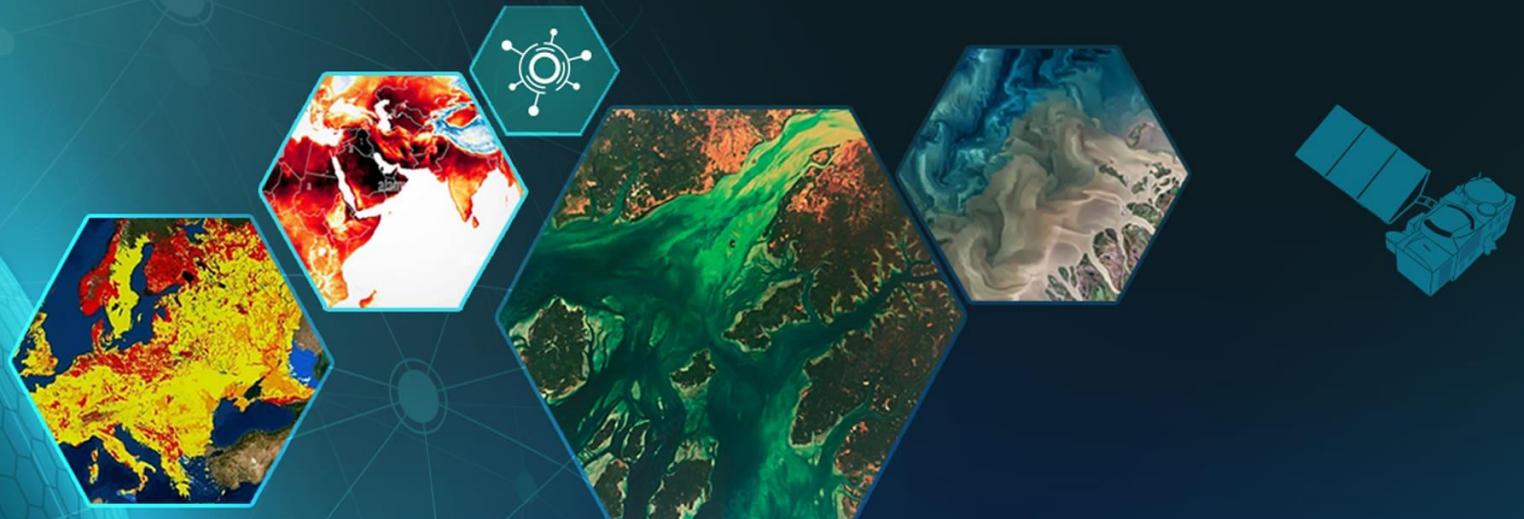


COPERNICUS EARTH OBSERVATION

DATA VISUALISATION WORKSHOP SERIES



PROGRAMME OF THE
EUROPEAN UNION



IMPLEMENTED BY



Introduction to EO Data Visualisation

Copernicus, EUMETSAT, and telling the EO story

Dr Hayley Evers-King (Marine Applications Expert, EUMETSAT) and Dr Mark Higgins (Training Manager)

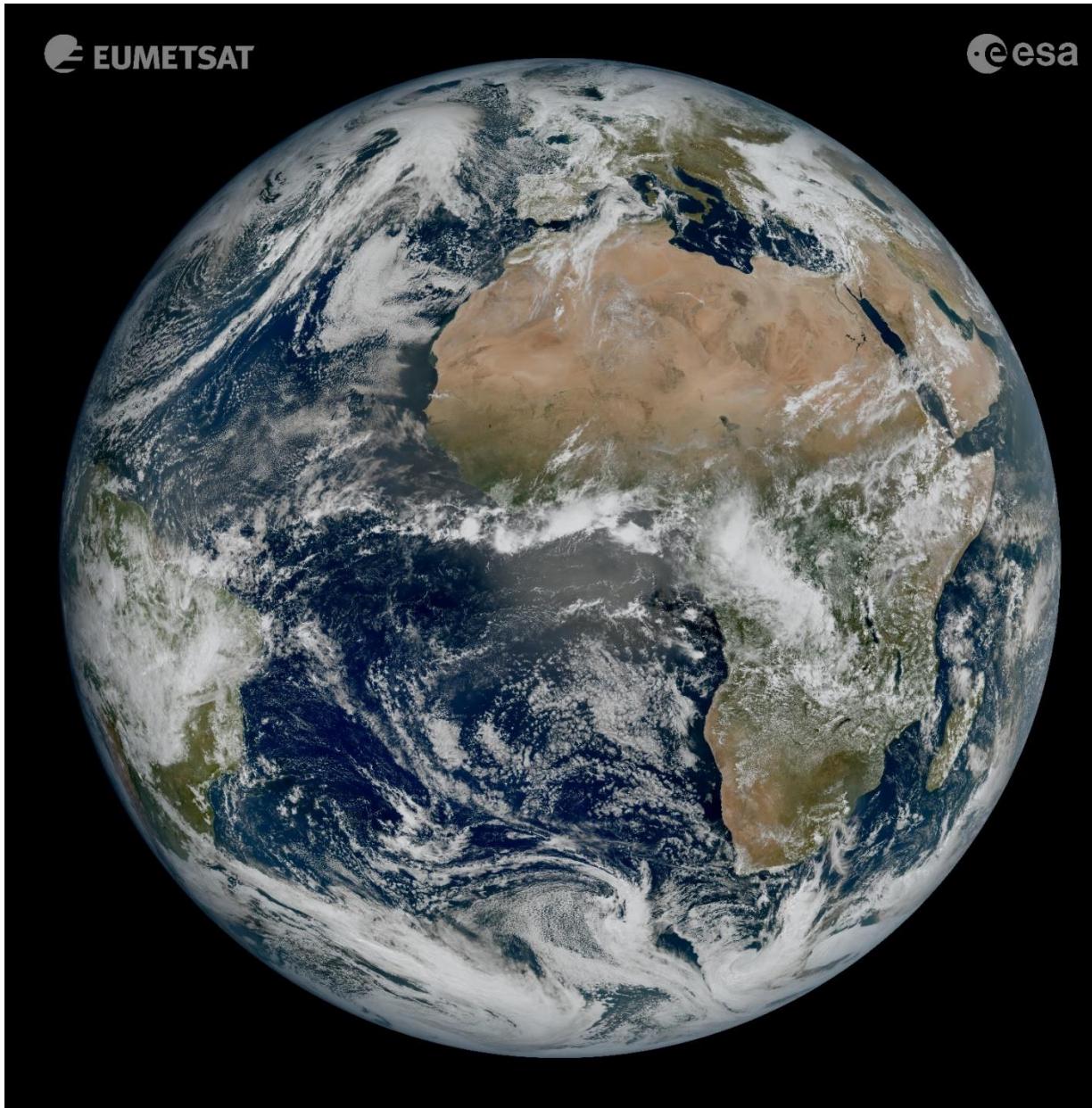
@HayleyEversKing

@DrMark_H

We've never been more connected to each other...



