

A CAREER at ESA

Tor Vergata
29 November 2021

Simonetta Cheli

Head of Strategy, Programme & Coordination Office
Directorate of Earth Observation Programmes, ESA



Who am I...

Hi, my name is
Simonetta Cheli

- Italian citizen
- 57 years
- And I work at the
European Space Agency

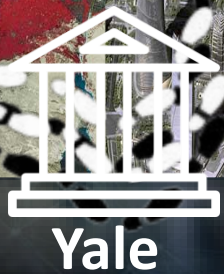




To be more precise, I work
at the ESA centre for
Earth Observation, ESRIN



Starting 1st Jan 2022 My
role will be Head of ESRIN
and Director of ESA's
Earth Observation
Programmes



What is Earth Observation?
What does ESA do?
How did I arrive there?

Studies

Academic Background

- **Degree in Political Sciences/International** Relations in Florence with a thesis on the telecommunication satellites and international law at the UN in New York.
- **Law and Economic Studies** at Yale University/US (Aspen Institute).

Continued Studies and Self-Development

- **Japan Young Professional Study Programme** for CEC trainees.
- **Master Degree in Diplomatic and Strategic Studies** at CEDS (Centre d'études Diplomatiques Stratégiques) in Paris.
- **Continued development** in Management, Marketing, Leadership, Selection/Interviews, Presentations
- **Fluent in five languages** IT, EN, FR, ES, DE

My academic background and continued growth has helped a lot in my job at ESA

First Jobs

- Volunteer jobs at NGO's like Amnesty International and Clubs UNESCO.
- Worked at the **European Commission in Brussels** in the Cabinet of Commissioner for audio visual policy (1987-1988).
- Research Contract in Italy with CNR (Consiglio Nazionale delle Ricerche)

My first professional experience in Brussels helped me navigate ESA/EU relations for many years to come

First Steps at ESA Since 1988

➤ From 1988 to 1997

Director General's Cabinet – International Relations

ESA Headquarters (Paris, France)

➤ Responsible for ESA International Relations

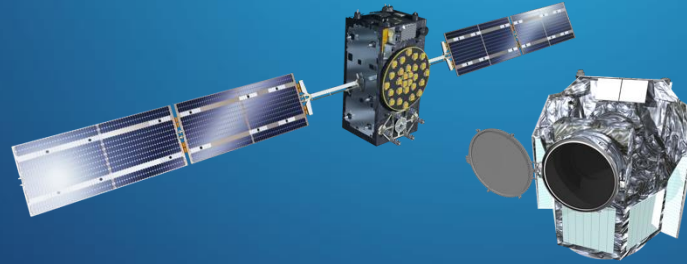
- European Commission in Brussels
- Bilateral ESA/Japan Annual Meeting
- Negotiation with legal affairs on bilateral cooperation agreements with **Central and Eastern European Countries**
- Promotion of space related technologies through Cooperative programmes with **Governmental, Regional and International organizations** (CEC, Eutelsat, FAO, African development Bank, WEU, United Nations)

I got to experience the complex world of the European Union and learned to work in a European and International context

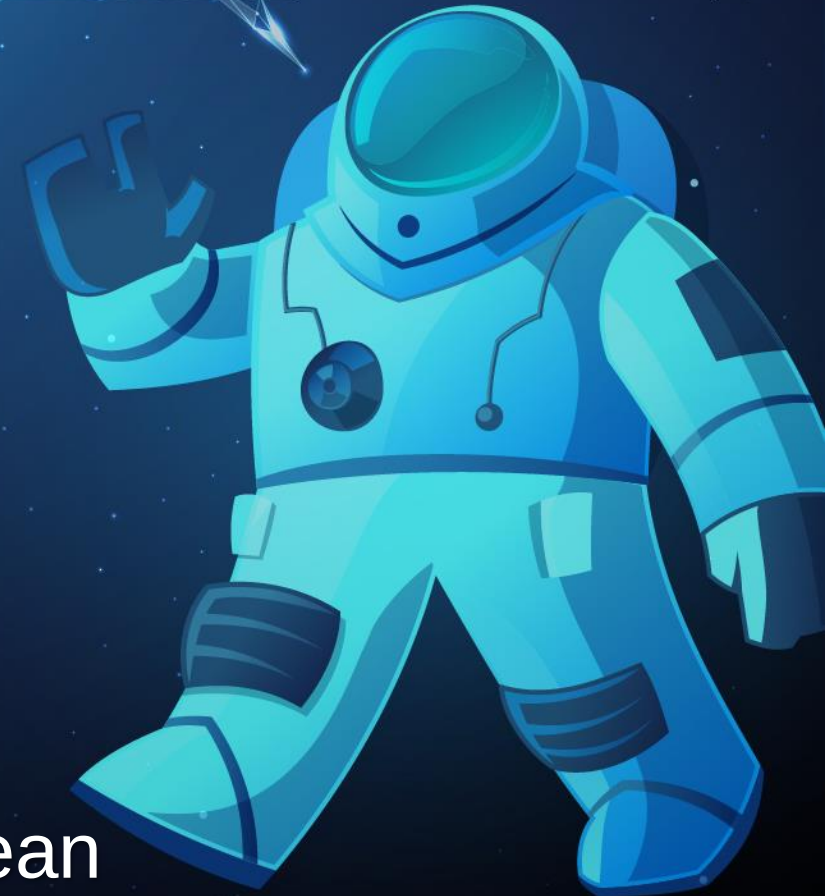
What is the European Space Agency?



