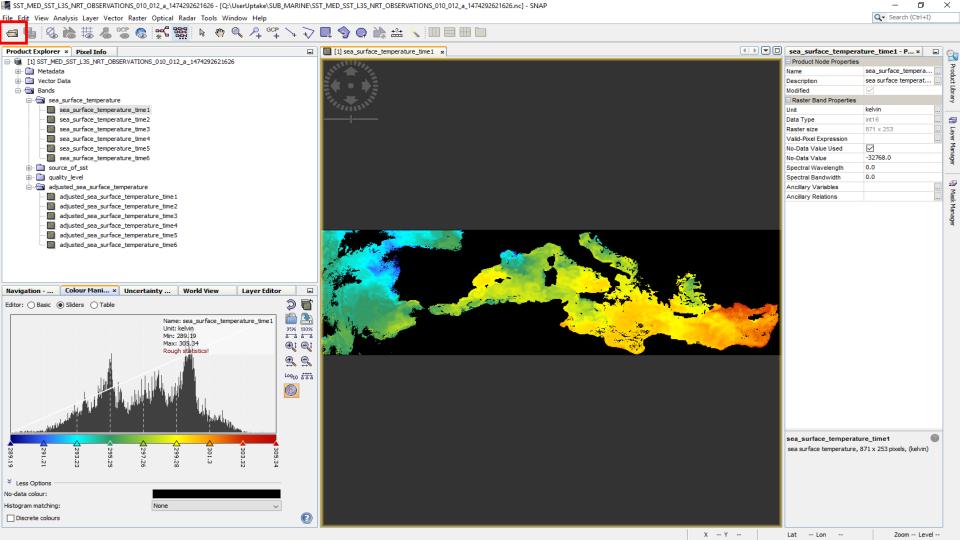


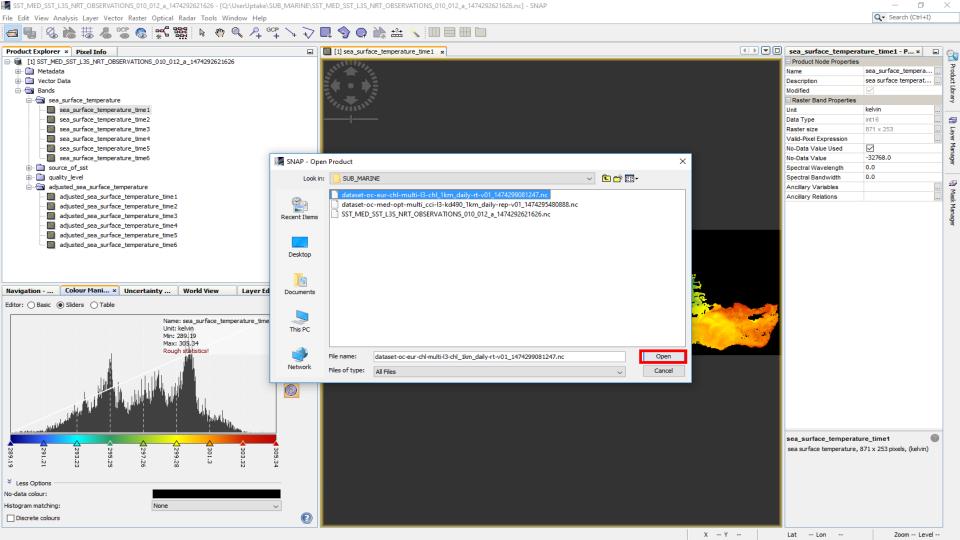


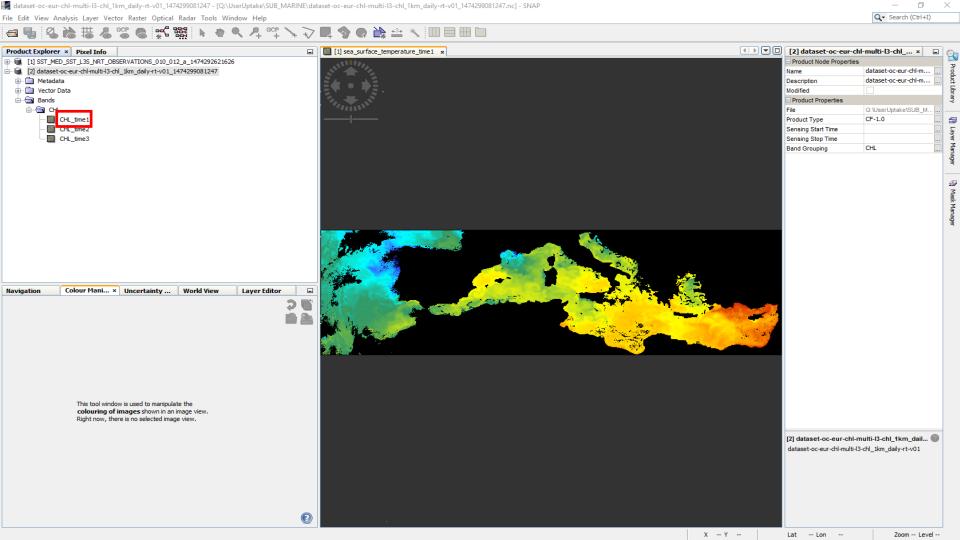


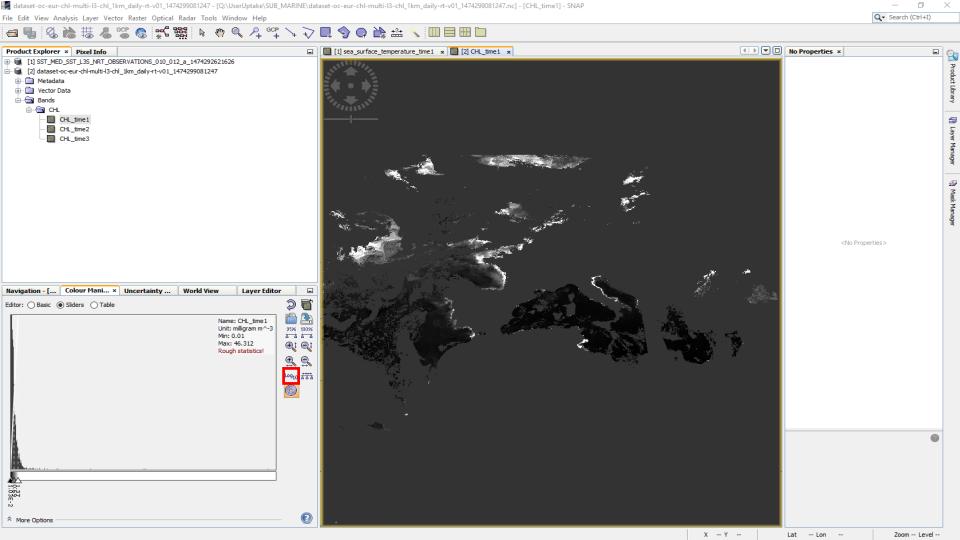