Copernicus Earth Observation
Data Visualisation Workshop Series
Introduction to EO Data Visualisation



...and we've never been
more connected to our
planet!

(First image from MTG-I1!)

Copernicus Earth Observation
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Introduction to EO Data Visualisation



Copernicus

Europe's eyes on Earth

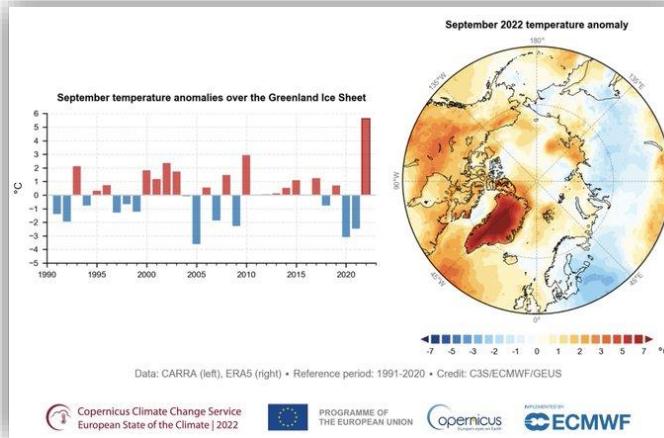
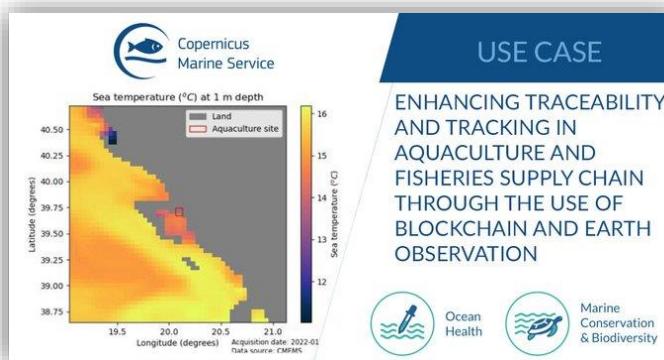
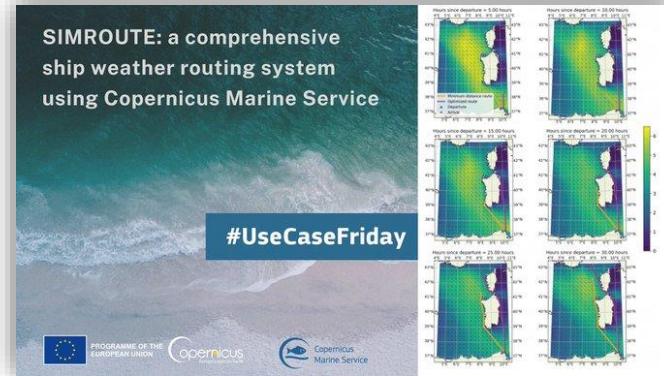
Monitoring every
part of our planet,
for everyone on
our planet....



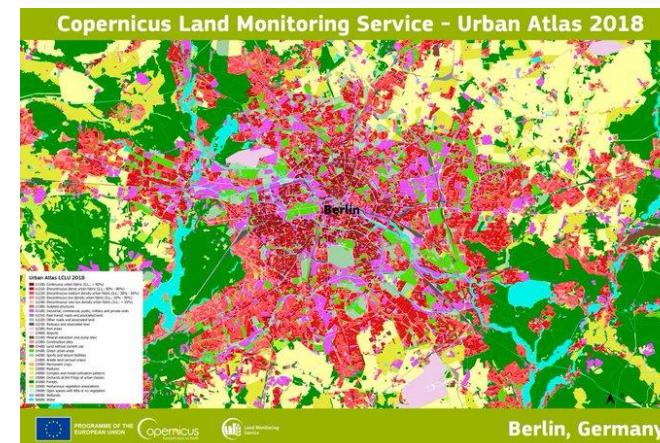
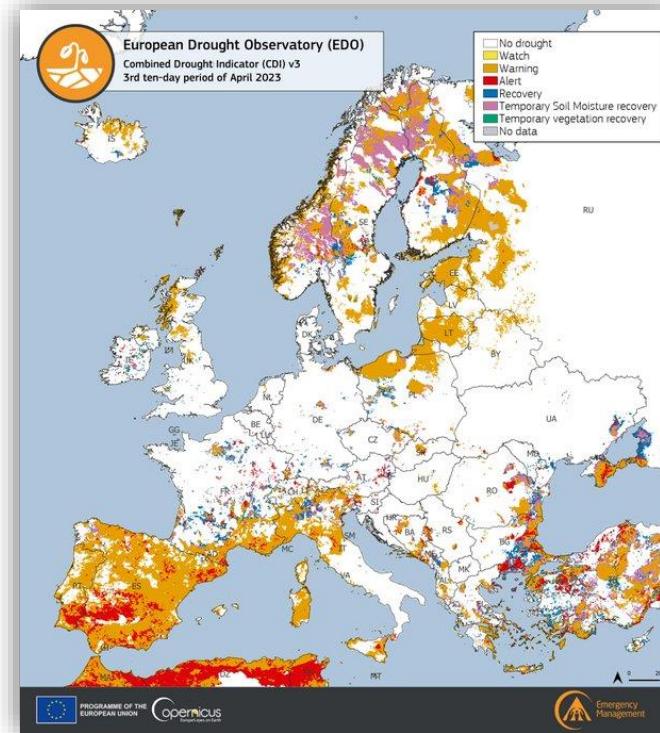


