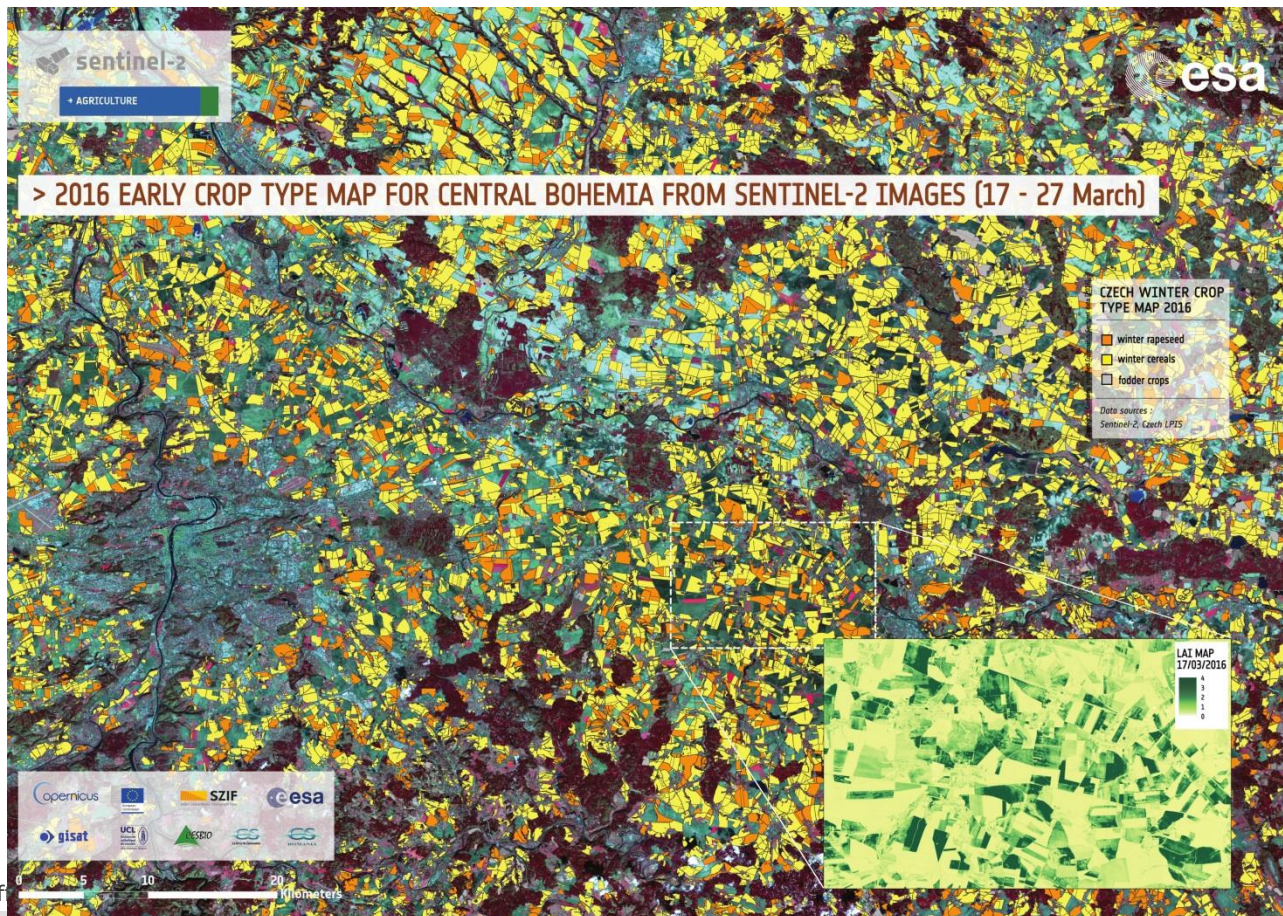


Example of Land Monitoring

Catapult Open



Czech republic crop type map (Mar 2016)

