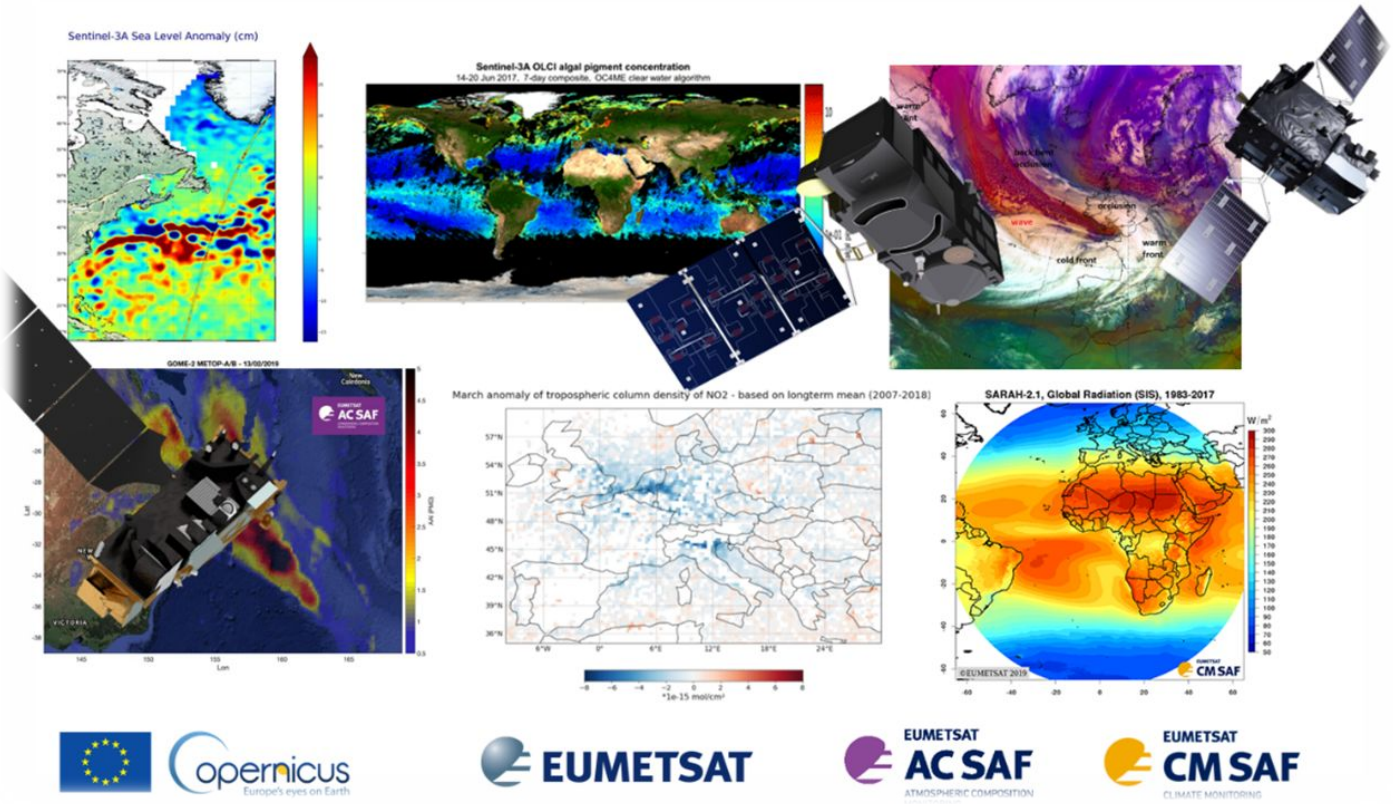
Welcome to the 28th short online course in the series

copernicus.eumetsat.int

The session will begin at 12 UTC



If you have technical issues, please send a message in the chat box to **Support**.

For **Q&A**: go to Slido.com – event code: **#EUMSC28**

Fire Danger Near Real Time Monitoring in the Mediterranean region - Series of online short courses