Sentinels and Services

**ECMWF**European
Environment
Agency**MERCATOR
OCEAN**
INTERNATIONALJoint Research Centre
JRC**EMSA**
European Maritime Safety AgencyFRONTEX
SatCen
European Union Satellite Centre



#EOData4Storytelling



PROGRAMME OF THE
EUROPEAN UNION

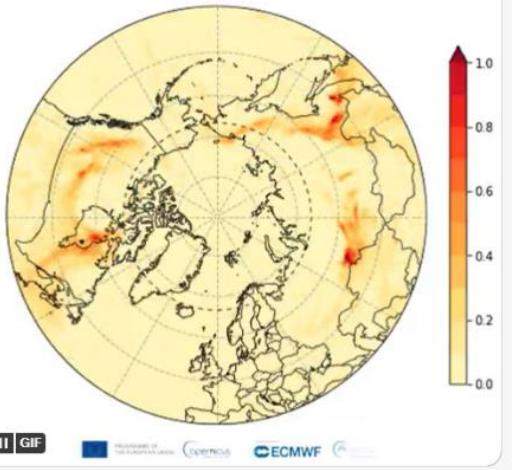


Copernicus ECMWF @CopernicusECMWF · May 10

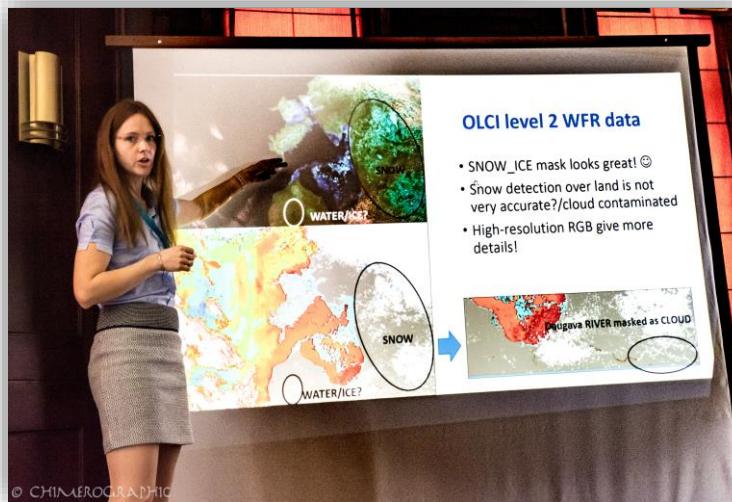
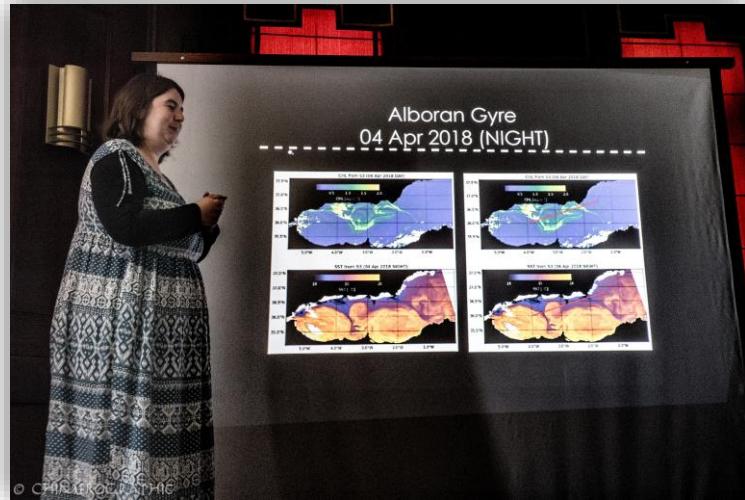
As wildfires burn across Alberta, Canada & the Eurasian steppe, #CopernicusAtmosphere Monitoring Service is closely monitoring the situation, tracking active fire locations & forecasting the impacts of the resulting smoke on the atmosphere.

For more bit.ly/3nNHvE2

CAMS Forecast Organic Matter Aerosol Optical Depth at 550nm
20230510T00 valid for 20230511T18



Telling stories for science and education....



**Copernicus Earth Observation
Data Visualisation Workshop Series**
Introduction to EO Data Visualisation

Stories around current events...

#EOData4Storytelling



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Pierre Markuse
@Pierre_Markuse

German TV Station @ZDF using some @CopernicusEU #Sentinel-2 🌎 #wildfire🔥 satellite images processed by me in the @sentinel_hub EO Browser in their "Terra X" documentary about fires. #RemoteSensing #OpenData #scicomm European🇪🇺 tax money at work!