ESA UNCLASSIFIED - For Of

Credits: ESA

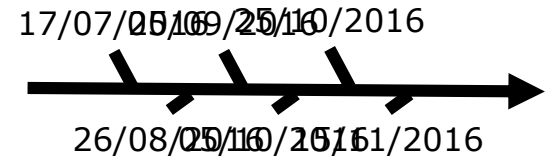


European Space Agency

Growth monitoring of cotton



Leaf Area Index

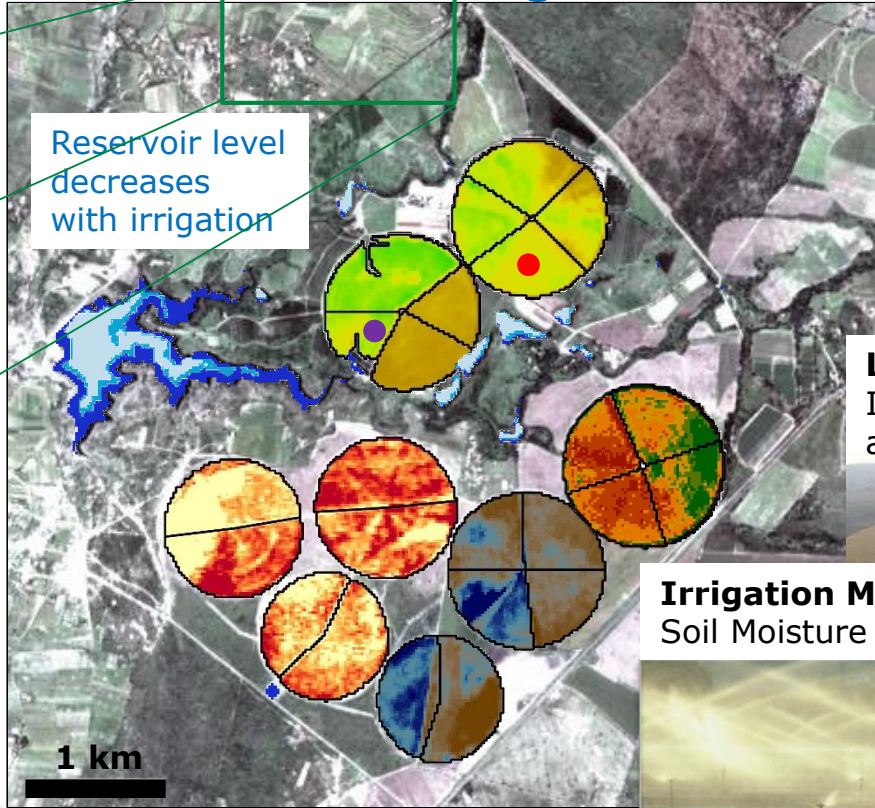


Sentinel-2 and smart farming as backbone for future sustainable agriculture

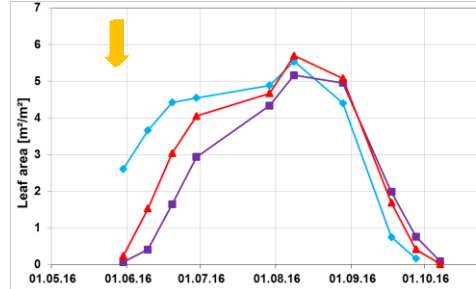
Catapult Open



Food Security
Spatial resolution of S-2 now also allows monitoring of small holder farms.



Crop Growth Monitoring



Leaf Chlorophyll
Indicating nitrogen stress and yield losses



Irrigation Monitoring Soil Moisture Mapping



www.vista-geo.de

Free, open and transparent Sentinel data & IT-platforms (e.g. ESA's FS-TEP) promote more sustainable and more productive agriculture everywhere on the Globe, in industrialized and developing countries.

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European Space Agency

Water Quality Monitoring Lake Turkana, Maximum Chlorophyll Index

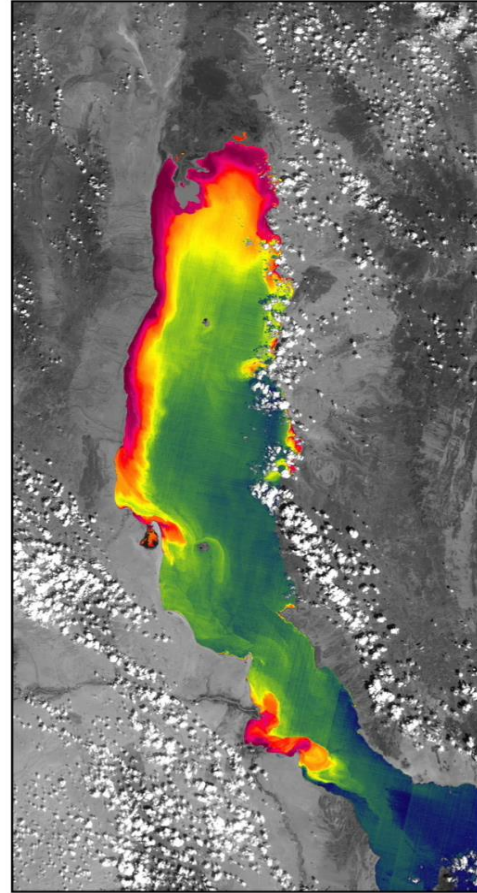
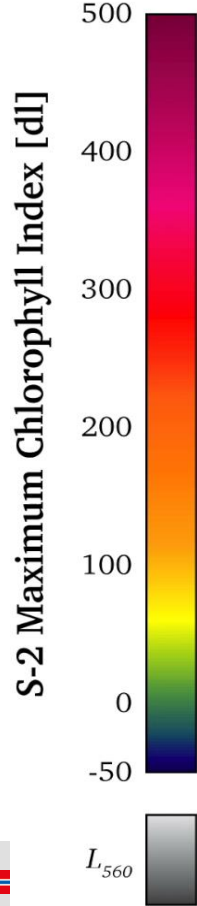
Catapult Open