20 April 2022

Carla Barroso, Federico Fierli, EUMETSAT
Celia Gouveia, IPMA-LSA SAF

Who is who: EUMETSAT - Copernicus

EUMETSAT - from 1986

Monitoring weather and climate from space

Maintain satellites

Distribute data ensure uptake

Build know/how

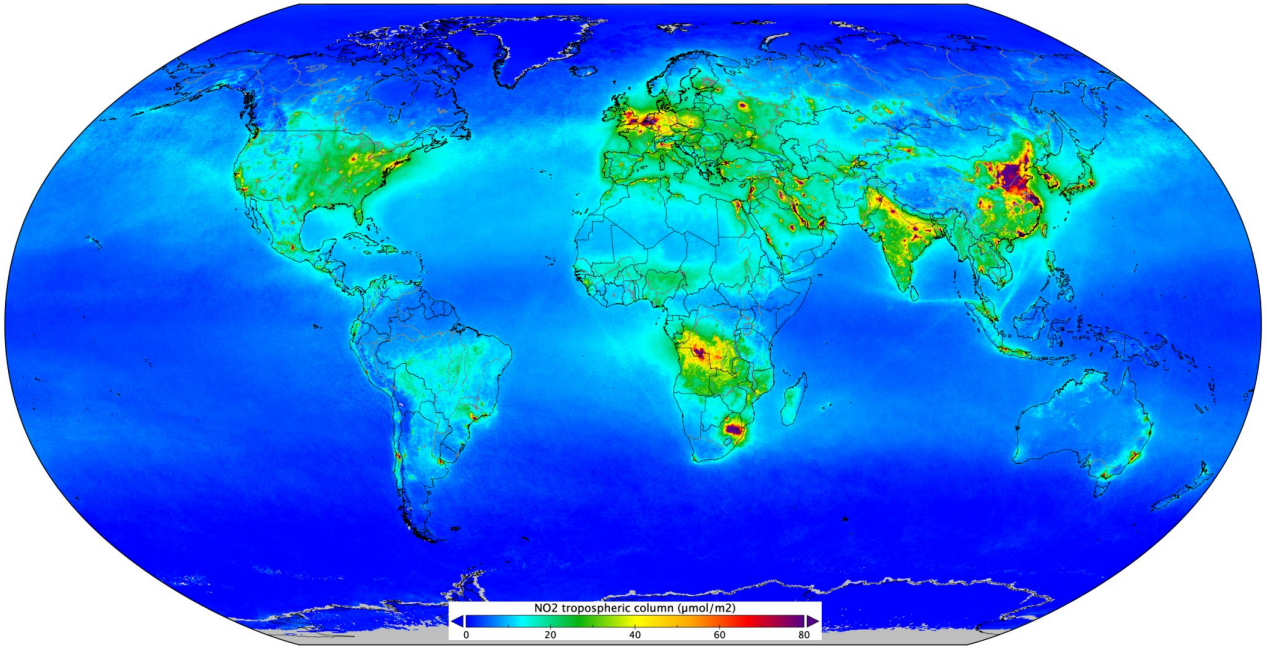
Observations

Infrastructure

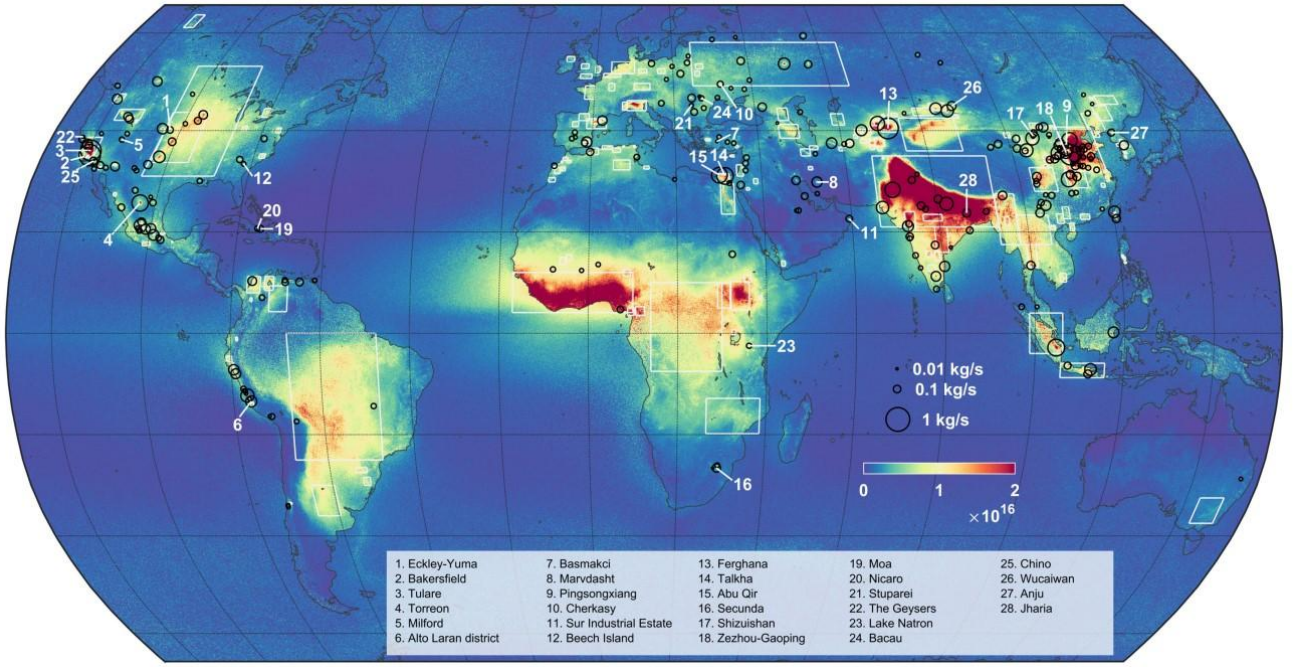
Services

Copernicus - Space & Environmental monitoring program of the European Union

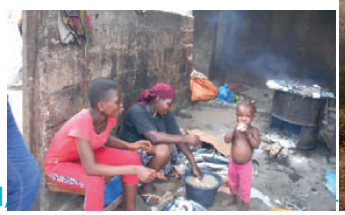
Satellites to monitor pollutants



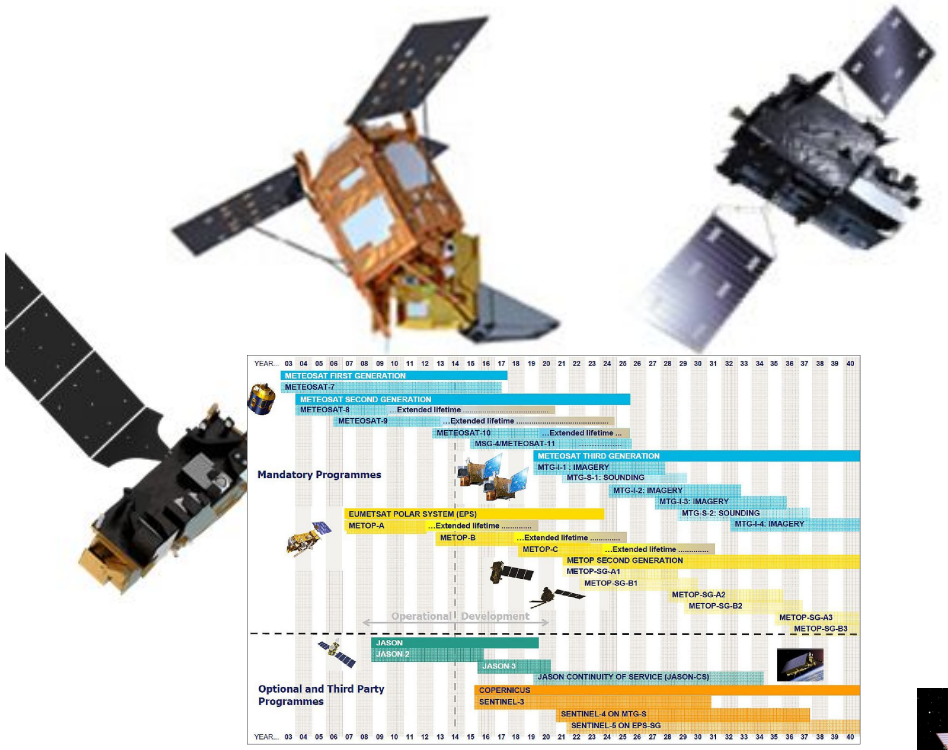
Nitrogen Dioxide from 1 month TROPOMI data
© Copernicus program

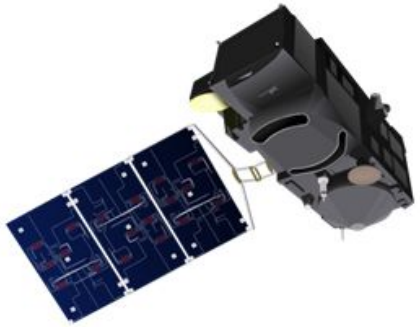


Ammonia fluxes based on 9 years of IASI data
© Martin Van Damme and Lieven Clarisse / ULB



Unique ensemble of existing and upcoming data





EUMETSAT

Copernicus
Europe's eyes on Earth

esa

SENTINEL-1:	4-40m resolution, 3 day revisit at equator	S1A and 1B in orbit
SENTINEL-2:	10-60m resolution, 5 days revisit time	S2A and 2B in orbit
SENTINEL-3:	300-1200m resolution, <2 days revisit	S3A and S3B in orbit
SENTINEL-4:	8km resolution, 60 min revisit time	1st Launch 2022
SENTINEL-5p:	7-68km resolution, 1 day revisit	S5P in orbit
SENTINEL-5:	7.5-50km resolution, 1 day revisit	1st Launch 2023
SENTINEL-6:	10 day revisit time	1st Launch 2020

Current and future missions on Atmospheric composition

- Operational satellites
- Sentinels
- Earth Explorers

EUMETSAT programmes overview

copernicus.eumetsat.int

YEAR... 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Mandatory Programmes

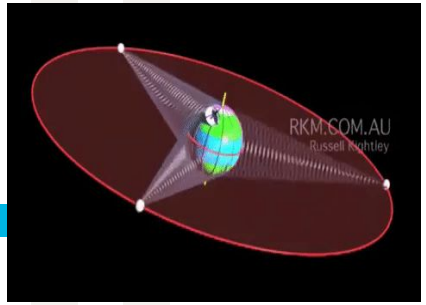
- METEOSAT FIRST GENERATION
  - METEOSAT-7
- METEOSAT SECOND GENERATION
  - METEOSAT-8 …Extended lifetime .....
  - METEOSAT-9 …Extended lifetime .....
  - METEOSAT-10 …Extended lifetime ...
  - MSG-4/METEOSAT-11 .....
- METEOSAT THIRD GENERATION
  - MTG-I-1 : IMAGERY
  - MTG-S-1: SOUNDING
  - MTG-I-2: IMAGERY
  - MTG-I-3: IMAGERY
  - MTG-S-2: SOUNDING
  - MTG-I-4: IMAGERY
- EUMETSAT POLAR SYSTEM (EPS)
  - METOP-A …Extended lifetime .....
  - METOP-B …Extended lifetime .....
  - METOP …Extended lifetime .....
- METOP SECOND GENERATION
  - METOP-SG-A1
  - METOP-SG-B1
  - METOP-SG-A2
  - METOP-SG-B2
  - METOP-SG-A3
  - METOP-SG-B3

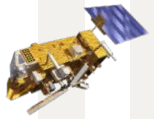
Operational | Development

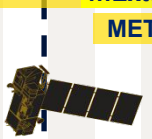
Optional and Third Party Programmes

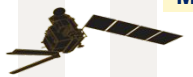
- JASON
  - JASON-2
  - JASON-3
- JASON CONTINUITY OF SERVICE (JASON-CS)
- COPERNICUS
  - SENTINEL-3a/Sentinel-3b (Q2/2018)
  - SENTINEL-4 ON MTG-S
  - SENTINEL-5 ON EPS-SG