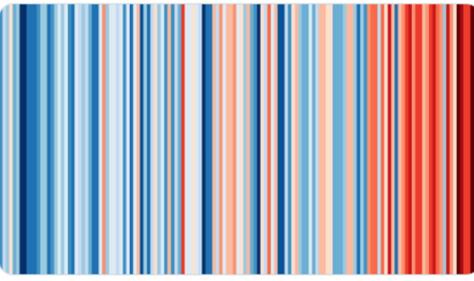
Sentinel Hub and 9 others

3:40 PM · Feb 20, 2022 · Twitter for iPad

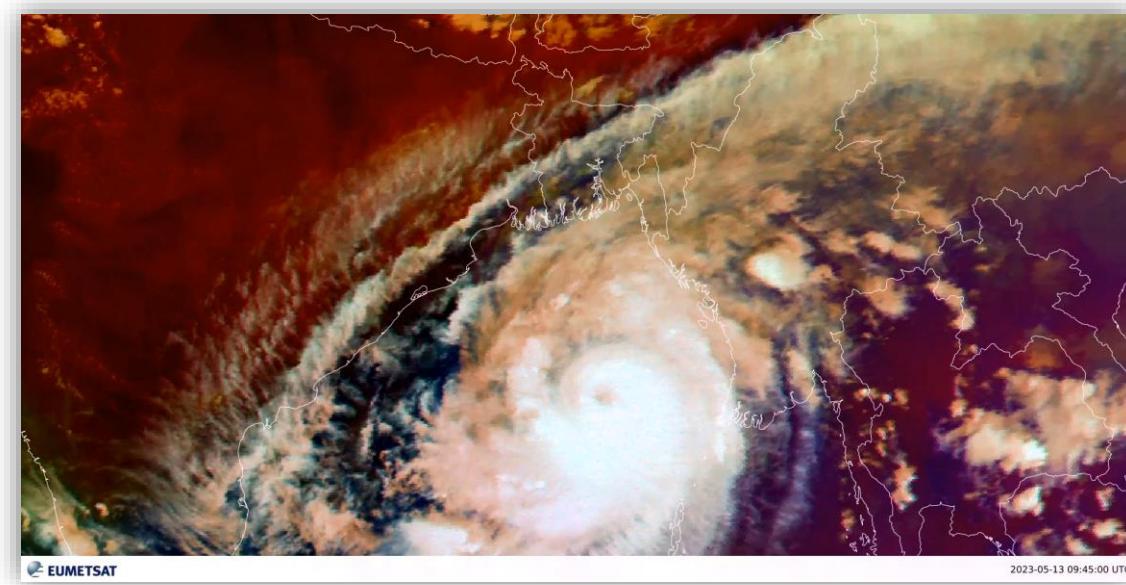
24 Retweets 104 Likes

Dr Hayley Evers-King 🌎 ... @HayleyEvers... · Jun 21, 2021

For the first time in my life I avoided going out last week because it was dangerously hot for us. That's what the future looks like more and more. Here's the stripes for Hessen, DE #ShowYourStripes



2 1 19 1 11

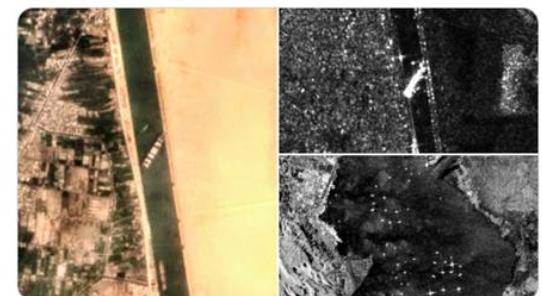


Dr Robbi Bishop-Taylor 🌎 ... @SatelliteSci · Mar 25, 2021

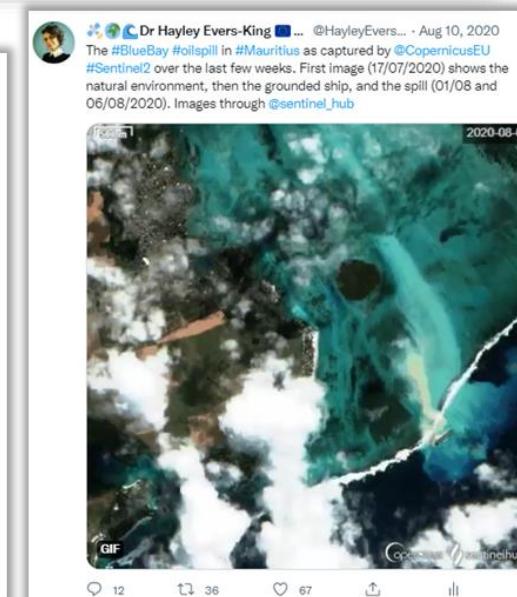
The immense #EVERGIVEN container ship stuck in Egypt's #SuezCanal captured by @CopernicusEU's #Sentinel2 and #Sentinel1 satellites yesterday.

Further to the south, hundreds of ships queue up in the Red Sea, waiting for the path to be opened.

(24 March imagery, @sentinel_hub)



1 30 71

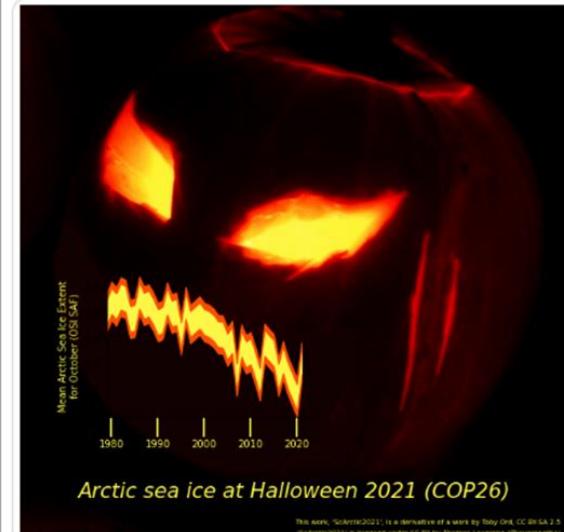


Thomas Lavergne
@lavergnetho

#Arctic #seoice pumpkin - 2021 edition.

Satellites have measured the decline of #Arctic sea ice extent in more than 40 years.

#halloween2021 #COP26
#ClimateEmergency #ClimateAction



Moon Arctic Sea Ice Extent:
for October (OSI SAF)

1980 1990 2000 2010 2020

Arctic sea ice at Halloween 2021 (COP26)

This work, Solent2021, is a derivative of a work by Tony Onit, CC BY 2.0
https://creativecommons.org/licenses/by/2.0/

OSI SAF

2:33 PM · Oct 31, 2021 · Twitter Web App

30 Retweets 2 Quote Tweets 88 Likes

Sharing stories with the public...

 Lucy Wallace @snoweider · Jun 18, 2021 ...
Any of my marine biologist contacts got any insight into what appears to be a massive phytoplankton bloom in the firth of Clyde? The sea is an incredible colour at the moment, but it's got me worried. I'm not the only Arran resident to have noticed this. [@ArranCoast](#)



10 3 33

 Melanie Austen @Mel_Austen · Jun 18, 2021 ...
any EO expert thoughts on this possible bloom in Clyde? [@PeterIMiller](#) [@PlymouthMarine](#) [@HayleyEversKing](#)

2 1

 Dr Hayley Evers-King  ... @HayleyEvers... · Jun 18, 2021 ...
Just taking a look now! It is huge! Here's an image from [@CopernicusEU](#) #Sentinel3 from yesterday...