2015-12-09



Getintravel



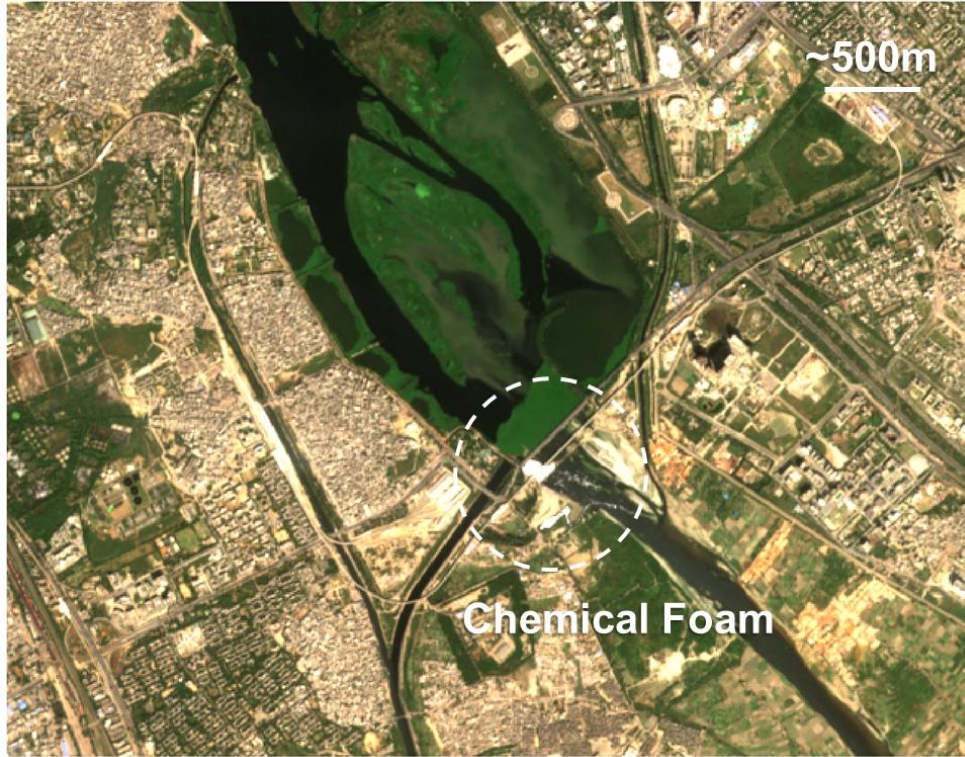
Contains modified Copernicus Sentinel data [2016]

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India river pollution

ρ_s RGB S2A/MSI 2016-10-22 (05:28 UTC)



Chemical Foam in the Yamuna River (New Delhi)

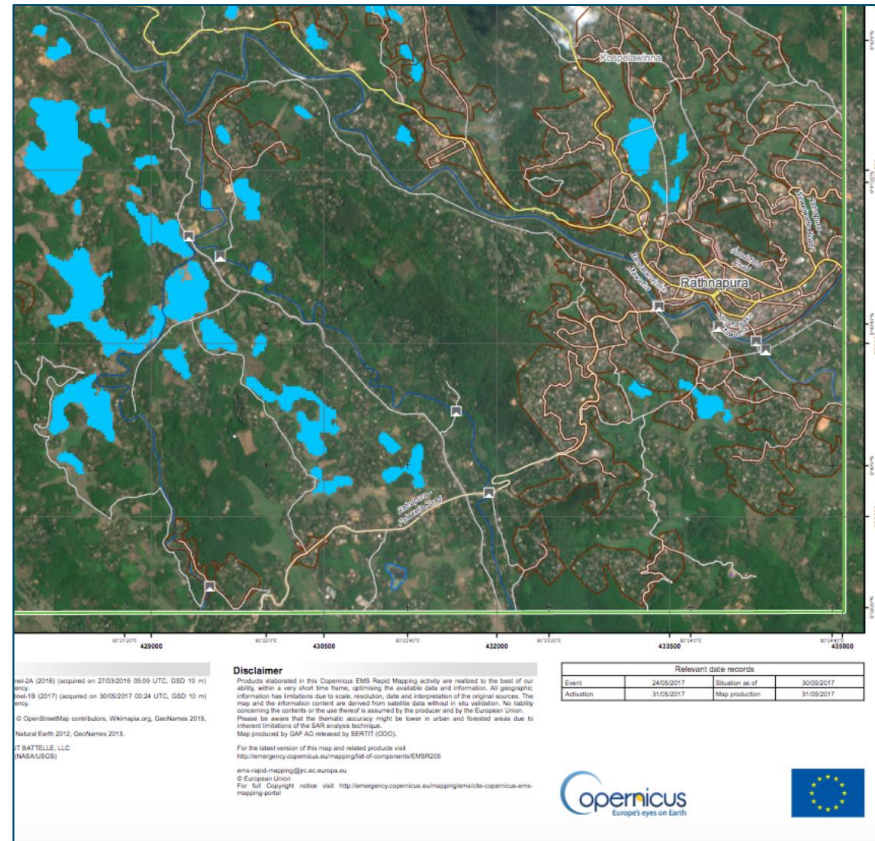


© AP
Diving in: This Hindu doesn't seem to mind the foam caused by industrial and residential waste