YEAR... 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40



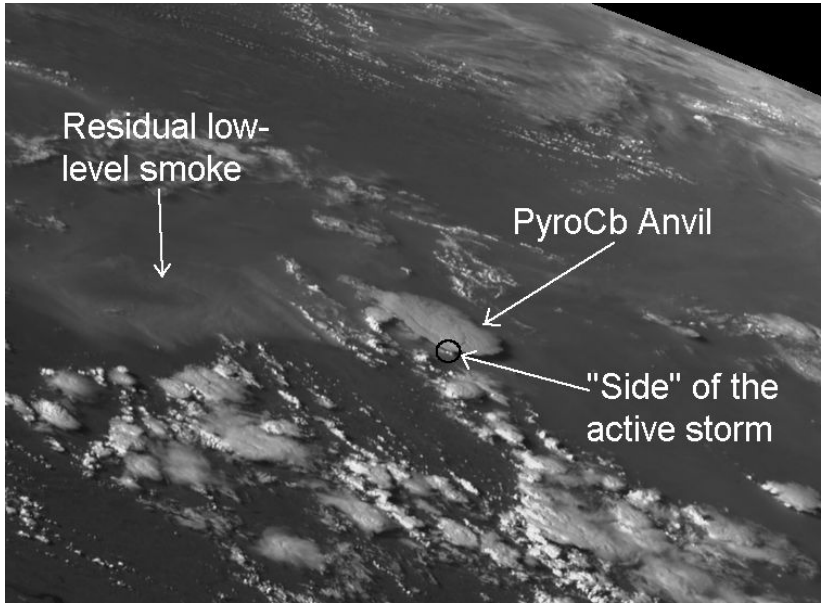


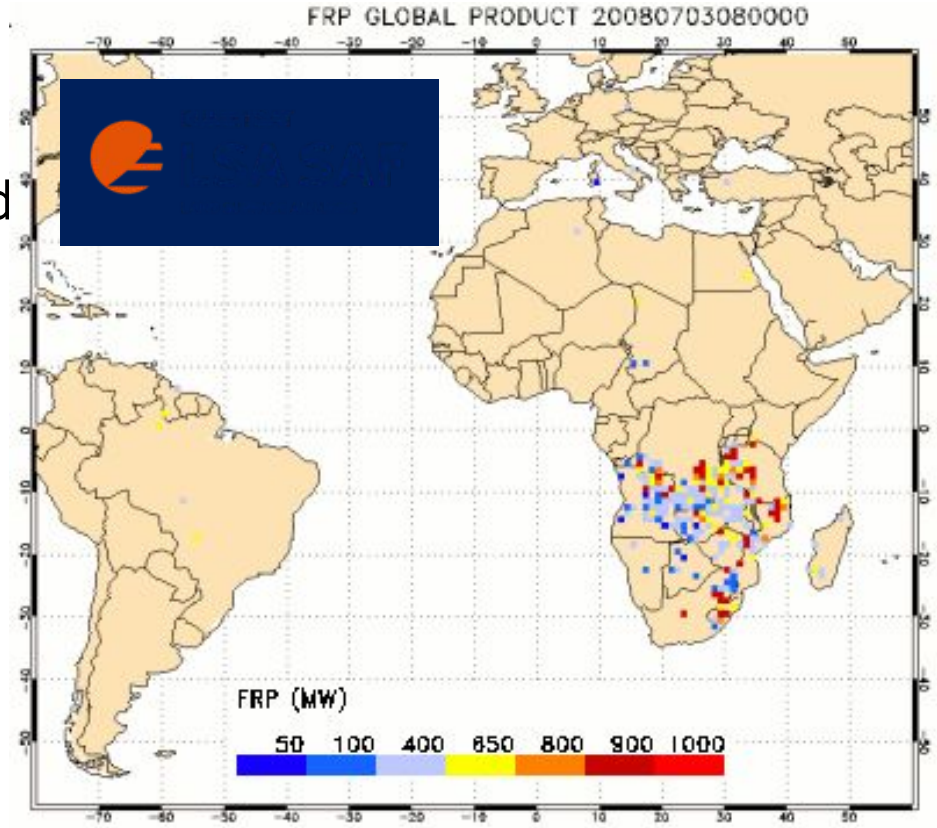




Observe from Geostationary orbit

- Meteosat Second & Third Generation (Africa
- High temporal frequency / sampling => good
- No global coverage
- High geometry deformation in high latitudes

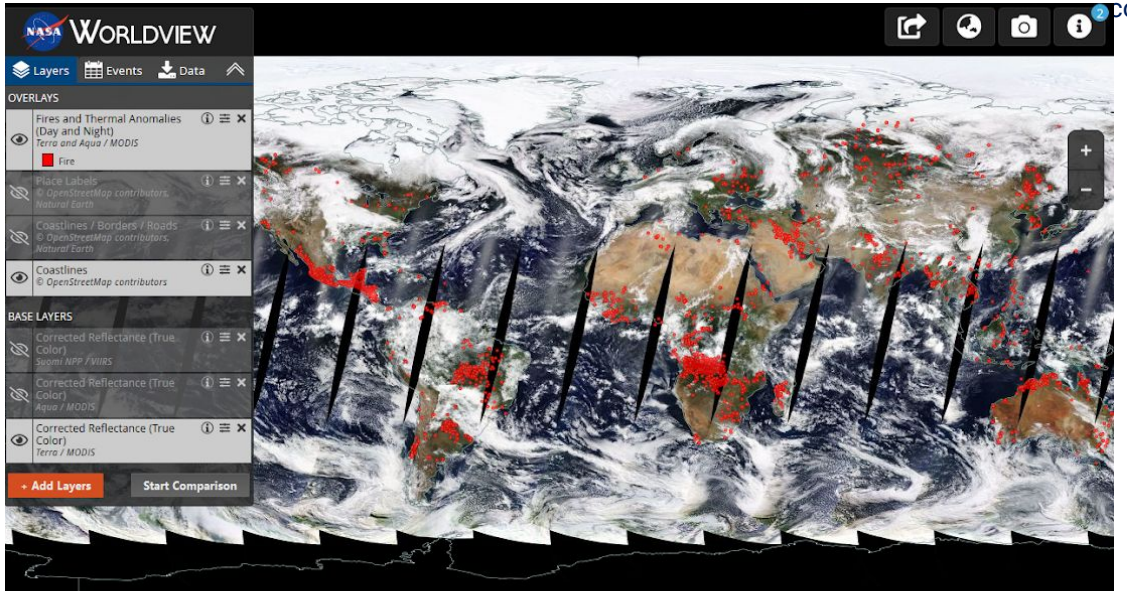




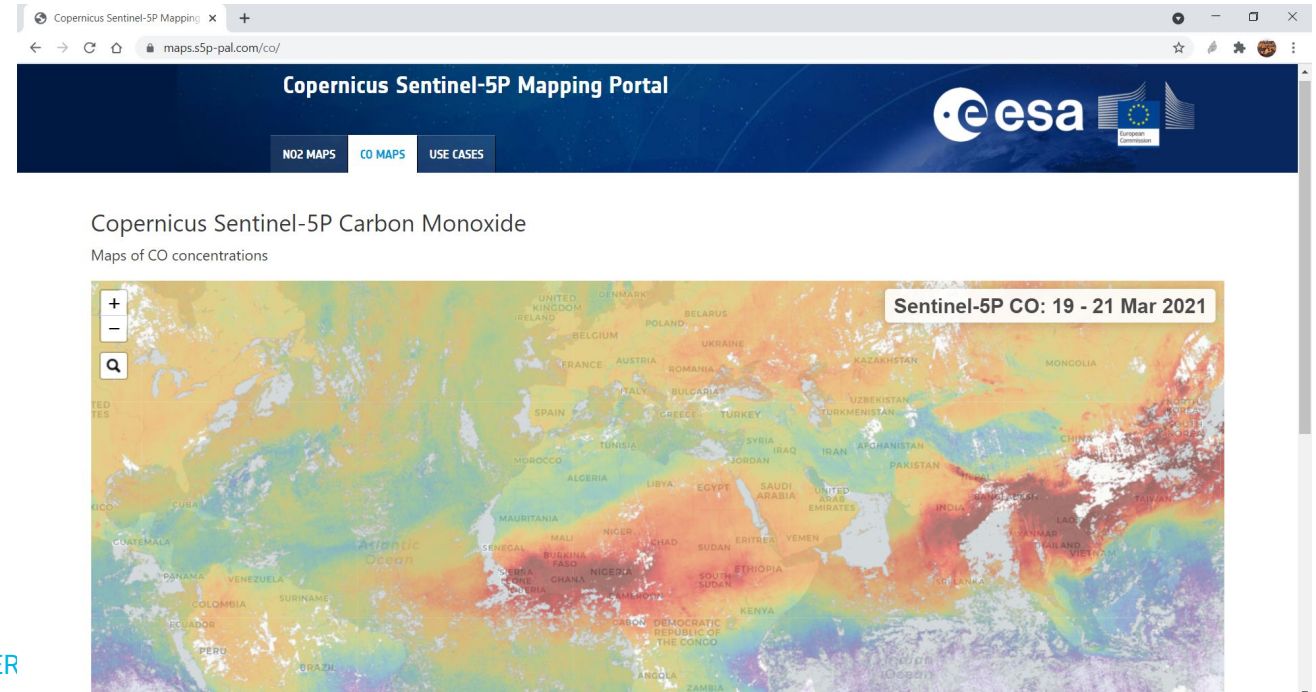
https://landsaf.ipma.pt/en/products/fire-products/frppixel

Observe from Polar orbit …

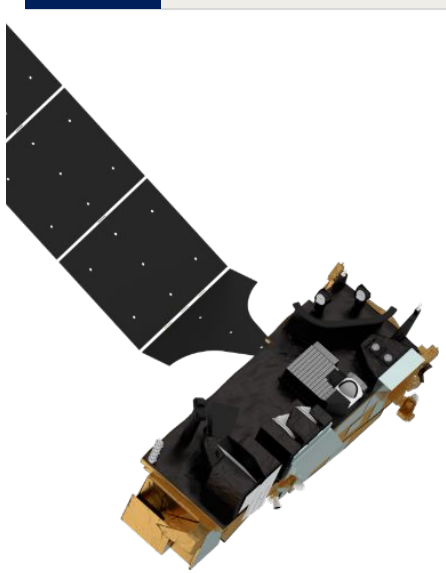
- Global, 1 km resolution (nadir)
- Tens thousands of users worldwide
- Limited temporal sampling