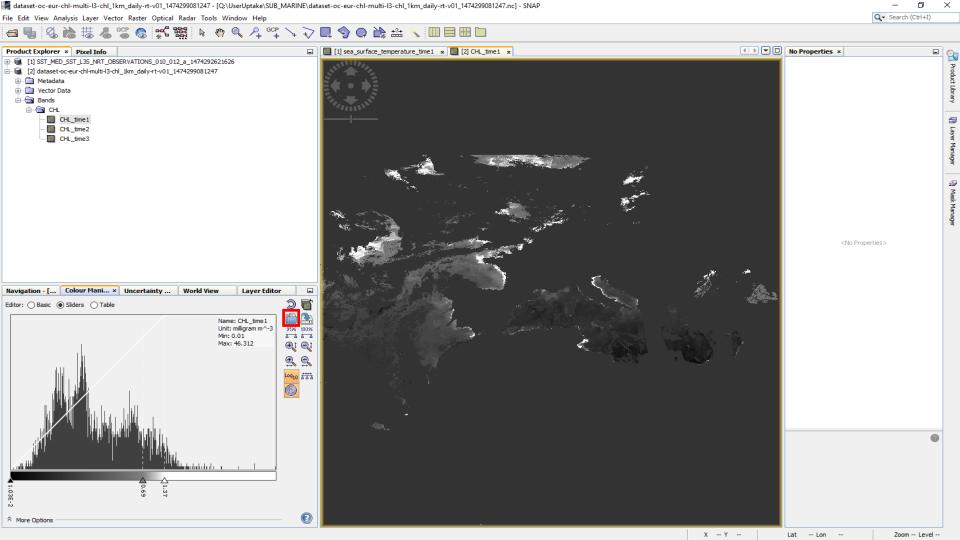


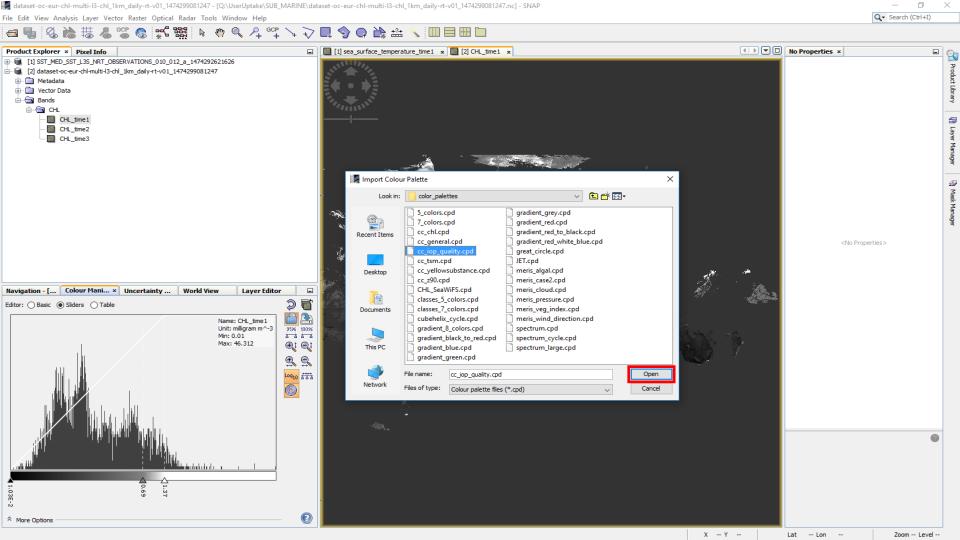


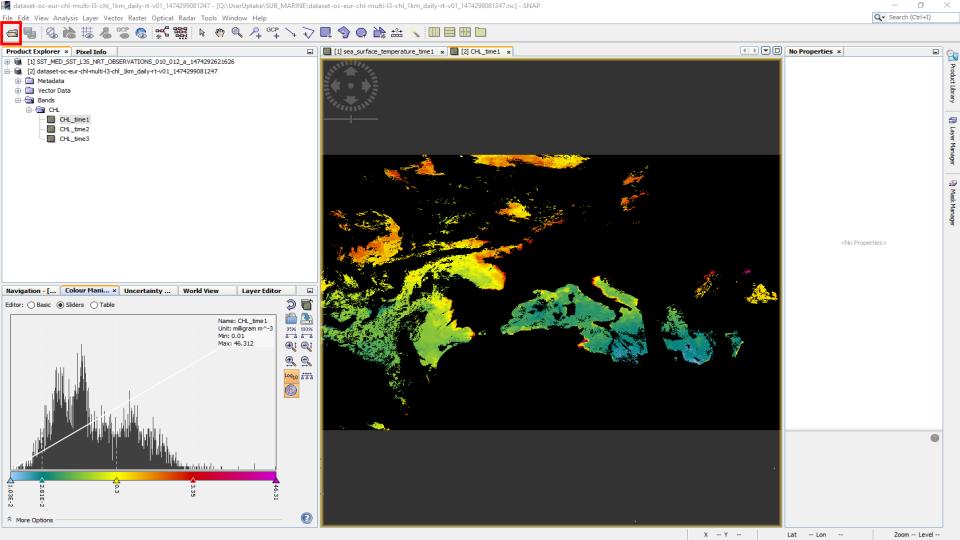


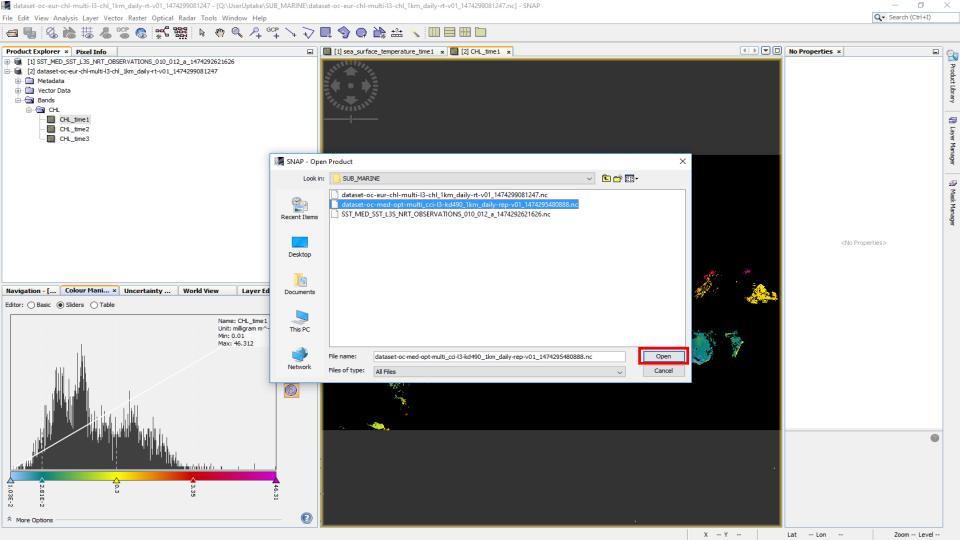