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RBINS/Quinten Vanhellemont



Sri Lanka Floods 24-25 May 2017: S1 & S2 join

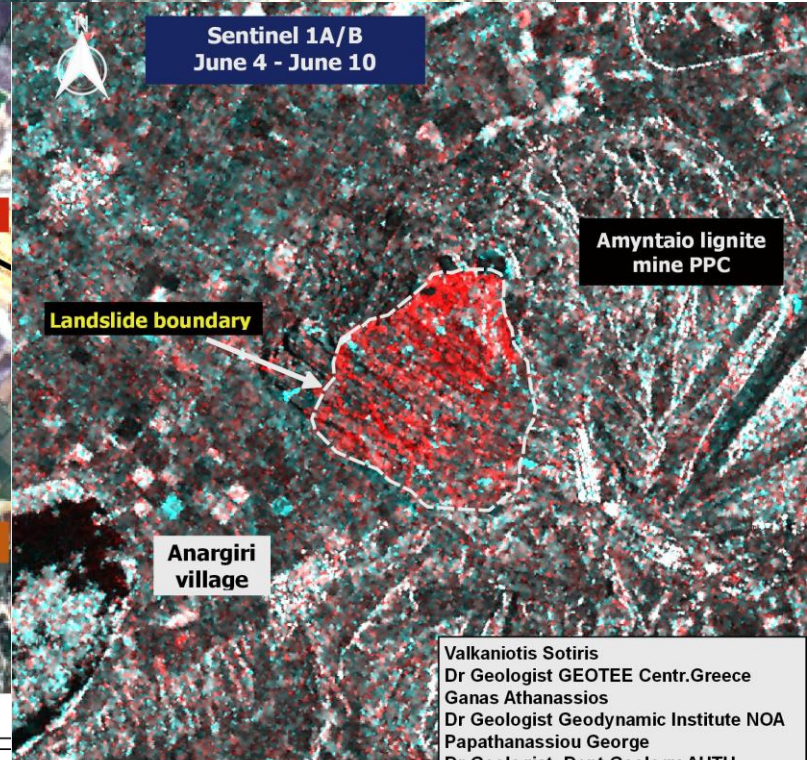
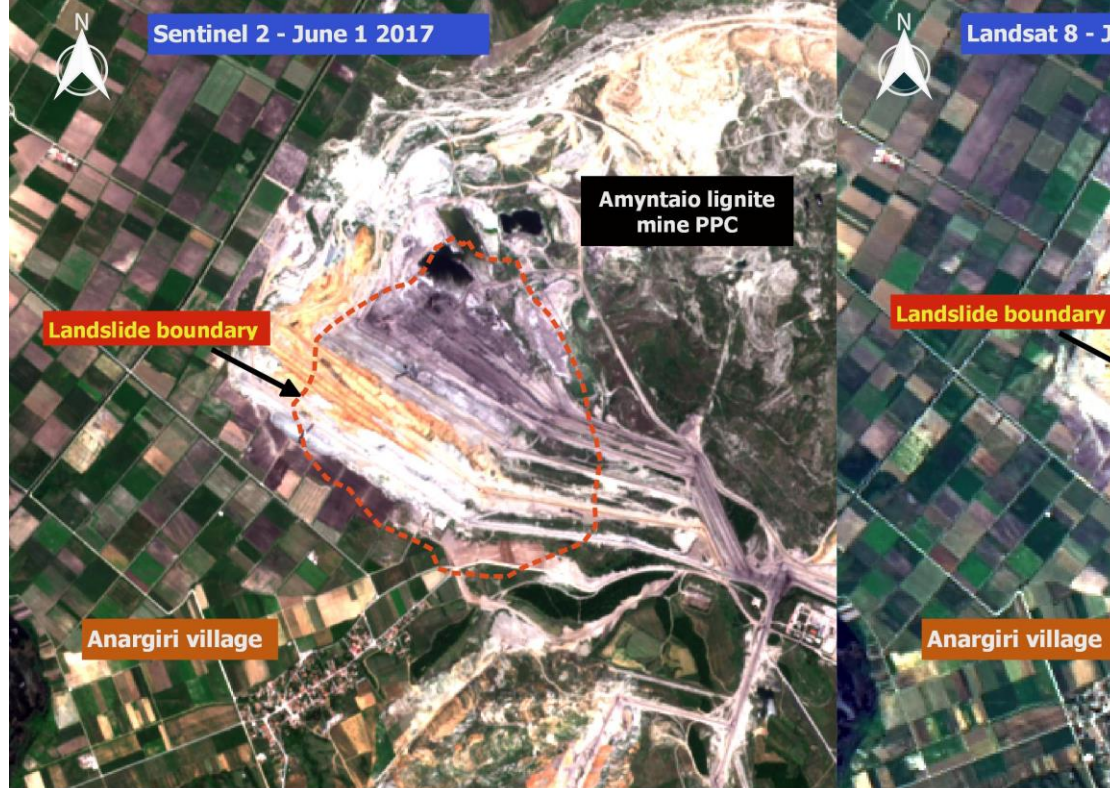


Data Sources

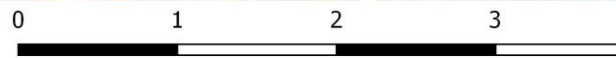
Pre-event image: Copernicus Sentinel-2A (2016) (acquired on 27/03/2016 05:09 UTC, GSD 10 m) provided by the European Space Agency.
 Post-event image: Copernicus Sentinel-1B (2017) (acquired on 30/05/2017 00:24 UTC, GSD 10 m) provided by the European Space Agency.