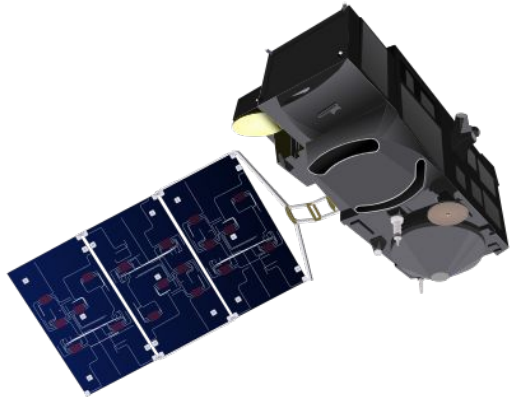


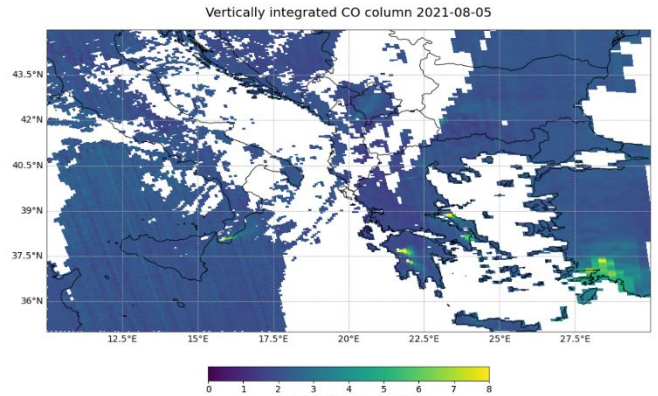
Accumulate data

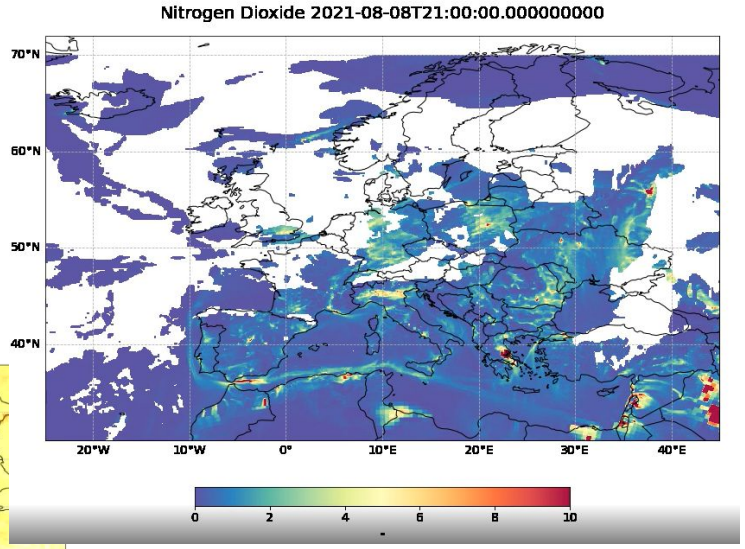


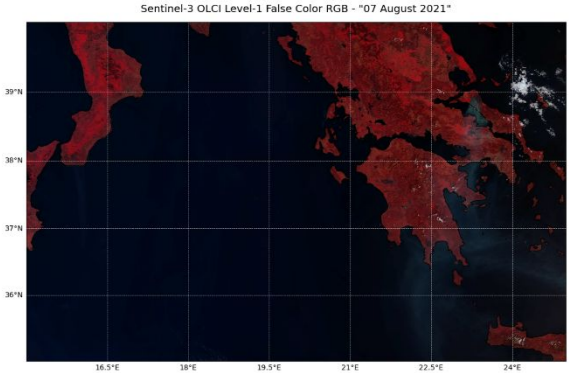
Synergy of observational datasets from Sentinels

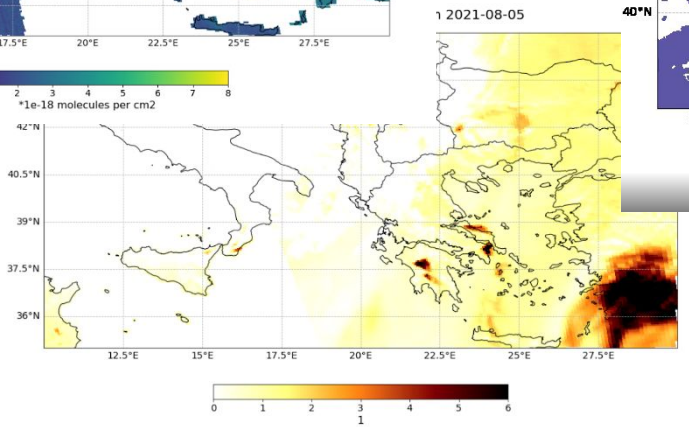


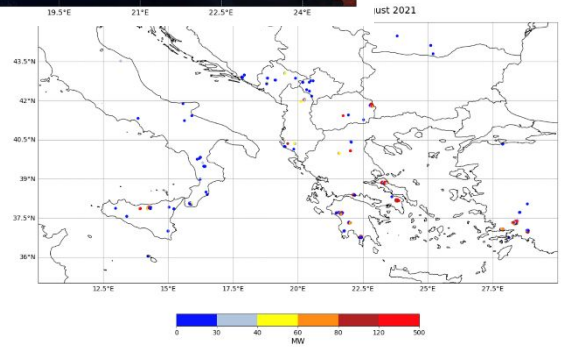










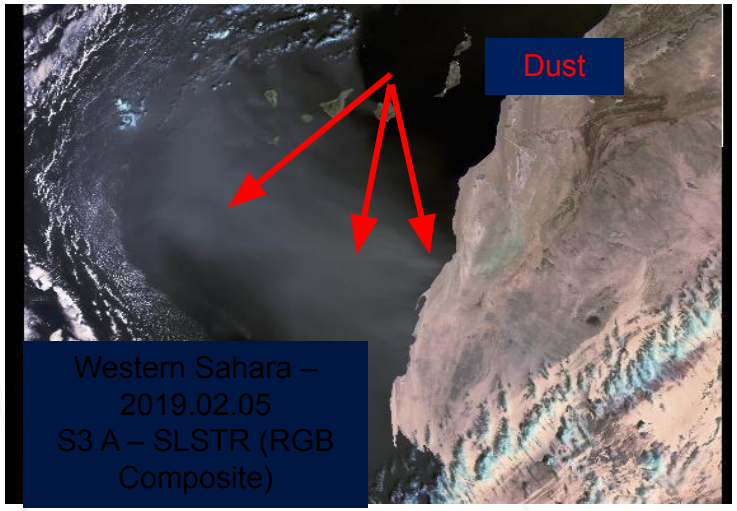


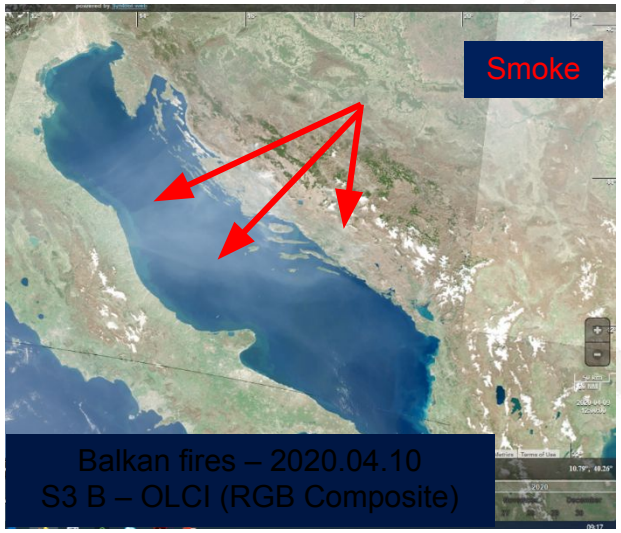
Observe smoke : In a nutshell

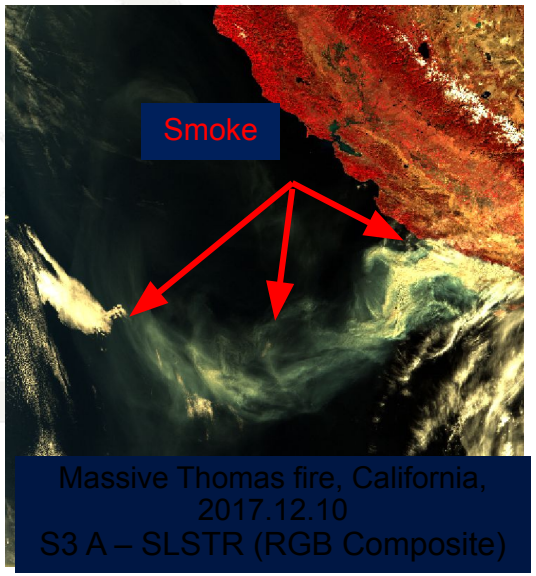
AOD (Aerosol Optical depth) = How much Solar light attenuated by aerosols?