5 2 9

 Peter Miller @PeterIMiller · Jun 18, 2021 ...
More on the turquoise algal bloom in the Clyde: my [@NEODAAS](#) colleagues produced this spectacular 10m resolution image from [#Sentinel2](#), 21 Jun 2021, true colour. Non-toxic chalky coccoliths from an usually-sited Ehux bloom (but can't say what else may be there!)



NEODAAS You and 6 others

5:03 PM · Jun 23, 2021 · Twitter Web App

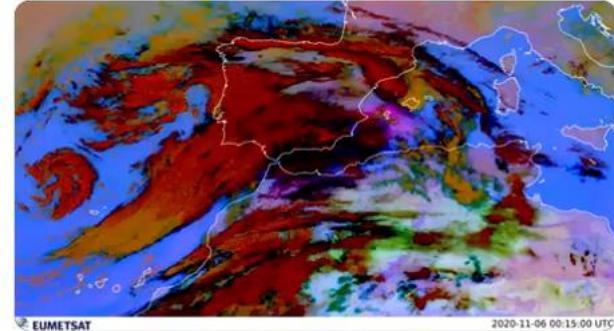
 Peter Miller @PeterIMiller · Jun 18, 2021 ...
Replies to [@PeterIMiller](#) [@Mel_Austen](#) and 4 others
We had to reassure the Highland Council last week that the huge bright bloom in the Minch near Hebrides was likely Ehux (harmless) and not cyanobacteria which only grows in lakes or brackish seas. Thanks Hayley for the true colour views; my image enhances the blue-green colours.

2 7

 Lucy Wallace @snoweider · Jun 18, 2021 ...
The colour is magnificent. It's a bit alarming when the sea you have lived next to for years suddenly changes colour!

1

 Ben Loveday @brloveday ...
As both a [@MotoGP](#) fan and satellite nerd, I took a look at data from [@eumetsat](#) [#meteosat](#) for Nov 6th. The 'puffs' of pink moving from N. Africa to Valencia are probably dust, dark red is thick high cloud (probably rain). [#ValenciaGP](#)



EUMETSAT 2020-11-06 00:15:00 UTC

 Simon Patterson  @denkmit · Nov 6, 2020
Thought [@calcrutchlow](#) was exaggerating about how dusty today's rain was, until I got back to the van! 🌩️ (if anyone can explain dusty rain to him he'd love to know how it happens BTW!)



9:47 AM · Nov 7, 2020 · Twitter Web App

Stories can be told in many forms...

Dr Hayley Evers-King @HayleyEversKing

Wow @HollieAHarding! What an incredibly emotive piece. You captured the complexity, and fear associated with the oceans under a changing climate in ways I never could with data alone. Very well done! Also love the pics in the programme from @brloveday @eumetsat & @PlymouthMarine



Hollie Harding and 3 others

9:57 PM - Mar 16, 2019 · Twitter for iPhone

[View Tweet analytics](#)

1 Retweet 8 Likes

Dr Hayley Evers-King @HayleyEversKing

Last week @brloveday&I got our @LEGO_Group Lego world map kit! And in honour of #WorldOceanDay I'm super excited to share the custom satellite data map we have created with it.... #OceanColour #LEGO #LEGOWorldMap #EarthObservation #WorldOceansDay



You and 2 others

Jun 8, 2021

Dr Hayley Evers-King @HayleyEversKing

Playdoh is better than VR #aomy #childrenofcalmet #Calmet19



Dr Lauren Biemann

Sep 19, 2019

Dr Hayley Evers-King @HayleyEversKing

It's not every day you get doodled having dinner with your favourite satellite #Sentinel3 ❤️ A pleasure to chat to @bolkhovsky recently but gutted we didn't get to work together last week @eumetsat - plan on hiatus for now! See what we talked about here: thesatsat.com/hayley-evers-k...



Aug 30, 2019



Bee Jackson ピーちゃん @BeeLouJackson

Median chlorophyl-a measurements taken from the Western Channel Observatory E-1 station in the English Channel for January-April... in the form of #crochet. #scienceproject #springbloom #oceansscience #coding #oceanobservation