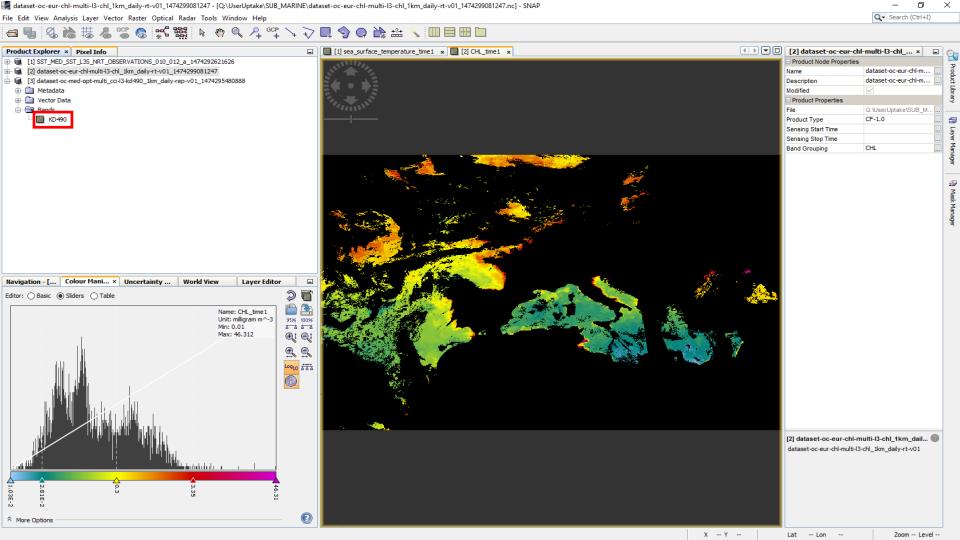


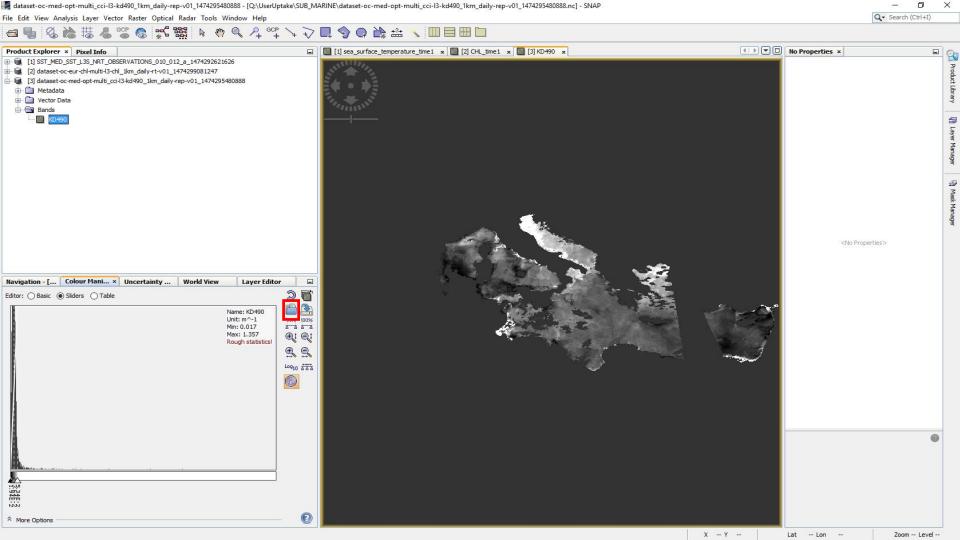


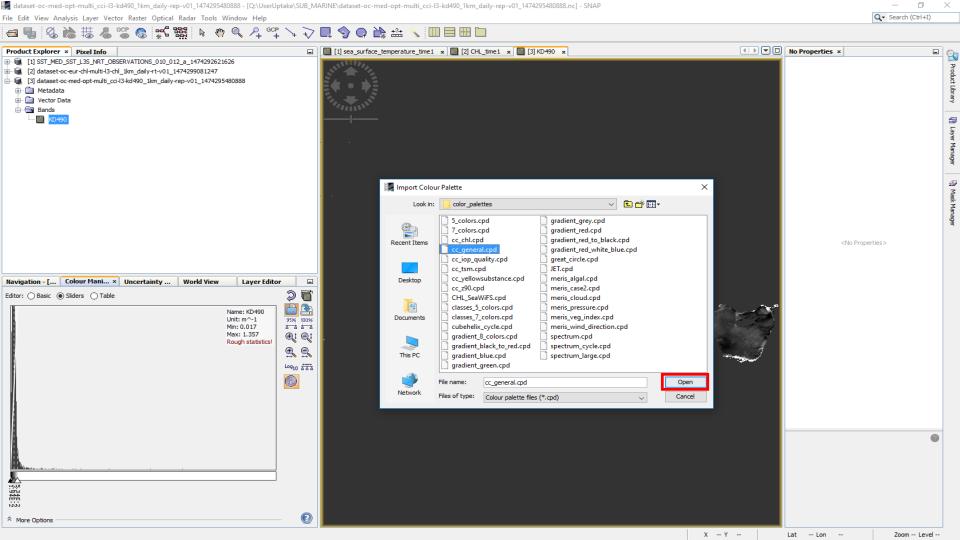


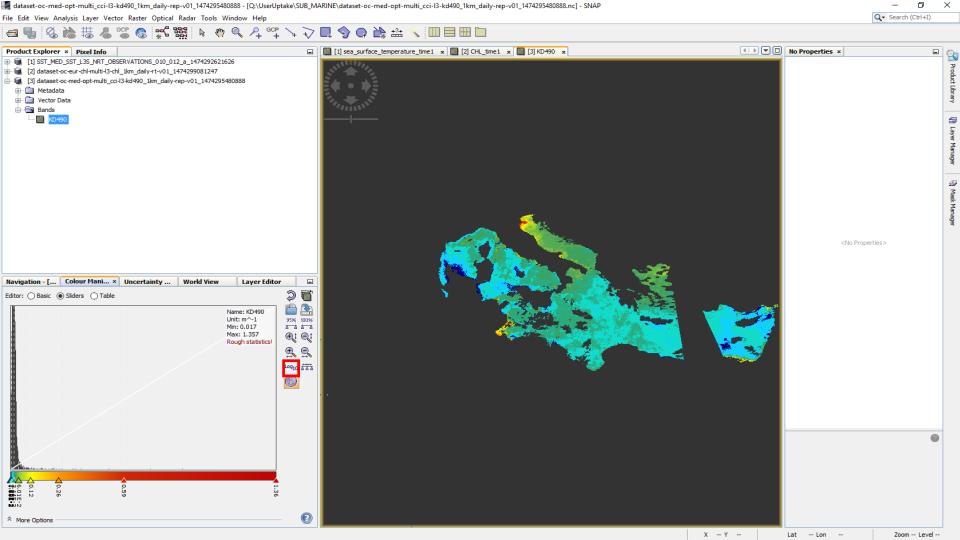