- A proxy of the aerosol amount in air

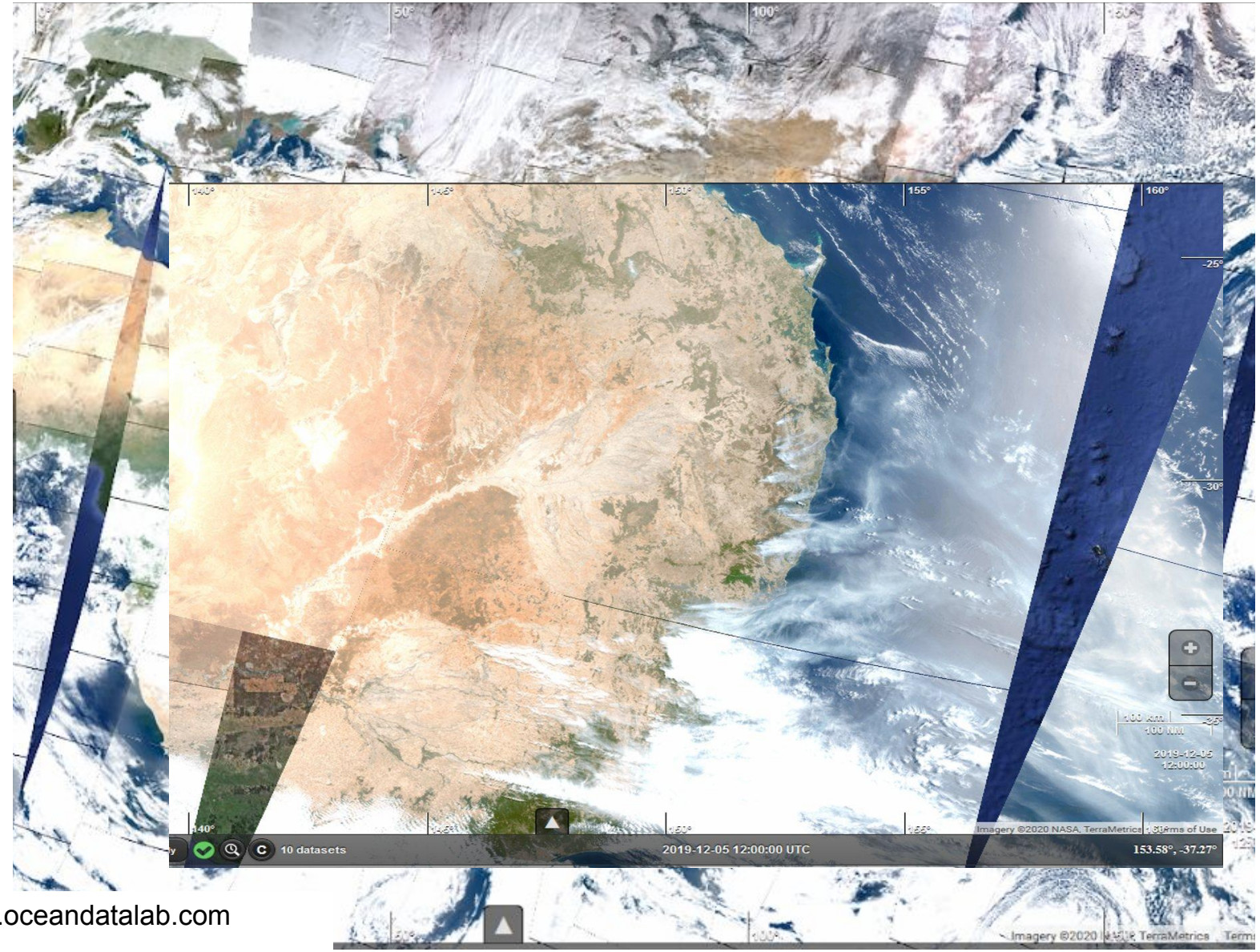
Looking at the contrast between aerosol layer & the underlying surface







Observe Smoke: Sentinel3



https://s3view.oceandatalab.com

Wildfire monitoring as part of an unique data value chain

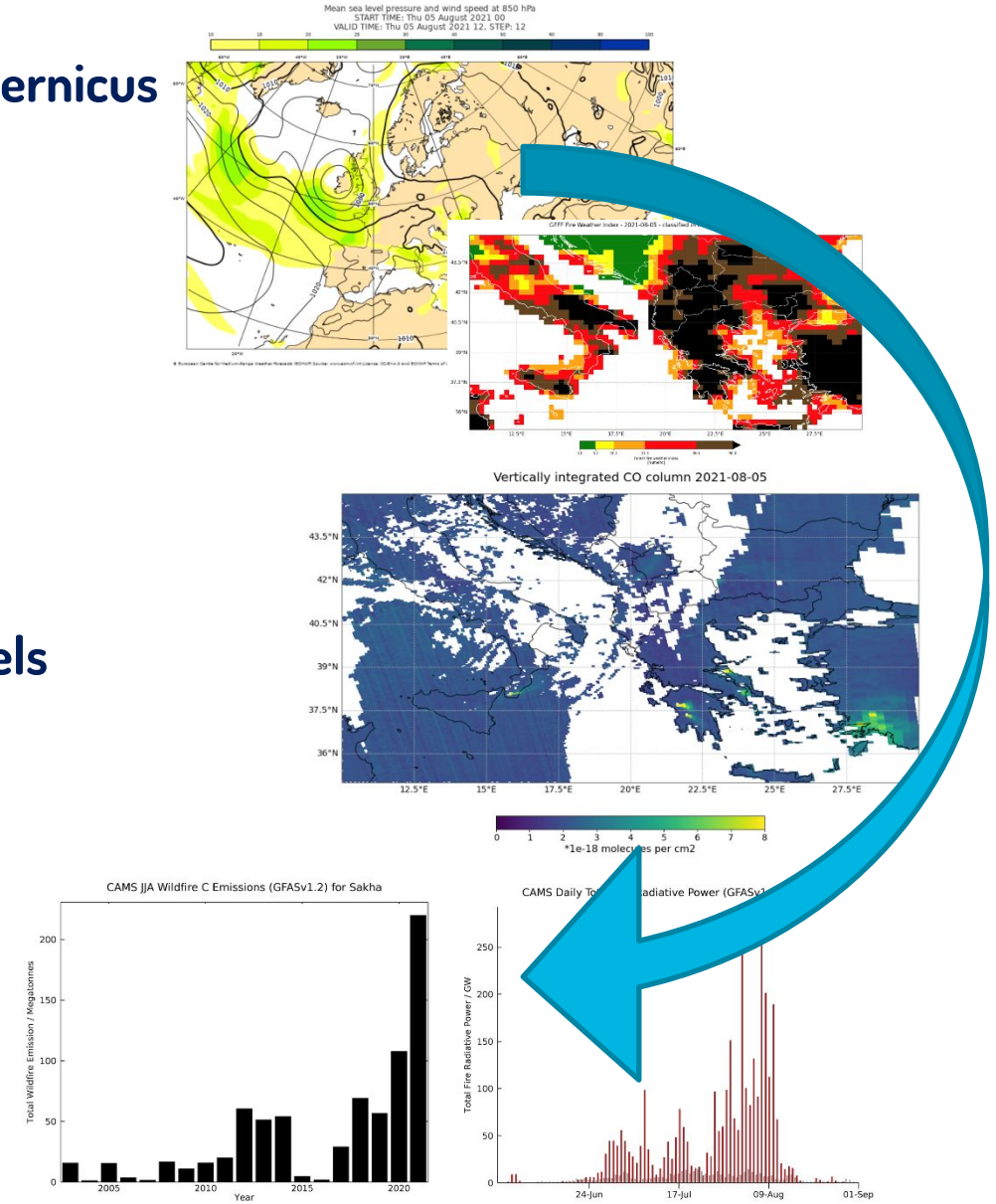
Bring to Users the concept of "Copernicus improves usability"

User journey encompassing:

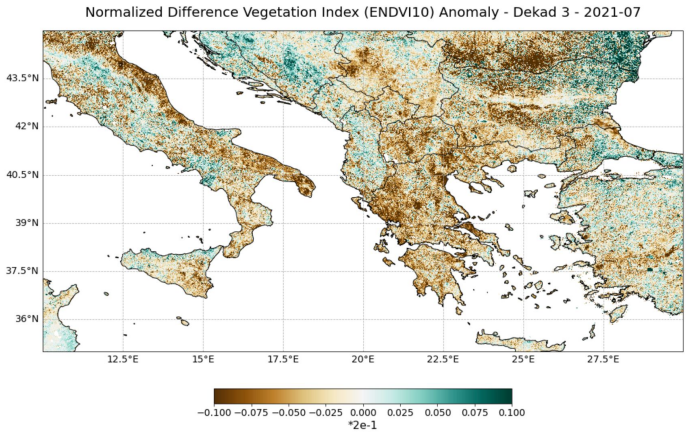
- Forecast
- Monitoring and nowcasting
- Estimate of impacts