Landslides: cooperative approach S2, S1, L8



Valkaniotis Sotiris
Dr Geologist GEOTEE Centr.Greece
Ganas Athanassios
Dr Geologist Geodynamic Institute NOA
Papathanassiou George
Dr Geologist Dept.Geology AUTH



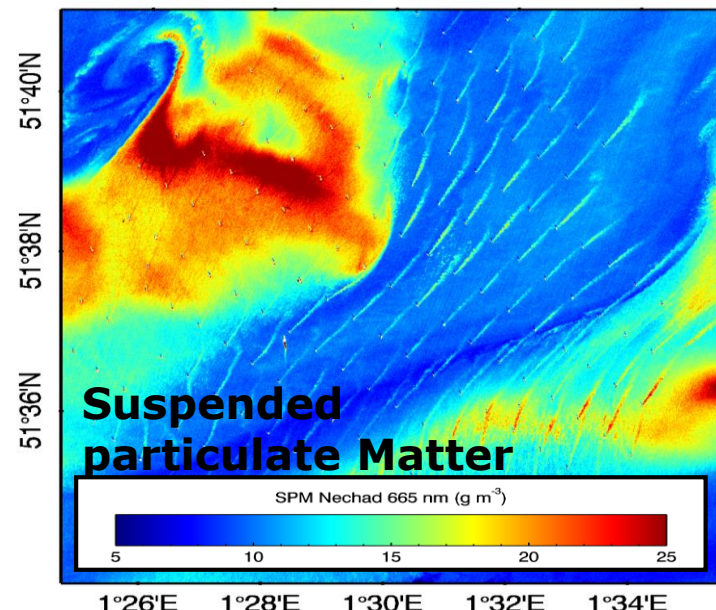
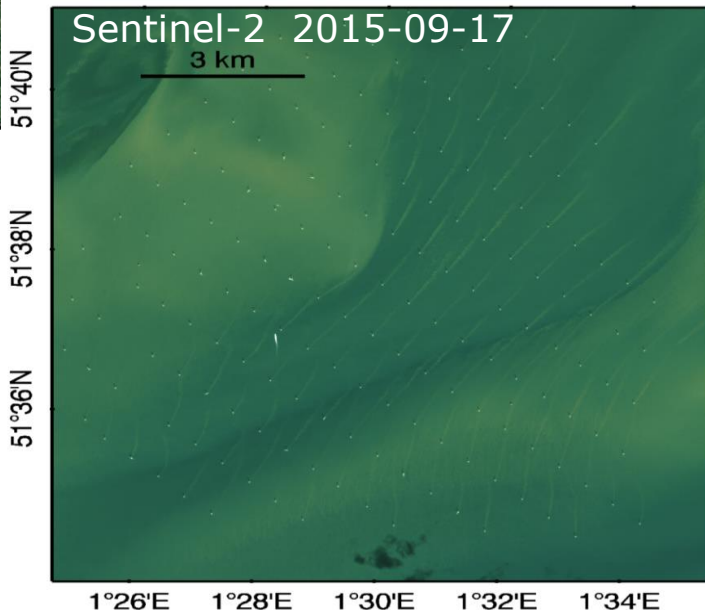
Valkaniotis Sotiris
Dr Geologist GEOTEE Centr.Greece
Ganas Athanassios
Dr Geologist Geodynamic Institute NOA
Papathanassiou George
Dr Geologist Dept.Geology AUTH

Environmental impact of offshore construction (wind farms)

- Legal obligation for offshore wind farm construction to assess environmental impact.
- New environmental impact is visible : turbid wakes in wind farms.



London array wind farm



[Vanhellemont & Ruddick K (2014). Turbid wakes associated with offshore wind turbines observed with Landsat 8. Remote Sensing of Environment, 143, pp. 105–115. Open Access]



Catapult Open
Coral Reefs seen by Sentinel-2 : Benthic Microalgae Dynamics
Wistari Reef, Great Barrier Reef



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European Space Agency

Sentinel-3 Ocean & Global Land Mission



Mission profile

-  **3** main instrument sets: OLCI, SLSTR and RA
-  Sun synchronous orbit at **814.5 km** mean altitude over geoid
-  **1270 km** swath width for OLCI and **750 km** for SLSTR
-  **< 1 day** repeat cycle for OLCI/SLSTR with 2 satellites, **27 days** for the topography package
-  **7 years** design life time, consumables for 12 years

Mission objectives:

- Sea/land colour data
- Sea/land Surface temperature
- Sea surface and land ice topography