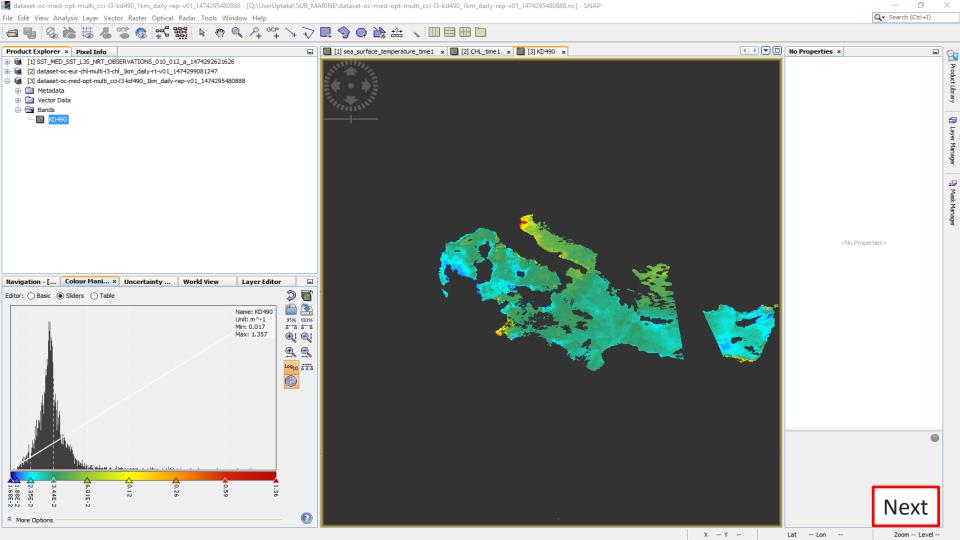














## Water transparency

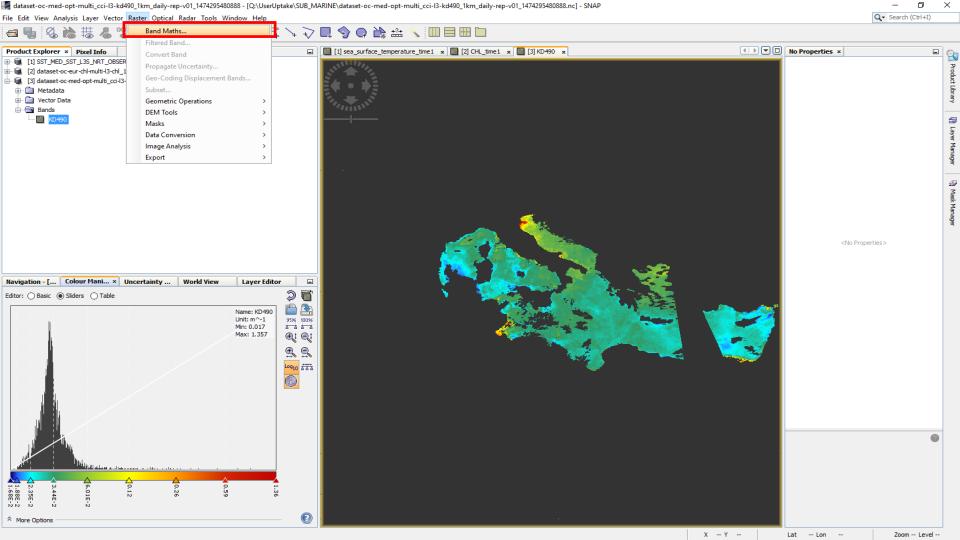
From Kd490 to water transparency (very simple algorithm):