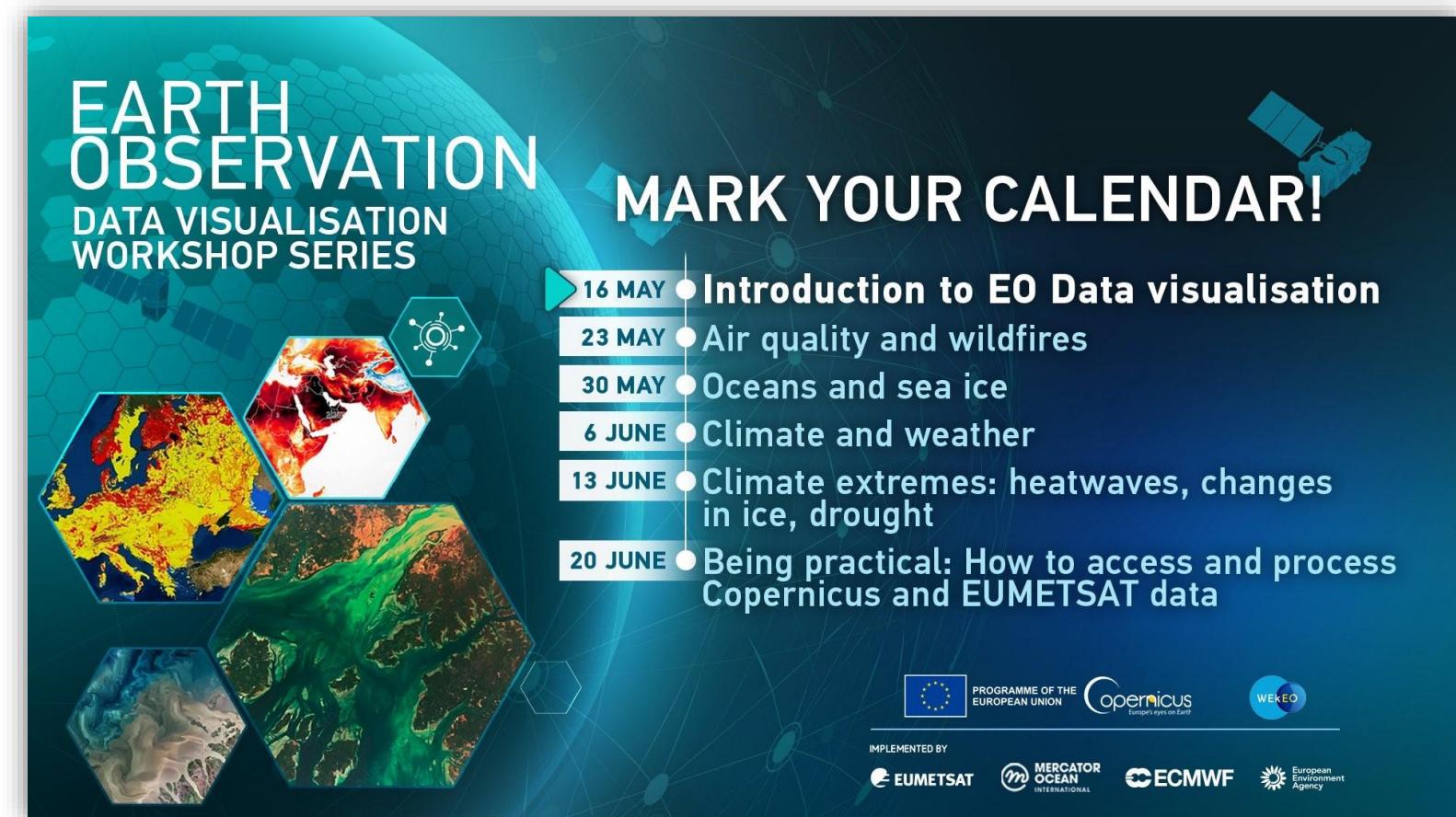


11:08 AM · Apr 2, 2022 · Twitter for iPhone

1 Quote Tweet 5 Likes

Coming up...

- Examples and lessons learned from around the world
 - Weather, climate, atmosphere, land, oceans
 - Data experts, scientists, journalists
- Getting hands on with data....



EARTH OBSERVATION
DATA VISUALISATION
WORKSHOP SERIES

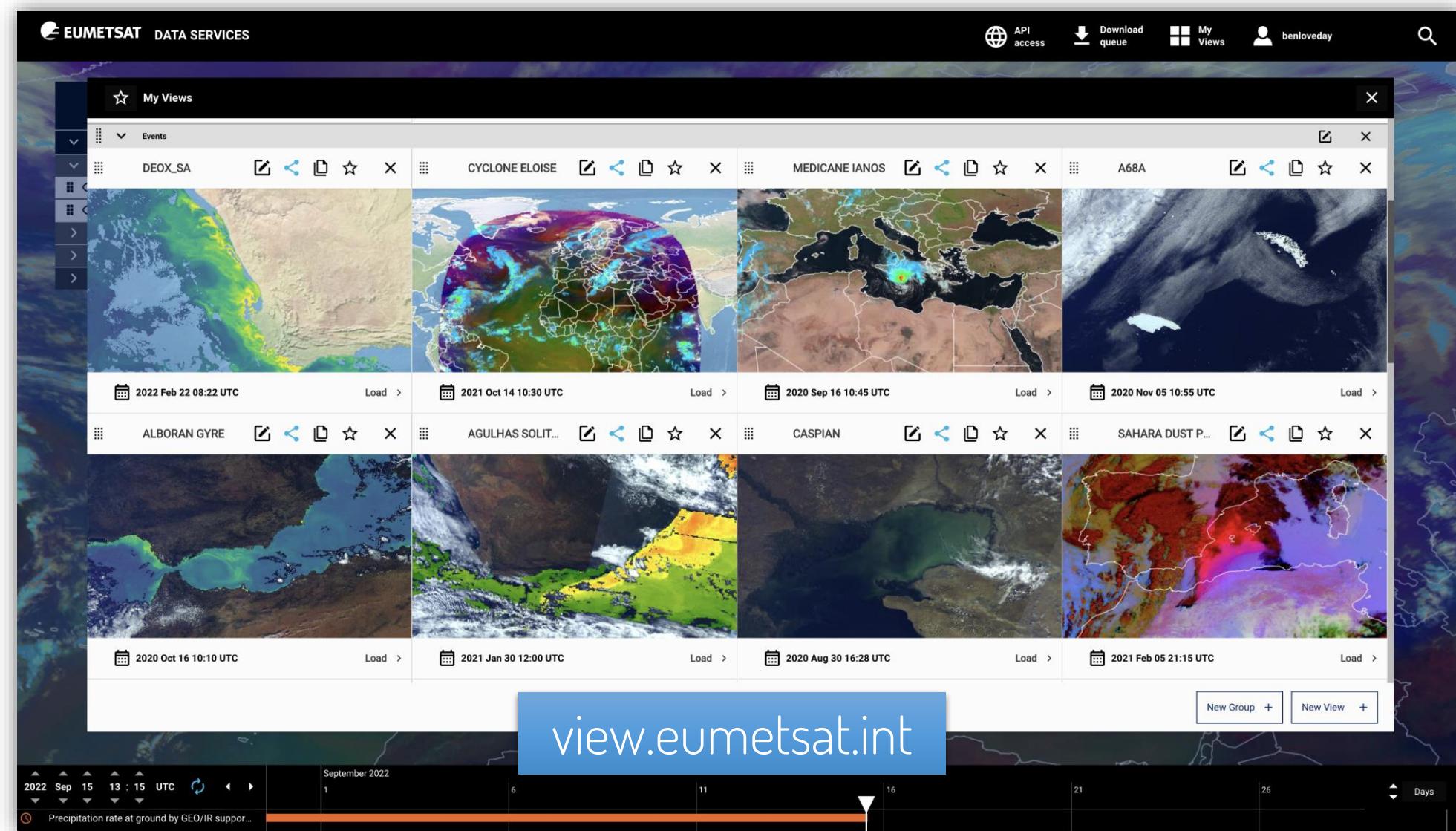
MARK YOUR CALENDAR!