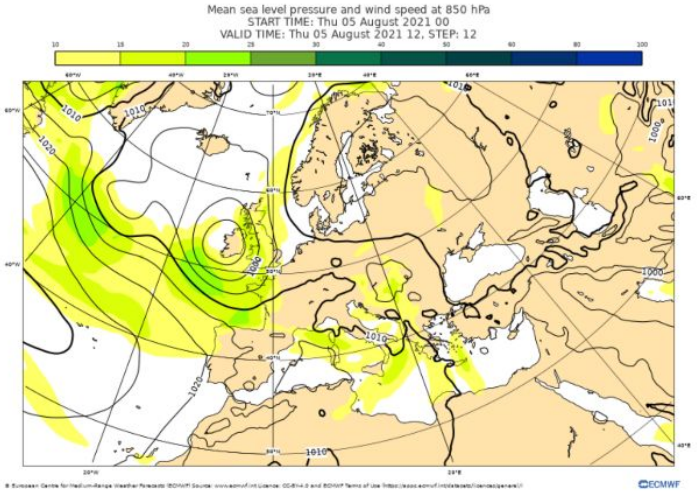
Integrated system:

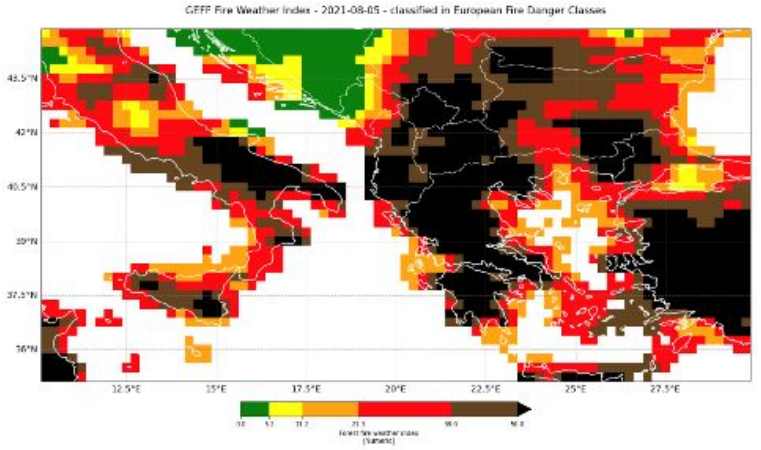
- Satellite and non satellite, models
- Support emission estimate
- Generate added value products
- Ensure Quality and usability

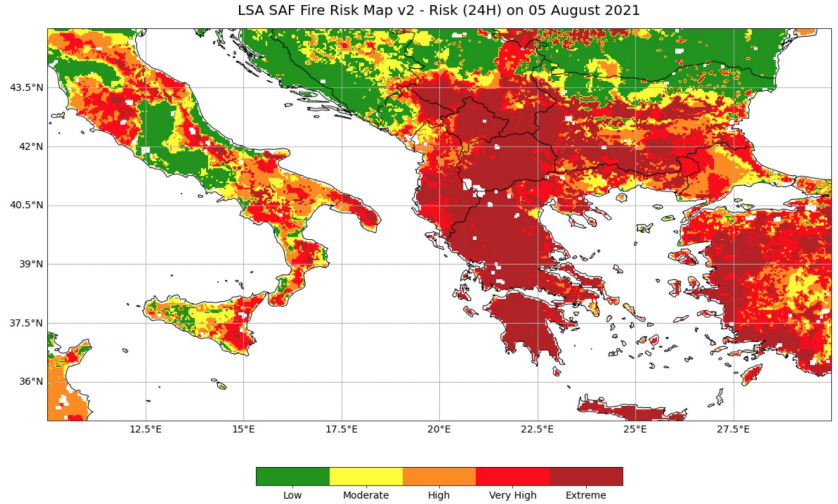


Use of Satellite data – early warning & forecast