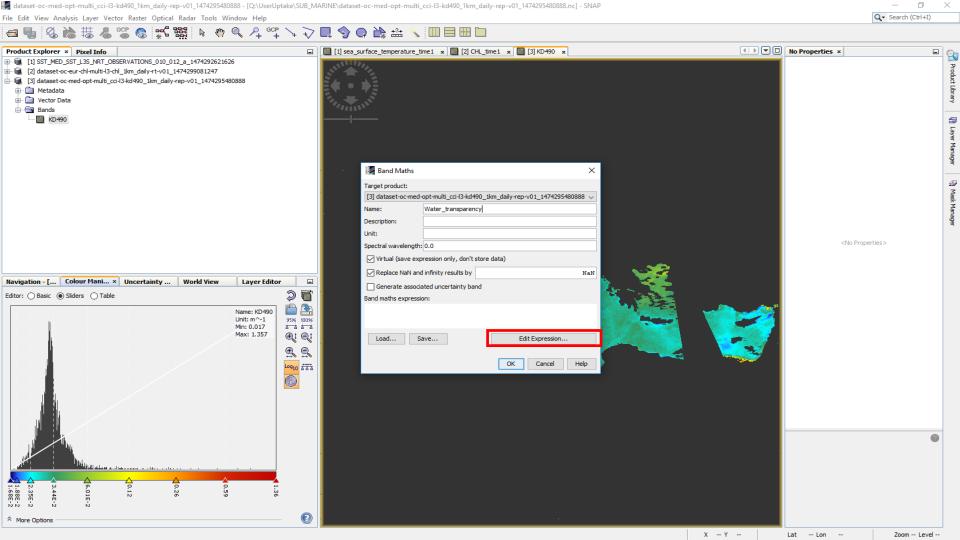


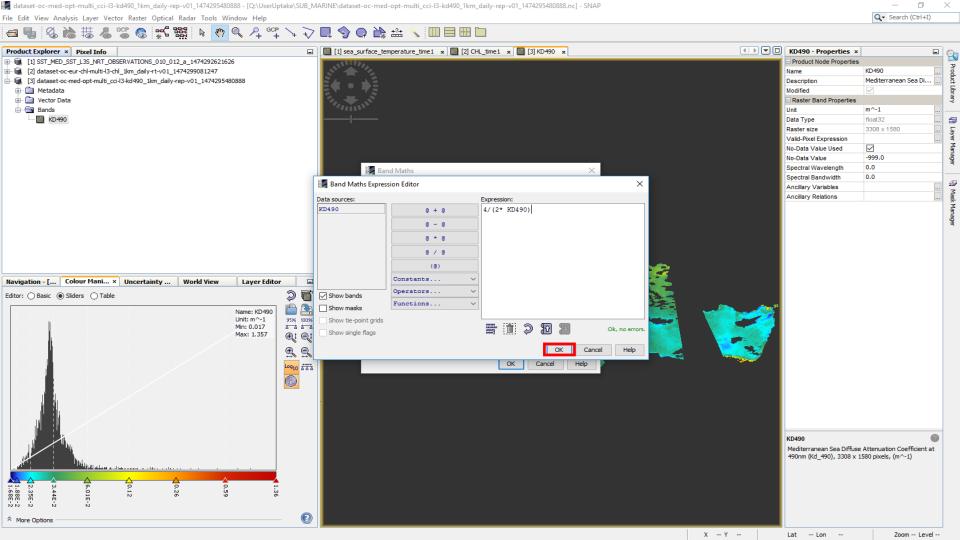
Const typically ranges from 4 to 7

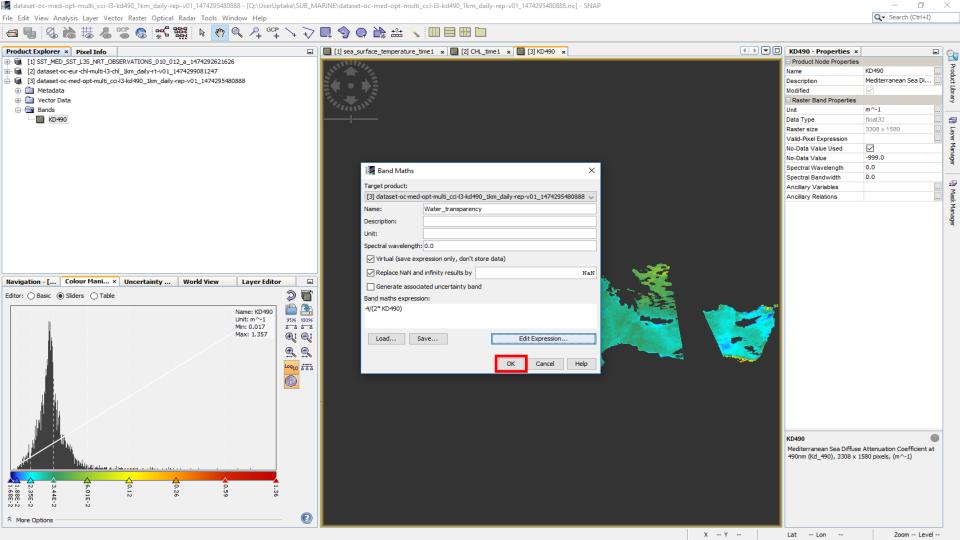


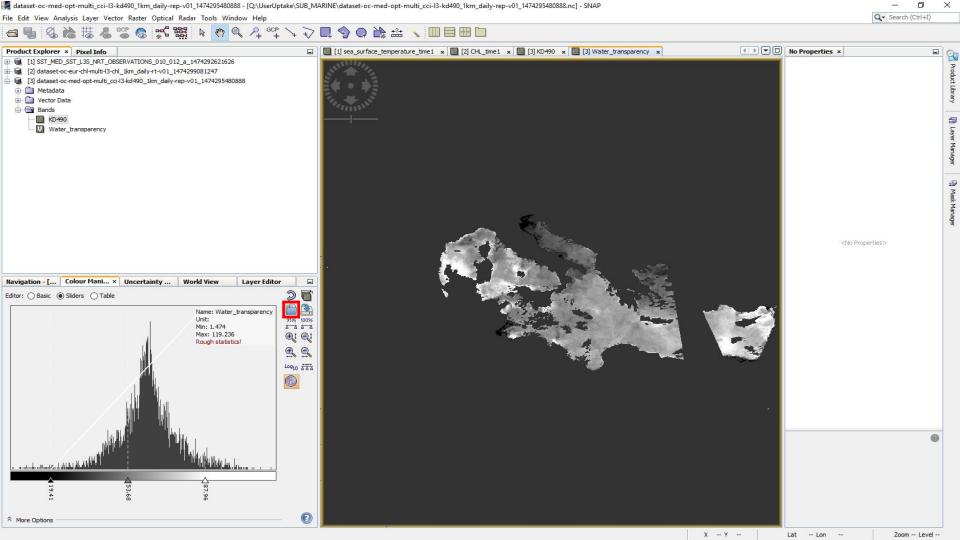