- 16 MAY • Introduction to EO Data visualisation
- 23 MAY • Air quality and wildfires
- 30 MAY • Oceans and sea ice
- 6 JUNE • Climate and weather
- 13 JUNE • Climate extremes: heatwaves, changes in ice, drought
- 20 JUNE • Being practical: How to access and process Copernicus and EUMETSAT data

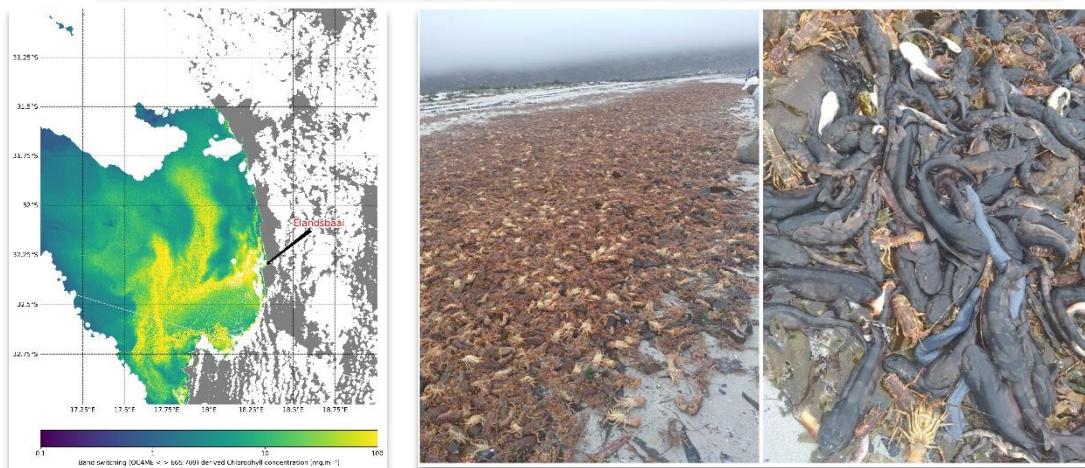
IMPLEMENTED BY

EUMETSAT MERCATOR OCEAN INTERNATIONAL ECMWF European Environment Agency

Get started with data from EUMETSAT and our friends across the Copernicus programme...

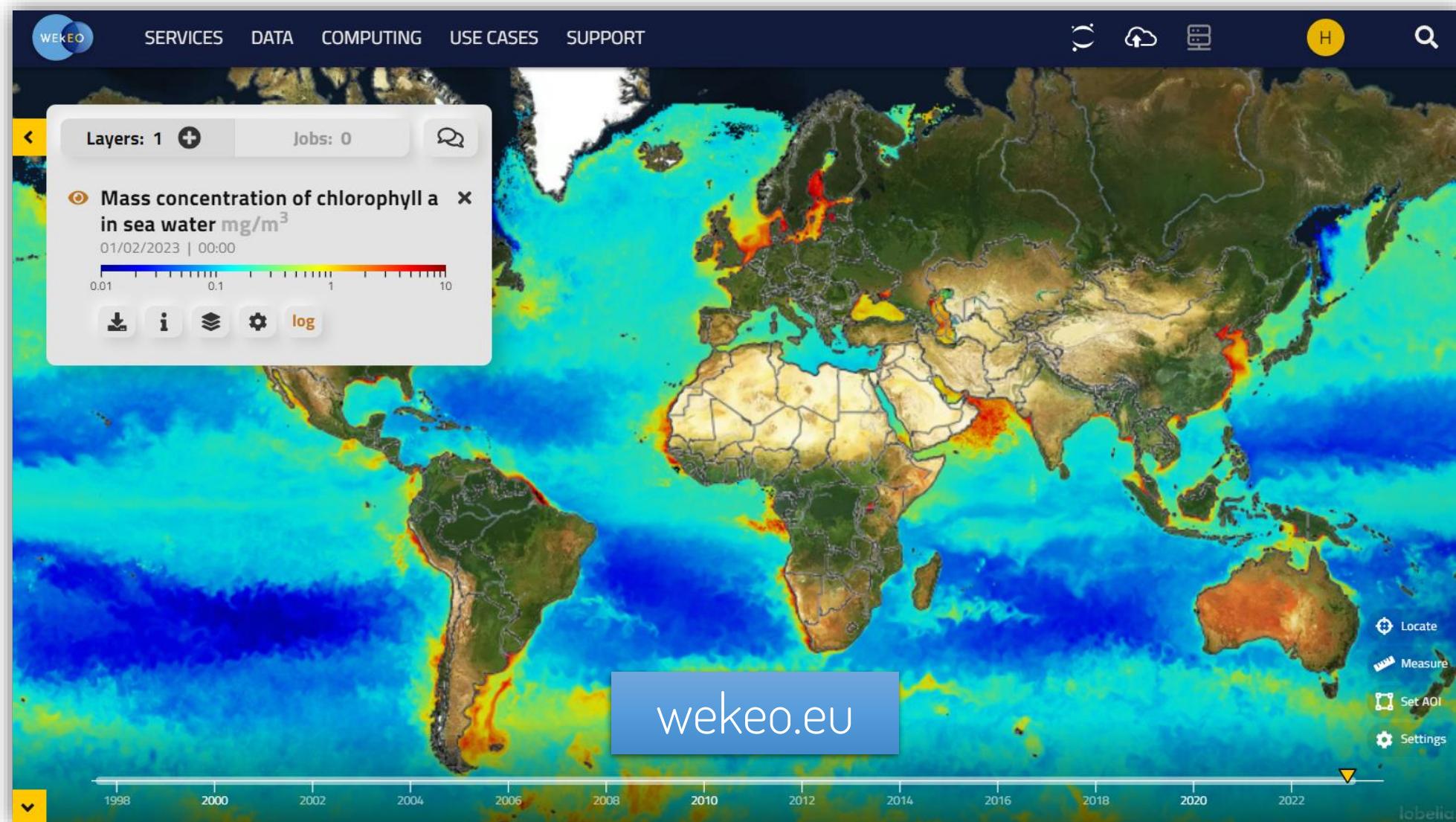


Get started with data from EUMETSAT and our friends across the Copernicus programme...