Use of Satellite data – Monitor

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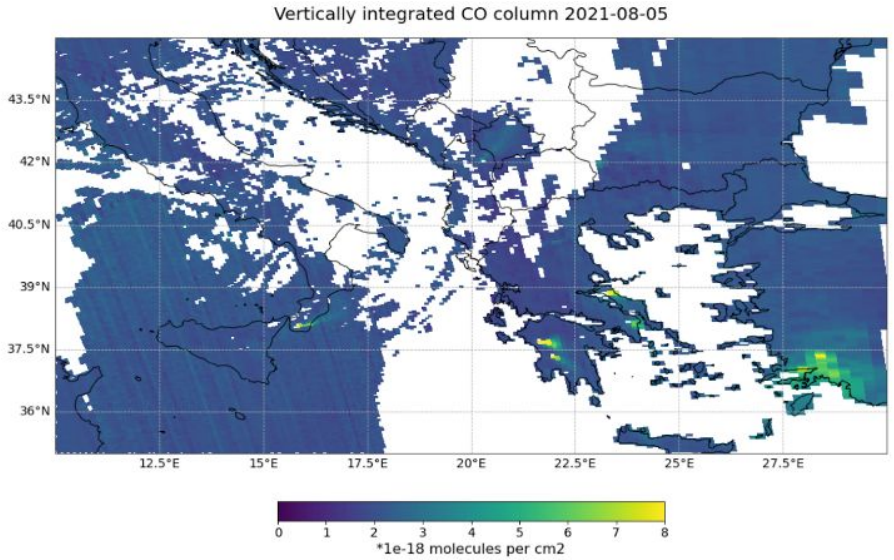
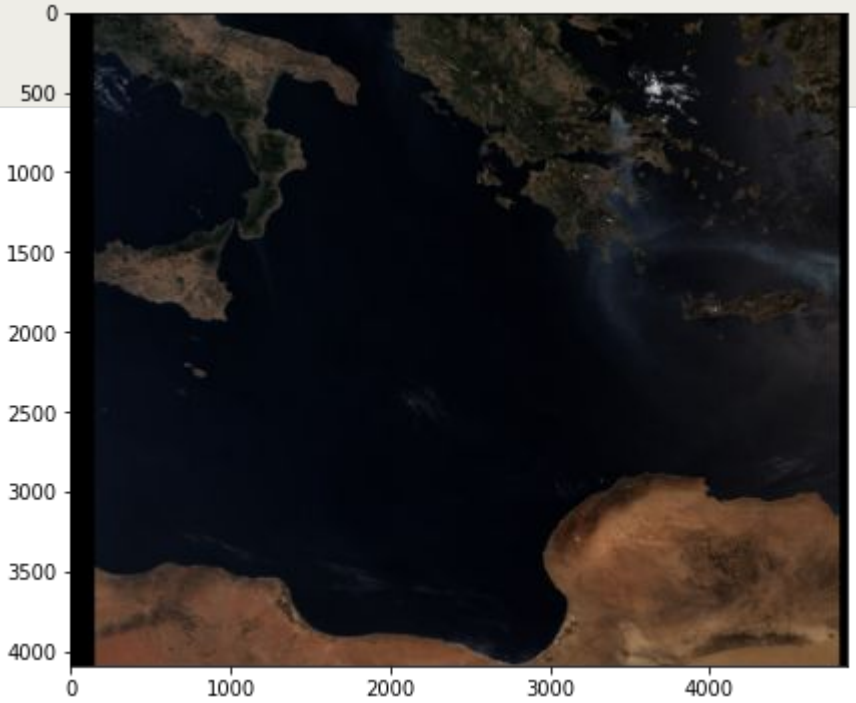
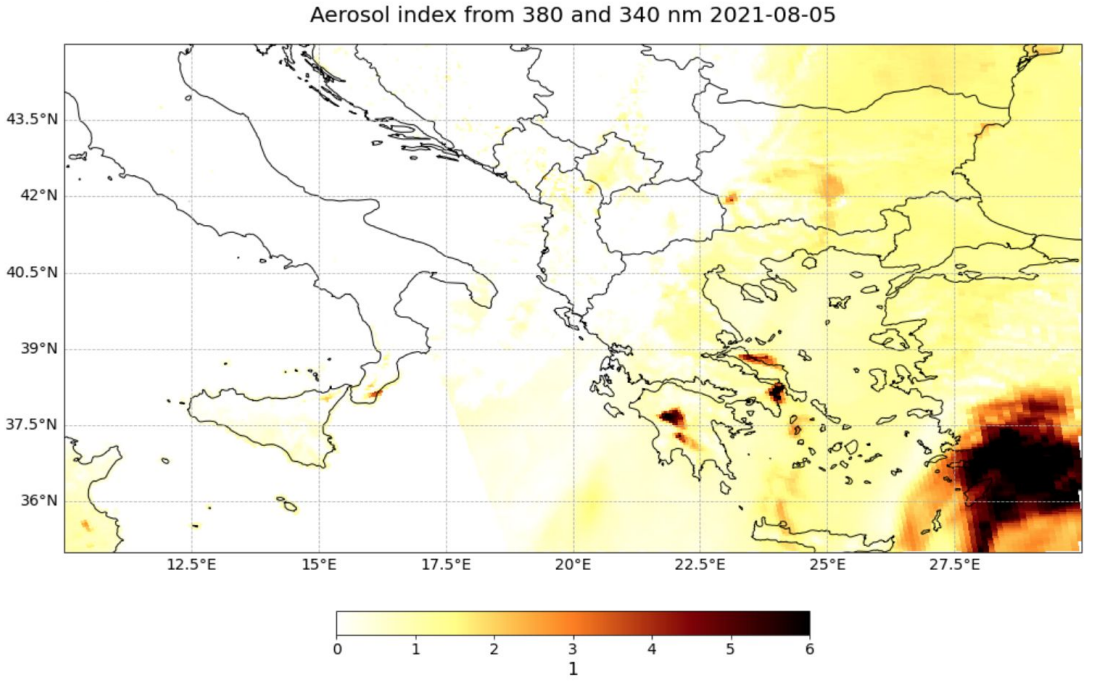
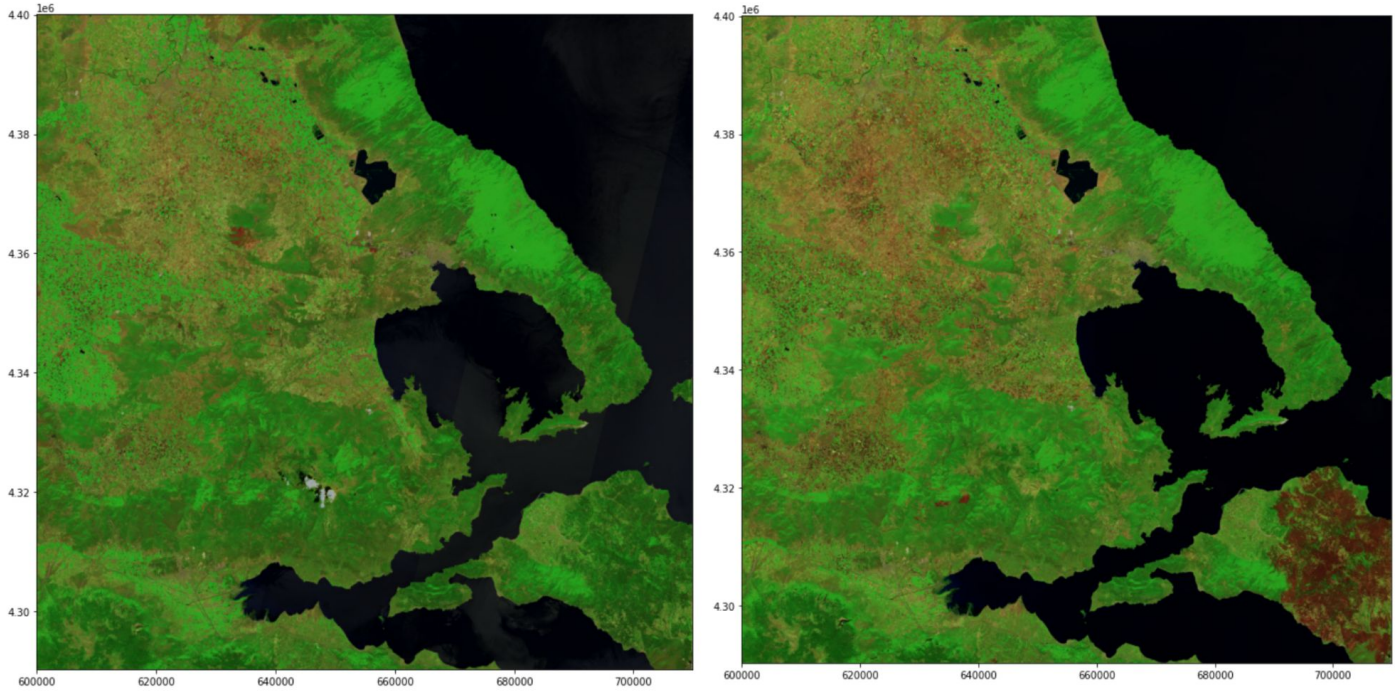
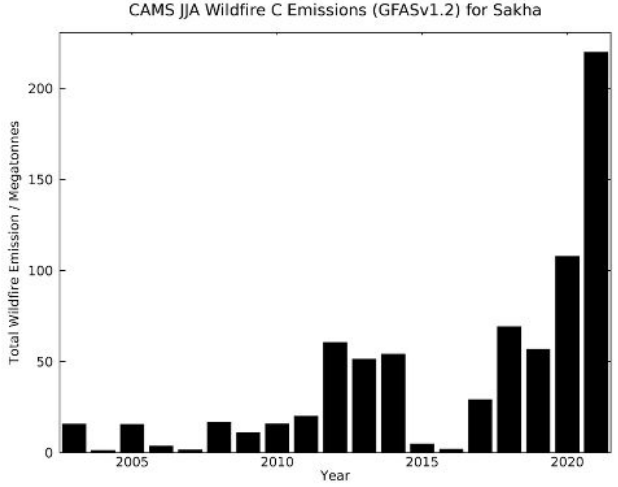