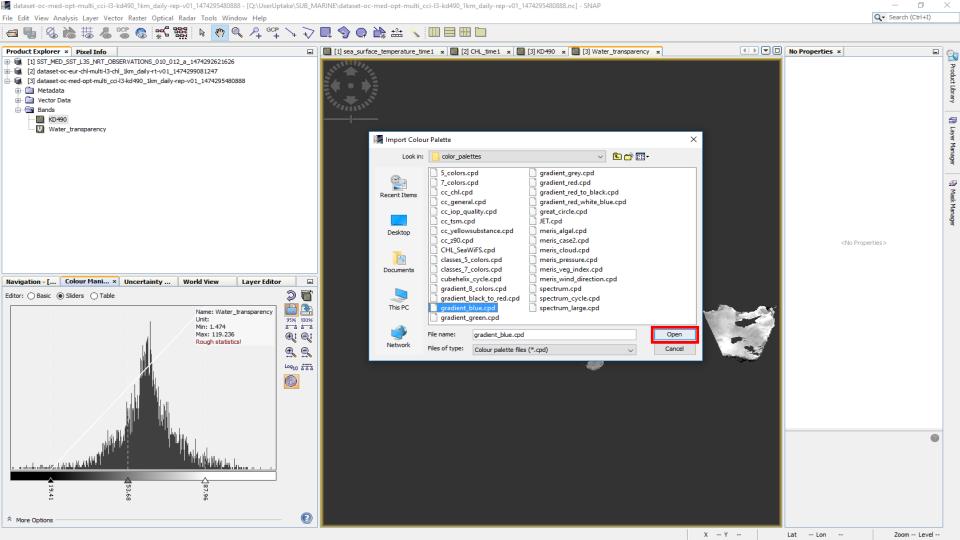


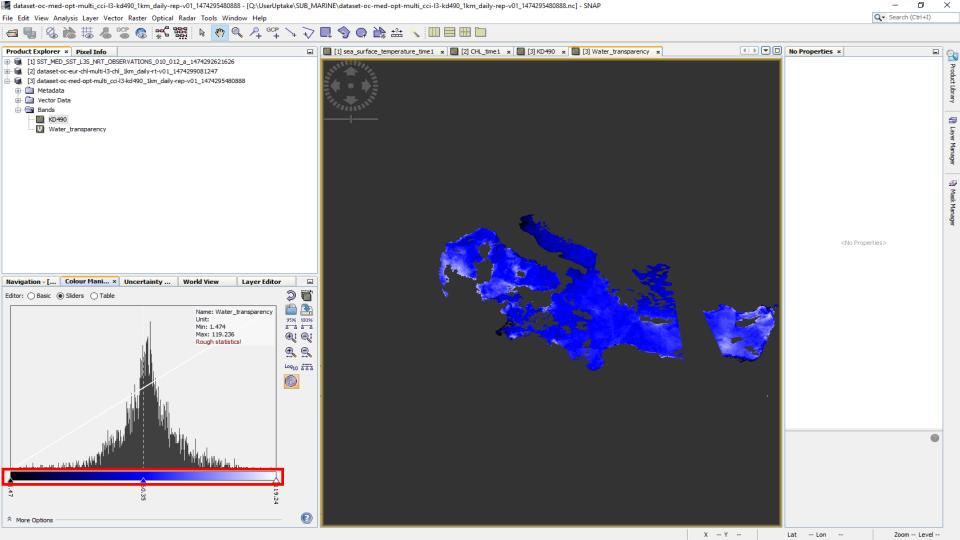


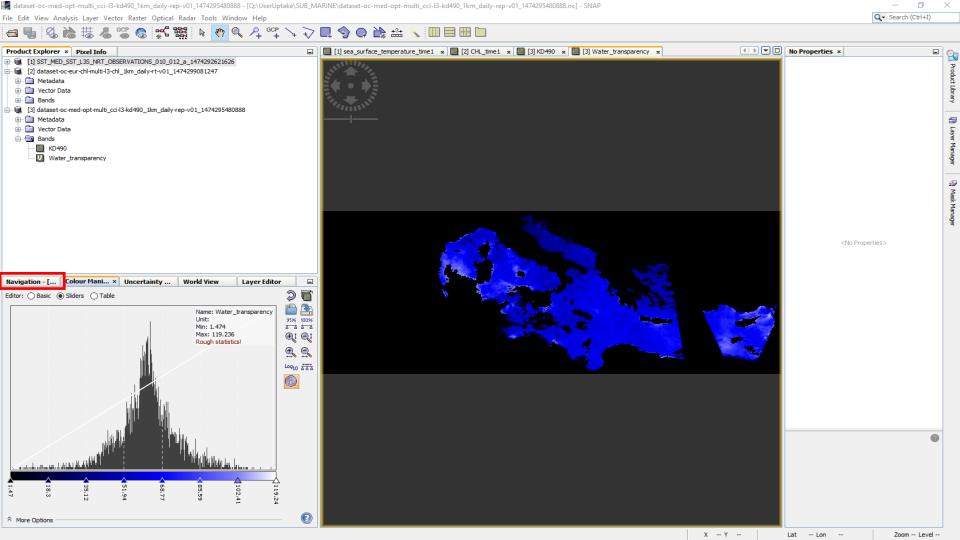


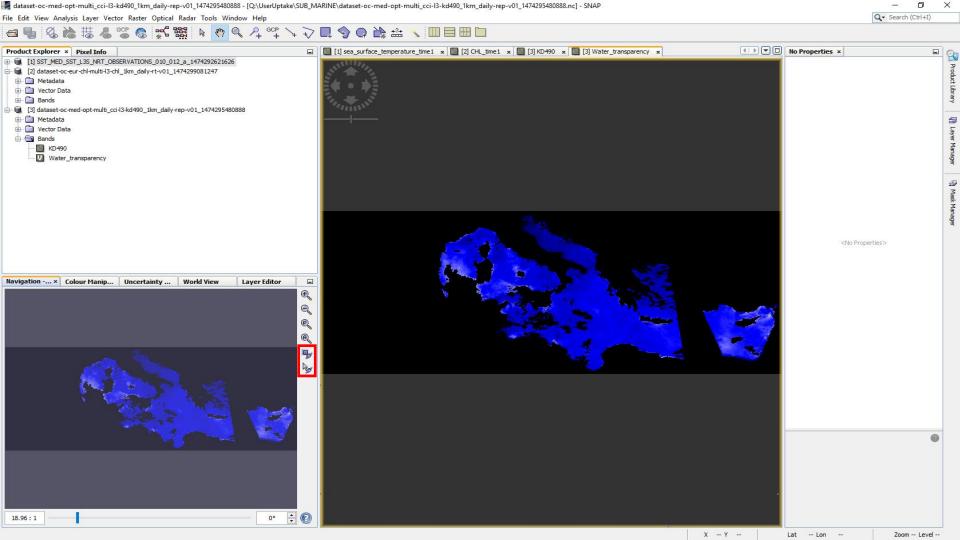


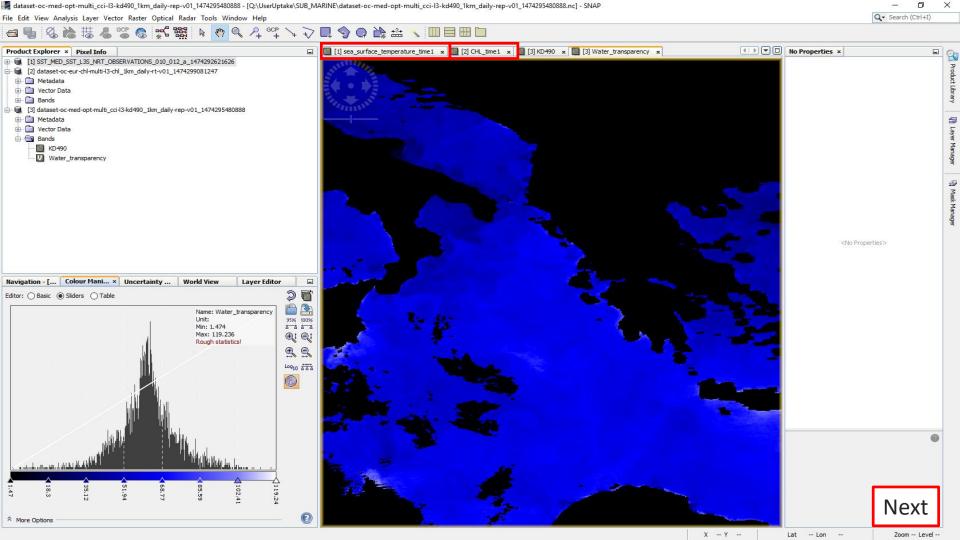