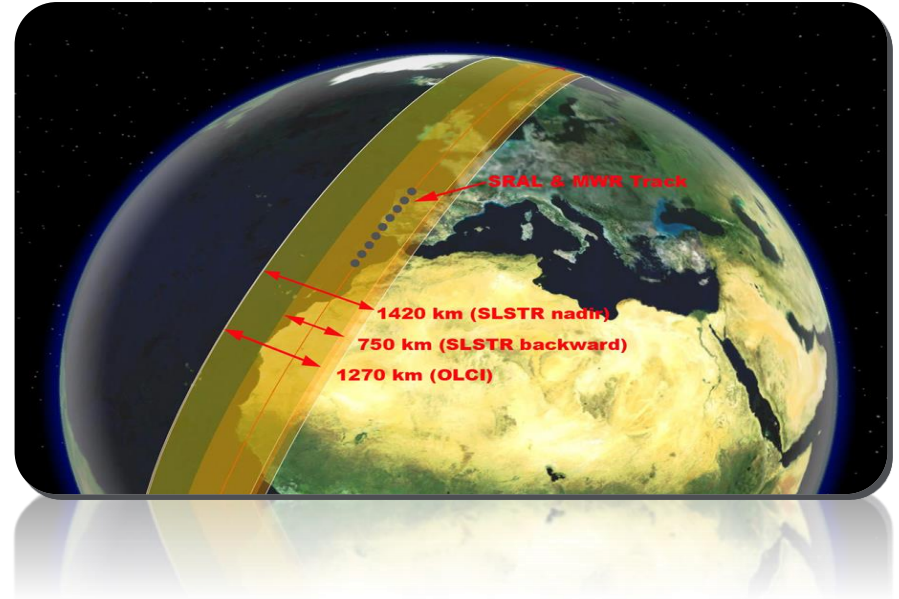
Sentinel-3 Payload

Optical Mission Payload

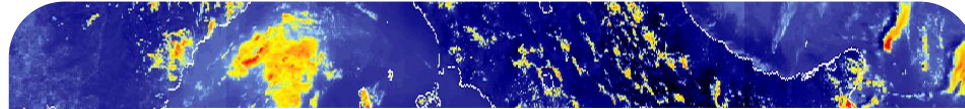
Ocean and Land Colour Instrument (OLCI)
Sea and Land Surface Temperature Radiometer (SLSTR)

Topography Mission Payload

- Ku-/C-band Synthetic Aperture Radar Altimeter (SRAL)
- MicroWave Radiometer (Bi-frequency)
- Precise Orbit Determination (POD) including:
 - GNSS Receiver
 - DORIS
 - Laser Retro-Reflector



Sentinel-3 Revisit Time & Coverage: Optical Mission



	Number of Satellites	Revisit at Equator	Revisit for latitude >30°	Spec.
Ocean Colour (Sun-glint free, day only)	2 Satellites	< 1.9 days	< 1.4 days	< 2 days
Land Colour (day only)	2 Satellites	< 1.1 day	< 0.9 day	< 2 days
SLSTR dual view (day and night)	2 Satellites	< 0.9 day	< 0.8 day	< 4 days

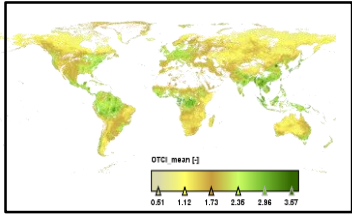


Simulated OLCI products

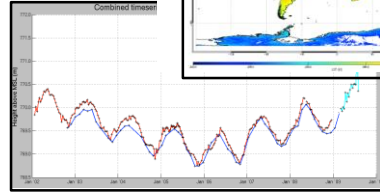
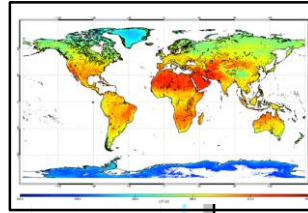
➤ **Short Revisit times for optical payload**

Sentinel-3 applications → ever increasing

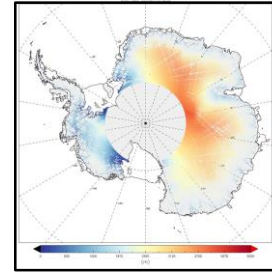
Catapult Open



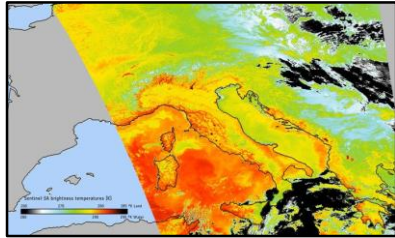
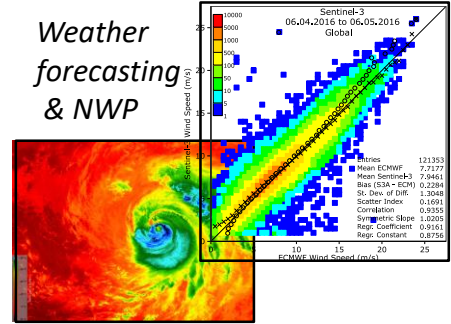
Agriculture, vegetation monitoring