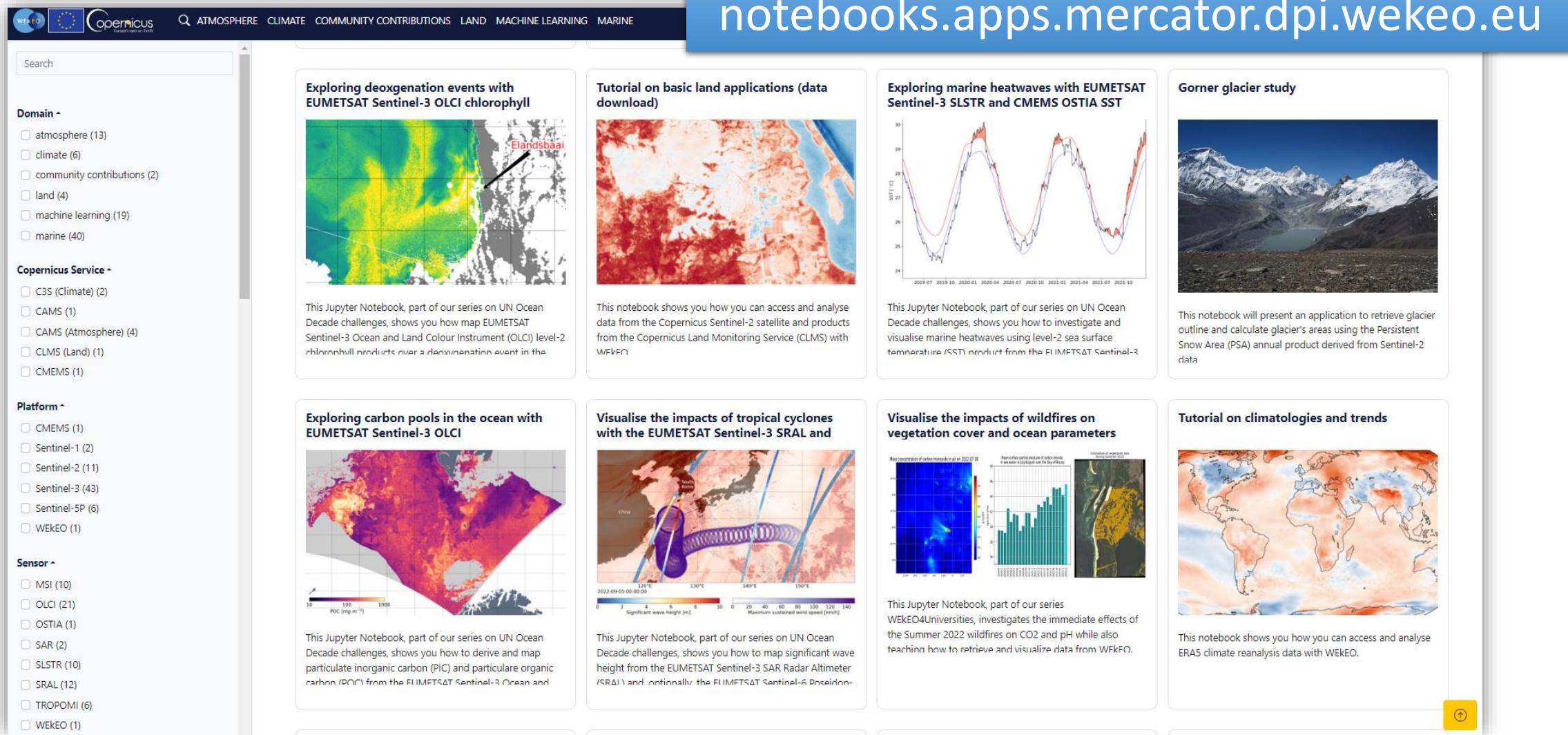
Ocean case studies

Get started with data from EUMETSAT and our friends across the Copernicus programme...



Get started with data from EUMETSAT and our friends across the Copernicus programme...

notebooks.apps.mercator.dpi.wekeo.eu



Exploring deoxygenation events with EUMETSAT Sentinel-3 OLCI chlorophyll
This Jupyter Notebook, part of our series on UN Ocean Decade challenges, shows you how map EUMETSAT Sentinel-3 Ocean and Land Colour Instrument (OLCI) level-2 chlorophyll products over a deoxygenation event in the Elandsbaai.

Tutorial on basic land applications (data download)
This notebook shows you how you can access and analyse data from the Copernicus Sentinel-2 satellite and products from the Copernicus Land Monitoring Service (CLMS) with WEKEO.

Exploring marine heatwaves with EUMETSAT Sentinel-3 SLSTR and CMEMS OSTIA SST
This Jupyter Notebook, part of our series on UN Ocean Decade challenges, shows you how to investigate and visualise marine heatwaves using level-2 sea surface temperature (SST) product from the EUMETSAT Sentinel-3.

Gorner glacier study
This notebook will present an application to retrieve glacier outline and calculate glacier's areas using the Persistent Snow Area (PSA) annual product derived from Sentinel-2 data.

Exploring carbon pools in the ocean with EUMETSAT Sentinel-3 OLCI
This Jupyter Notebook, part of our series on UN Ocean Decade challenges, shows you how to derive and map particulate inorganic carbon (PIC) and particulate organic carbon (POC) from the EUMETSAT Sentinel-3 Ocean and

Visualise the impacts of tropical cyclones with the EUMETSAT Sentinel-3 SRAL and
This Jupyter Notebook, part of our series on UN Ocean Decade challenges, shows you how to map significant wave height from the EUMETSAT Sentinel-3 SAR Radar Altimeter (SRAL) and optionally the EUMETSAT Sentinel-6 Poseidon.

Visualise the impacts of wildfires on vegetation cover and ocean parameters
This Jupyter Notebook, part of our series WEKEO4Universities, investigates the immediate effects of the Summer 2022 wildfires on CO₂ and pH while also teaching how to retrieve and visualize data from WEKEO.

Tutorial on climatologies and trends
This notebook shows you how you can access and analyse ERA5 climate reanalysis data with WEKEO.

What do we want this workshop to achieve?

- Create a network of people who are generating and share EO visualisations.
- For the organisers: learn about the challenges faced by those wanting to visualise data.
- Co-create good practice:
 - Share examples of what works for which types of storytelling
 - Share tools, tips, and tricks for working with data
 - GitHub: <https://github.com/wekeo/DataVisualisation> (Please contribute!)



Copernicus Earth Observation
Data Visualisation Workshop Series
Introduction to EO Data Visualisation



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