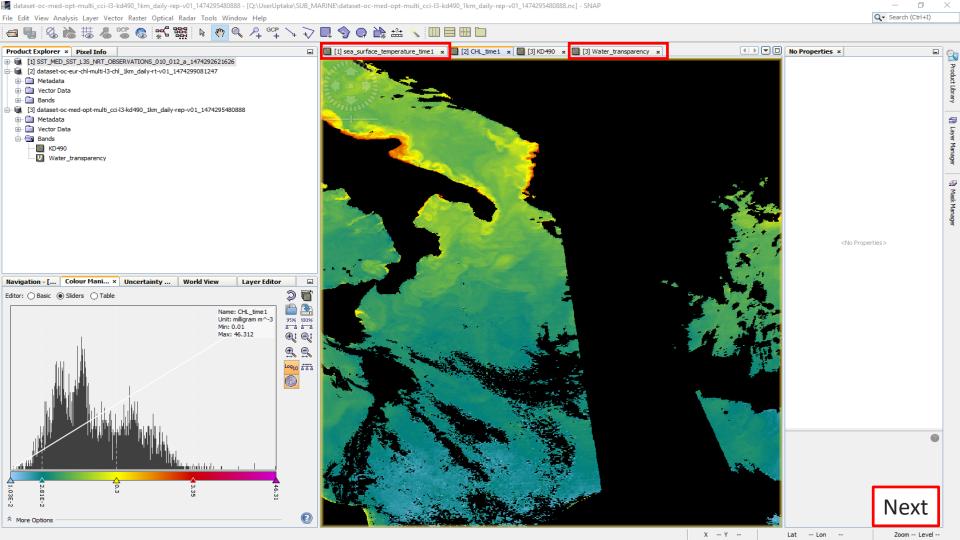


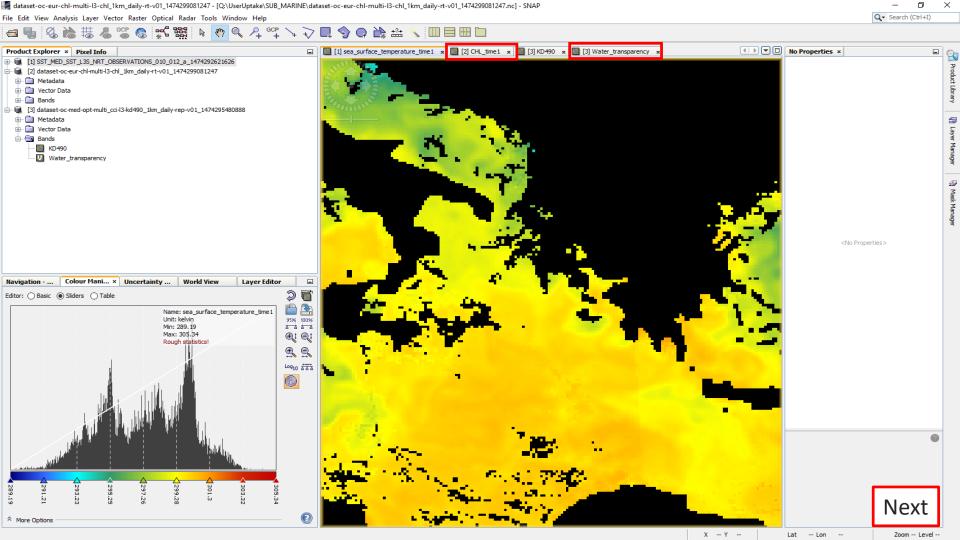


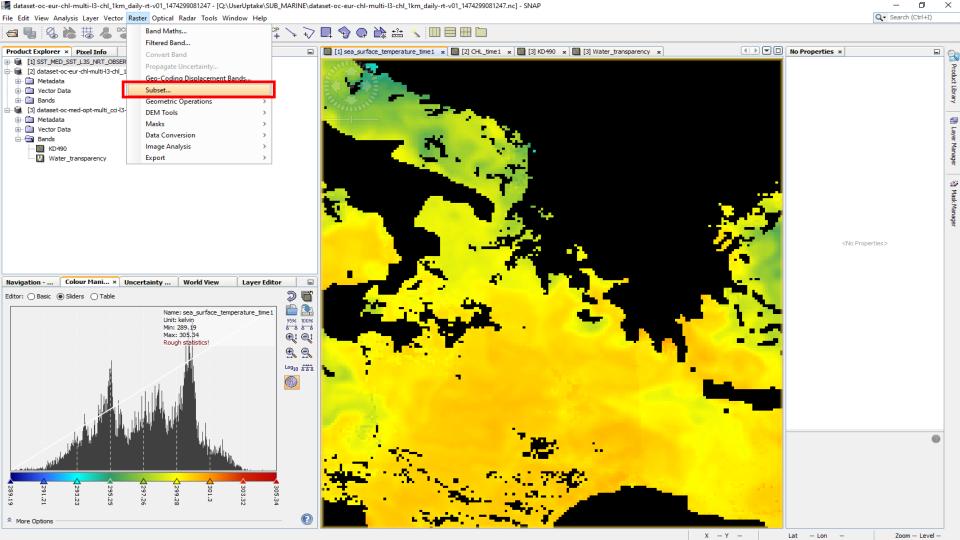


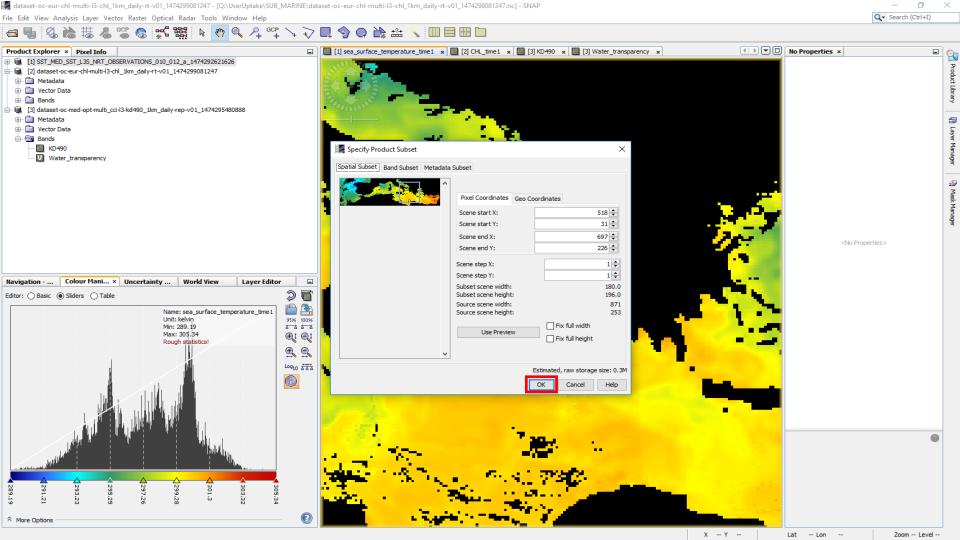


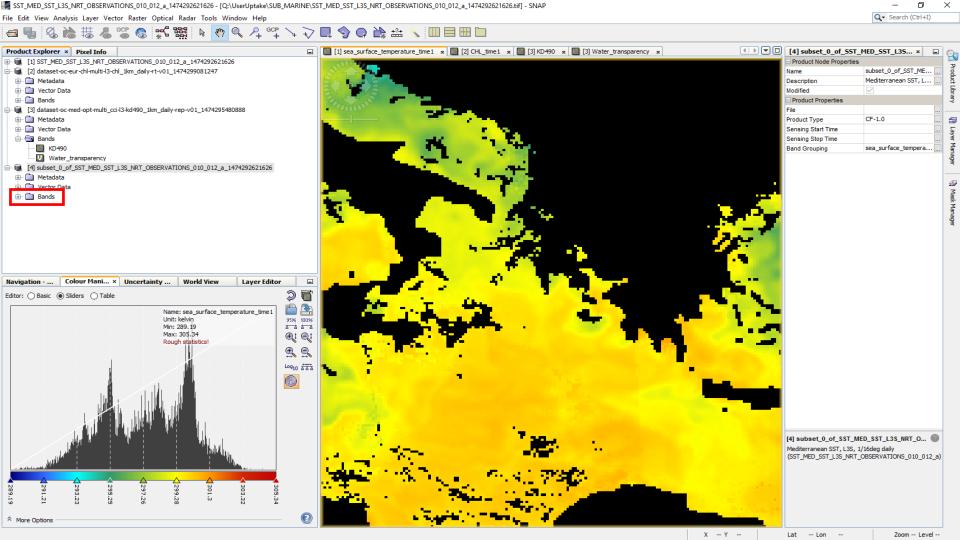