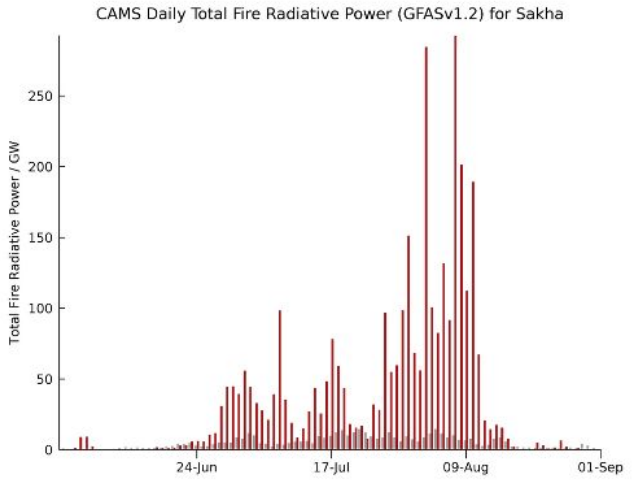




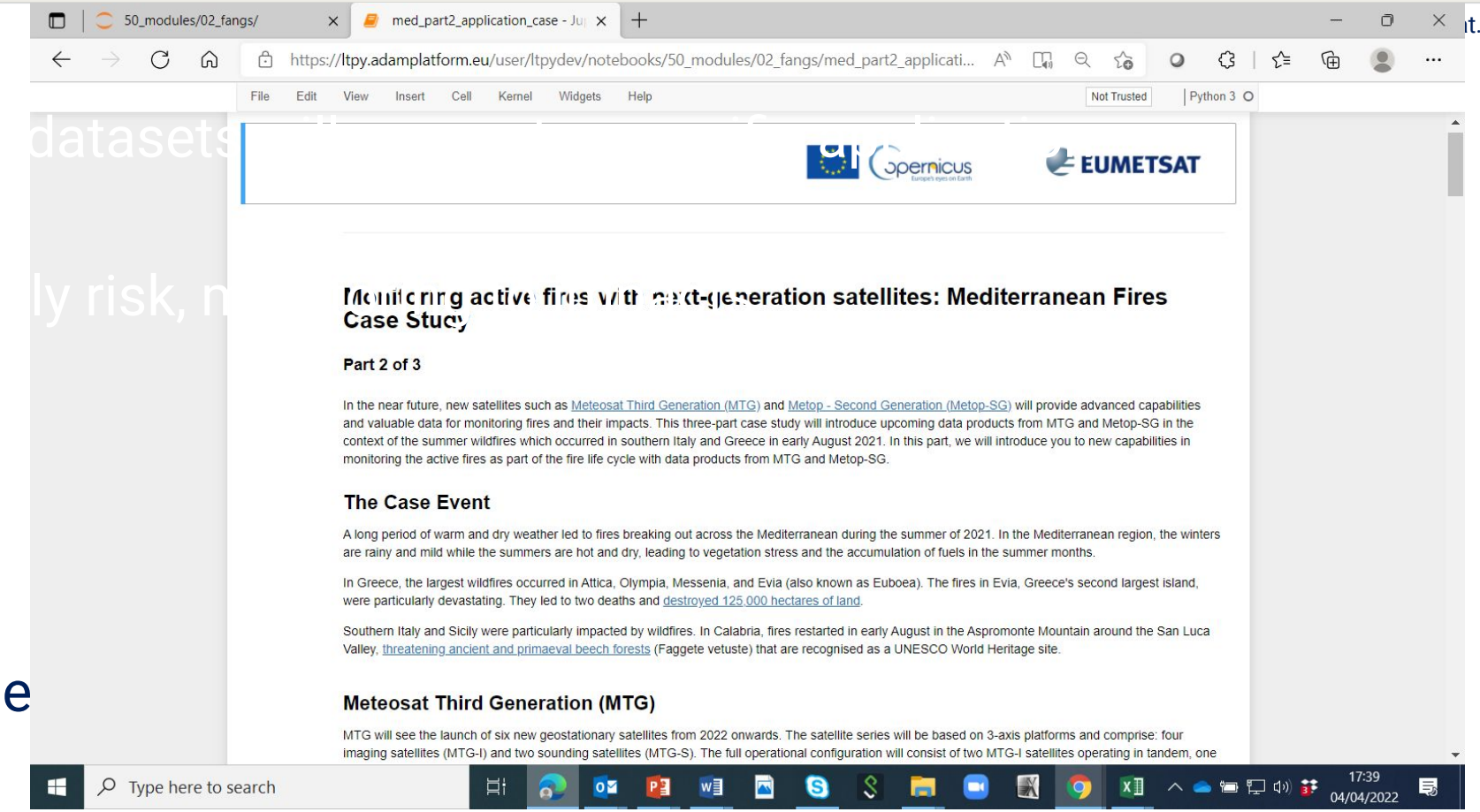
Use of Satellite data – Impact







Example: Use Sentinel and EUMETSAT data for wildfire monitoring



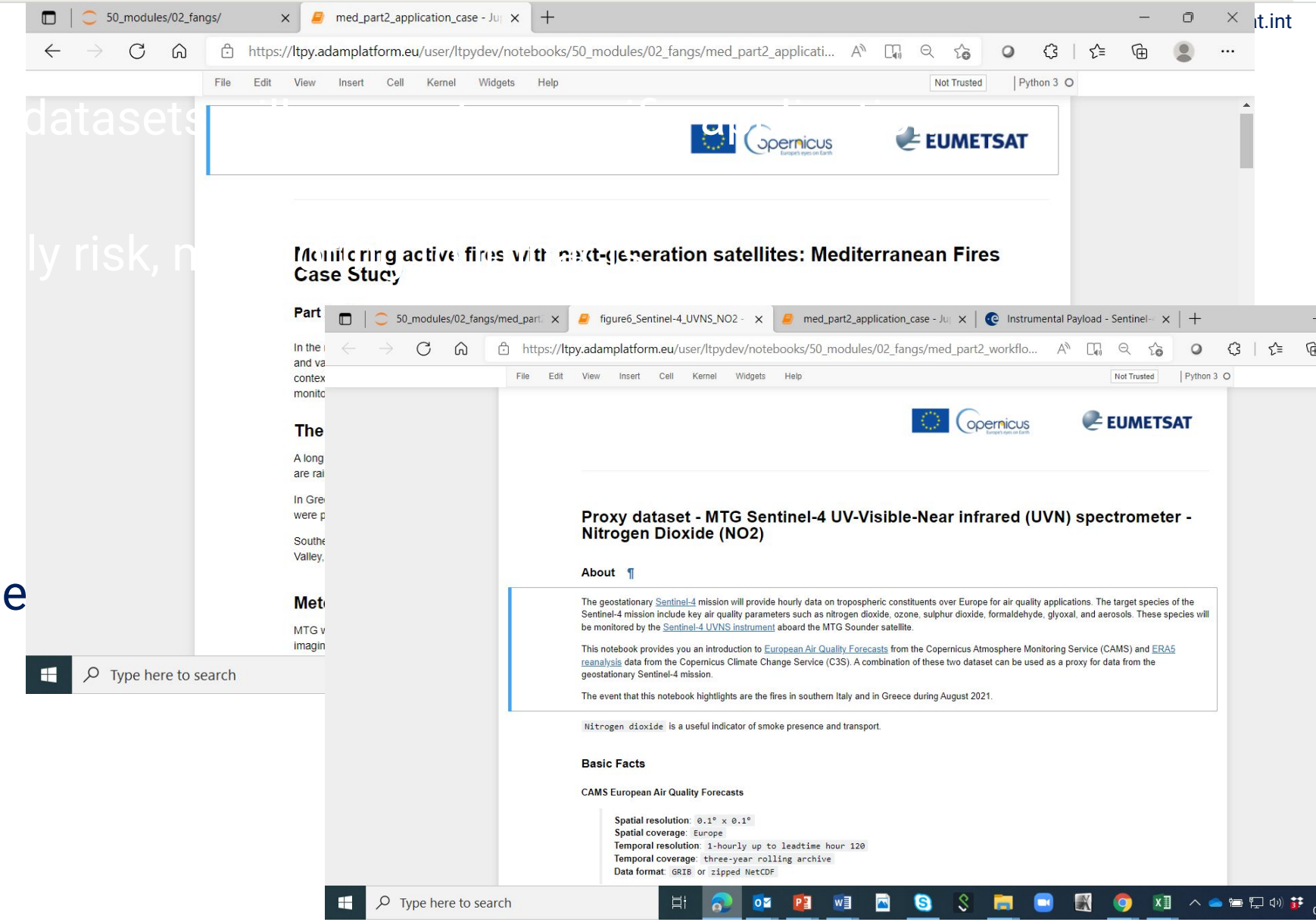
Multiple layers of knowledge

- Thematic Text

Example: Use Sentinel and EUMETSAT data for wildfire monitoring

Multiple layers of knowledge

- Thematic Text
- Dataset presentation



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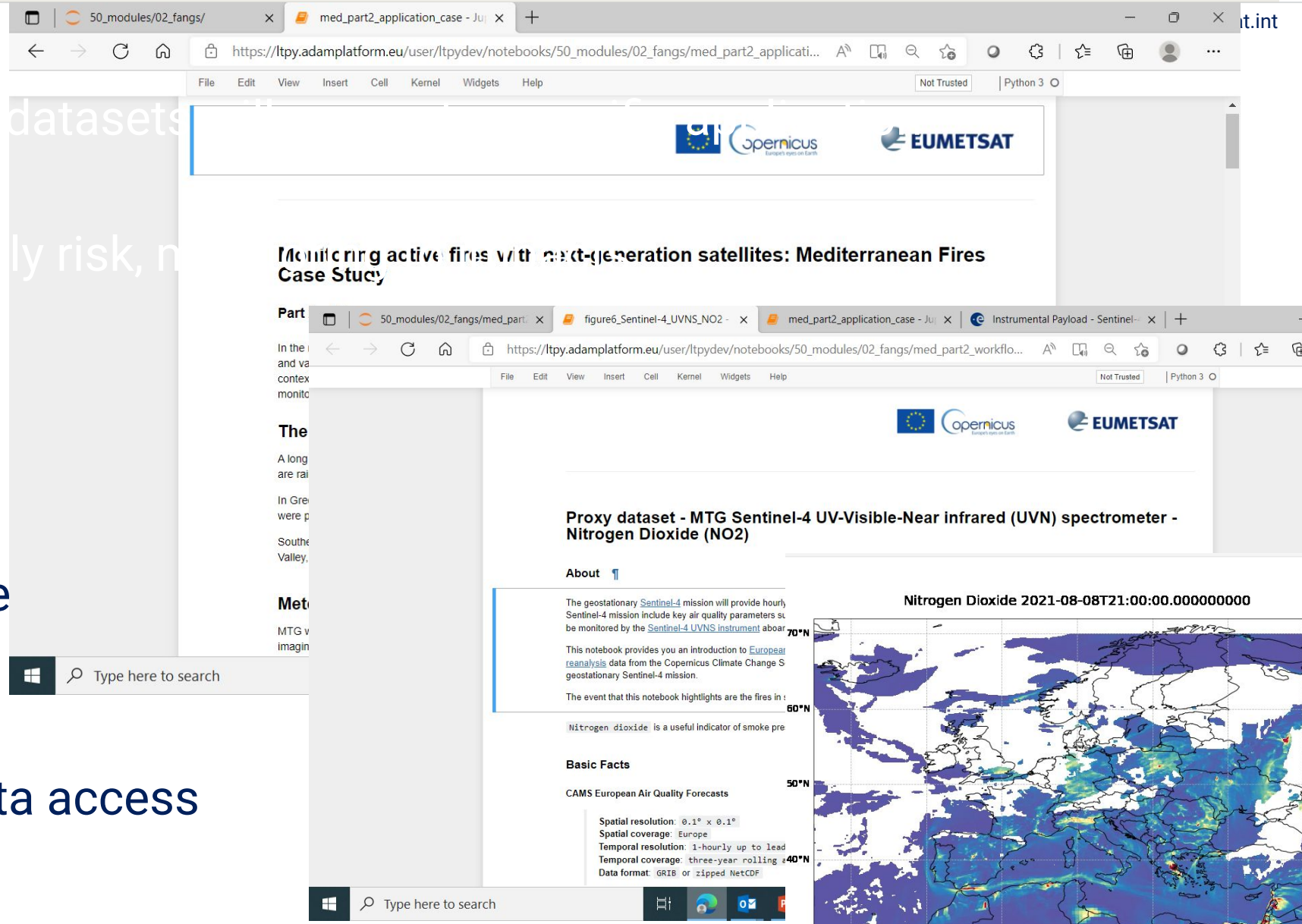

Multiple layers of knowledge

- Thematic Text
- Dataset presentation
- Practical handling and data access