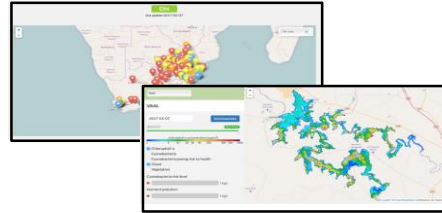
Water resource management



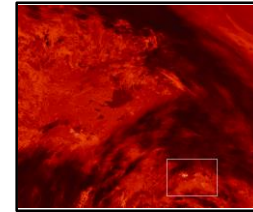
Climate research



Climate monitoring, numerical modelling and mesoscale analysis



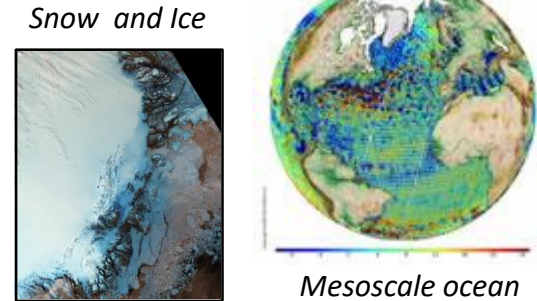
Inland water quality



Fire monitoring



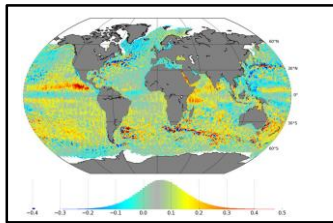
Fisheries: Harmful algal bloom/marine biology/global ocean primary production



Snow and Ice

Mesoscale ocean circulation, currents, tides

Ship routing: maritime safety



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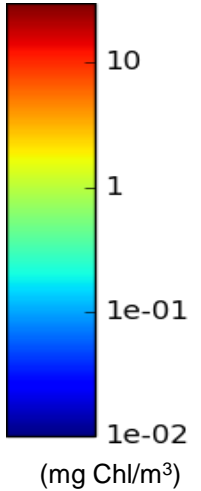
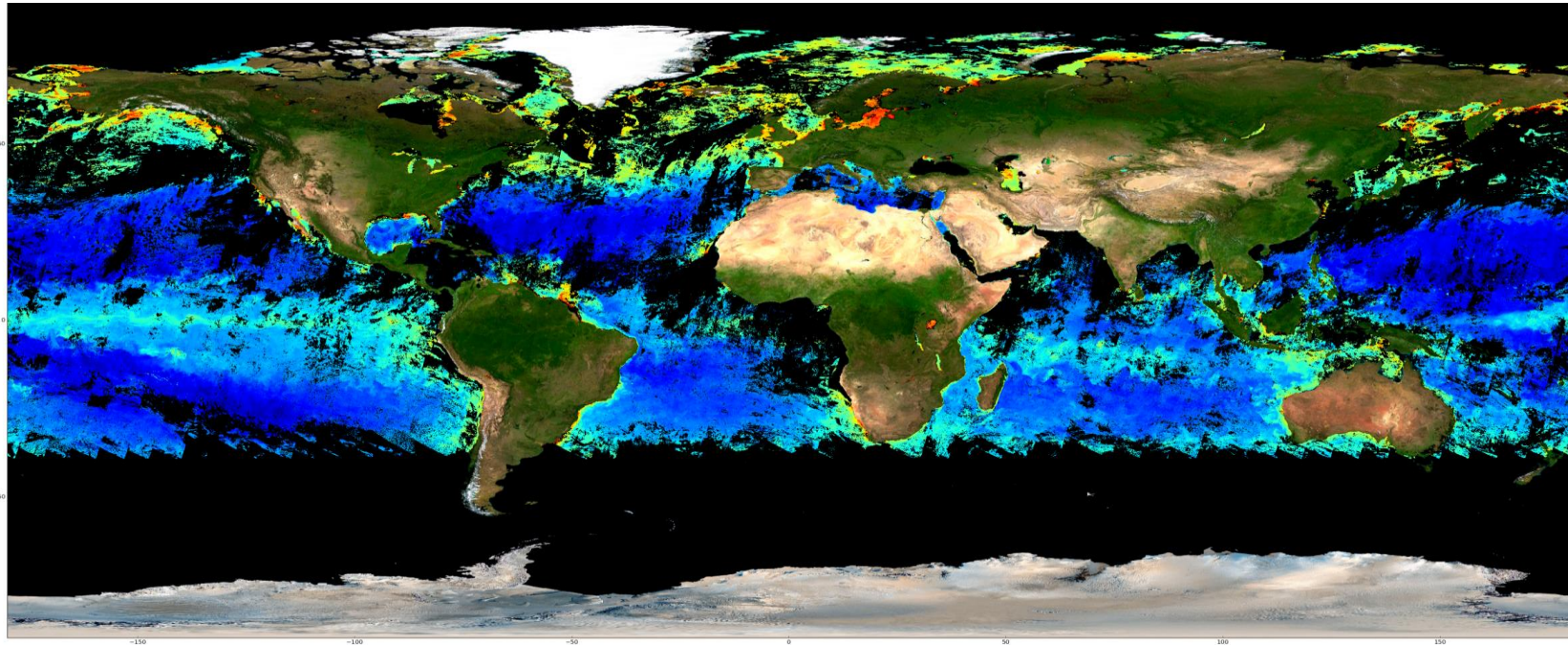