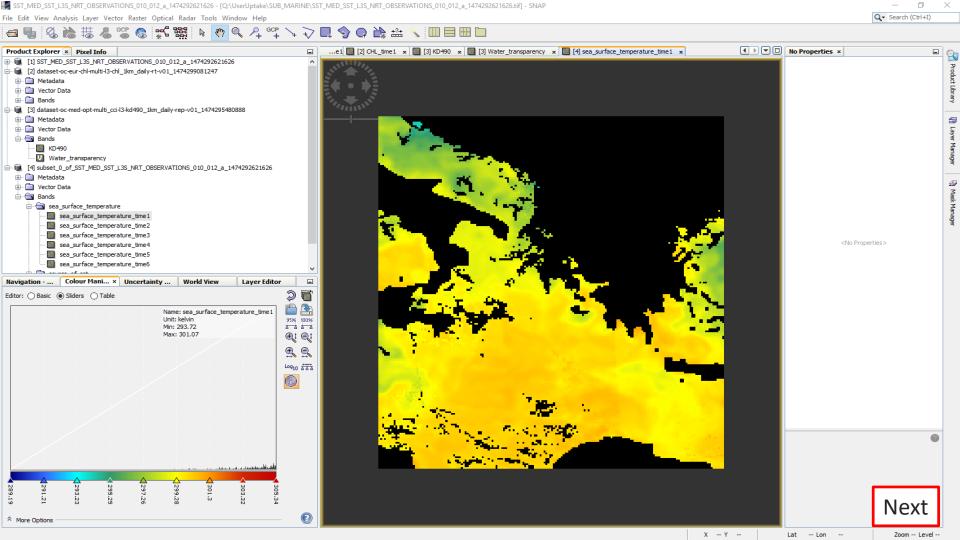


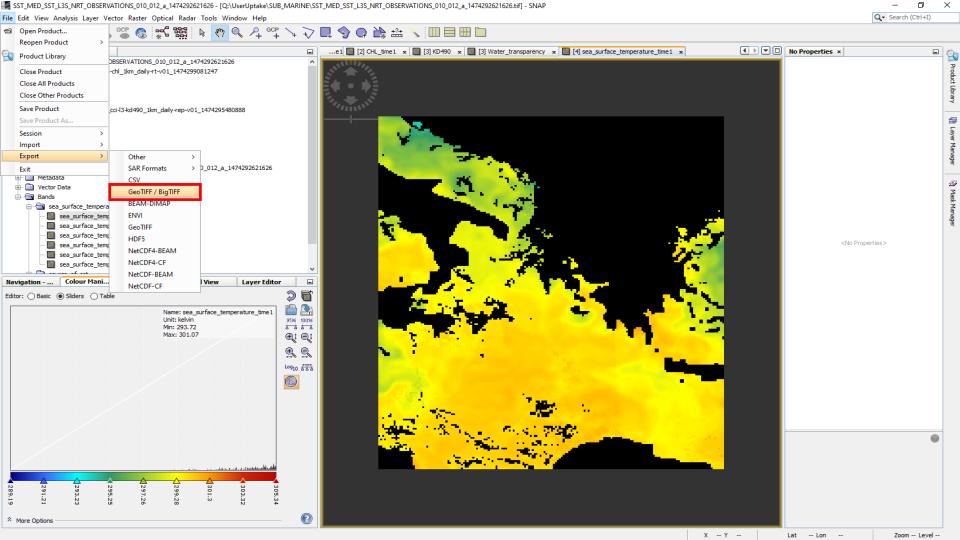


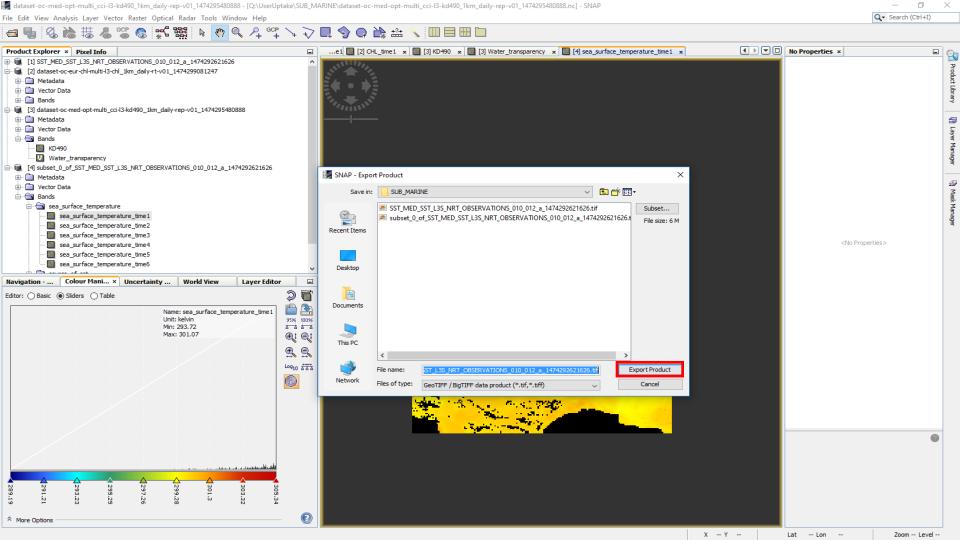


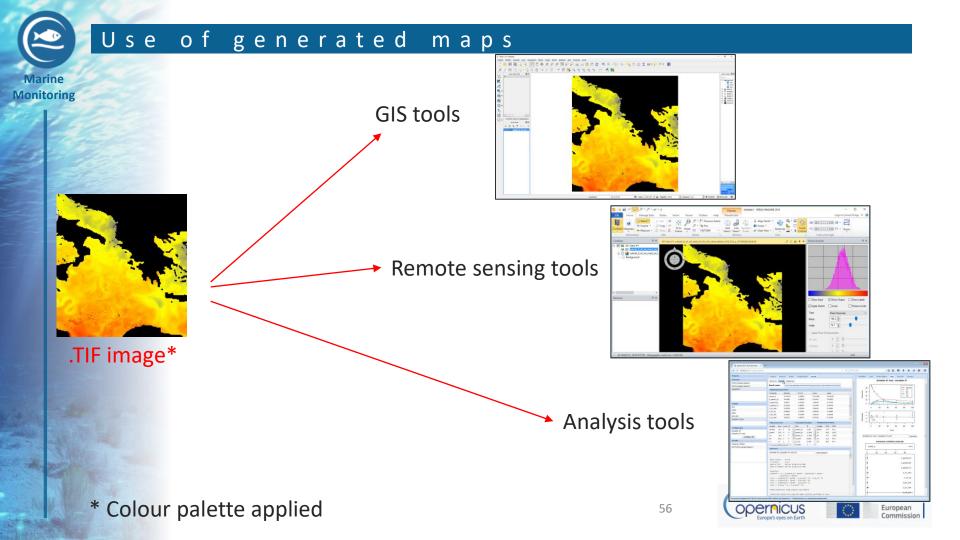














## Thank you