European Space Agency

OLCI L2: OCEAN COLOUR STATUS



Level 2 Operational since 5 July 2017



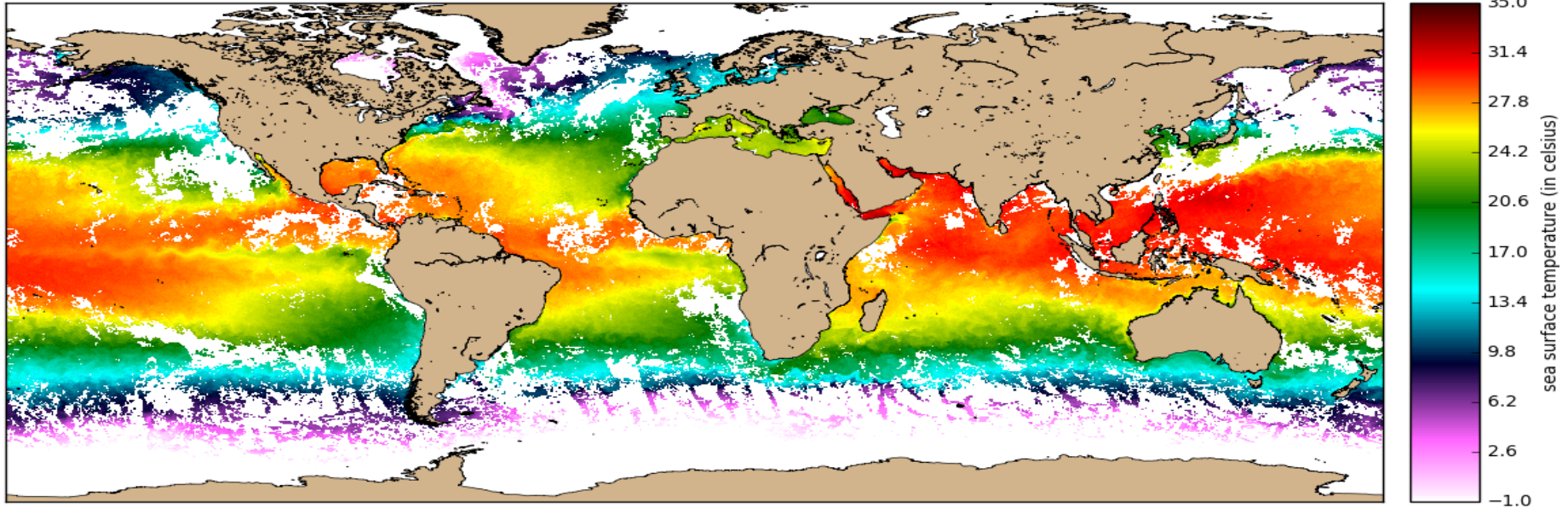
ESA UNCLASSIFIED - For Official Use S3 OLCI Chlorophyll Concentration product (14-20/6/2017)



SLSTR: L2 SEA SURFACE TEMPERATURE STATUS

Level 2 Operational since 5 July 2017

sea surface skin temperature
15-19 Jun 2017 composite - Sentinel-3A / SLSTR WST NR [PB2.16]-
N = 1427346, min = -1.99 C, max = 36.71 C



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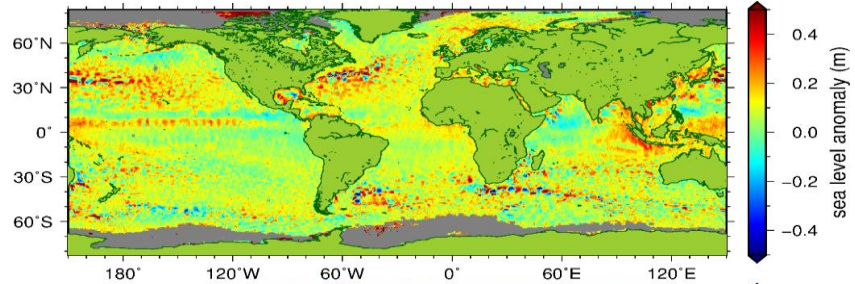


European Space Agency

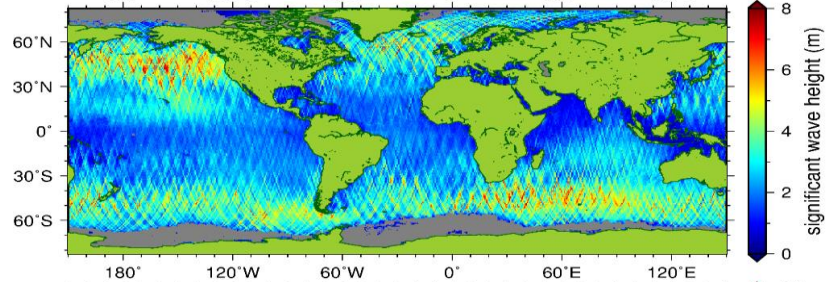
SRAL/MWR: L2 ALTIMETRY PRODUCTS STATUS

Operational since 13 December 2016

Sea level anomaly



Wave Height



Wind speed