Make Space
for Europe



Pushing the limits of
what is possible in
space since 1975



5 500+
ESA Workforce

22
Member States

2021 Budget

€ 6.49 billion =
12 per European



ESA Activities and Achievements



All of this is possible thanks to the collaboration of Member States

ESA is active across every area of the space sector

World leader in science and technology

Over 80 satellites developed, tested, and operated since 1975

More than 220 launches from Europe's Spaceport in Kourou



ESA Membership

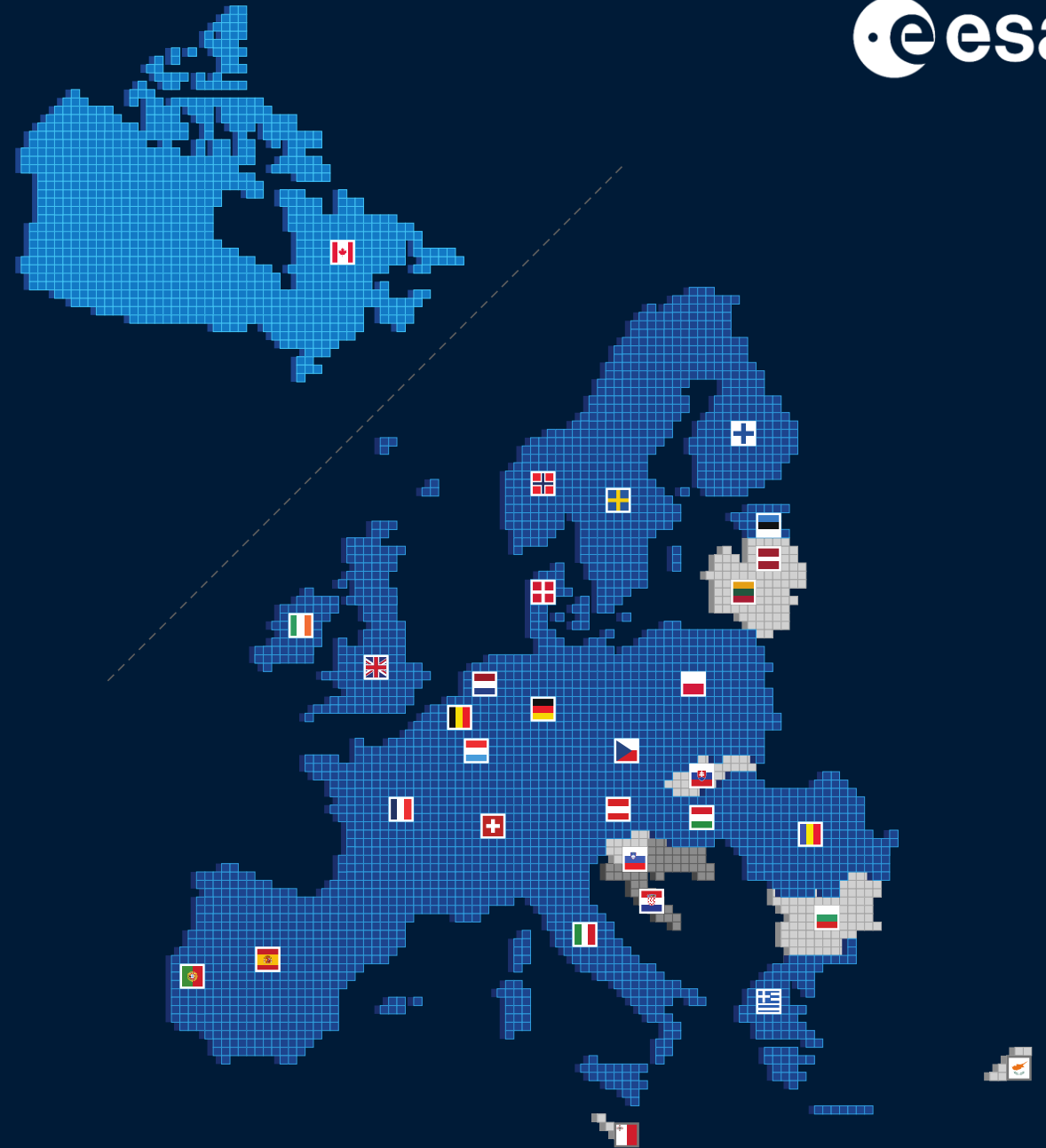


22 Member States

Austria	Italy
Belgium	Luxembourg
Czech Republic	Netherlands
Denmark	Norway
Estonia	Poland
Finland	Portugal
France	Romania
Germany	Spain
Greece	Sweden
Hungary	Switzerland
Ireland	United Kingdom

Cooperation Agreements

7 other European States & Canada



ESA Locations



11 ESA Directorates



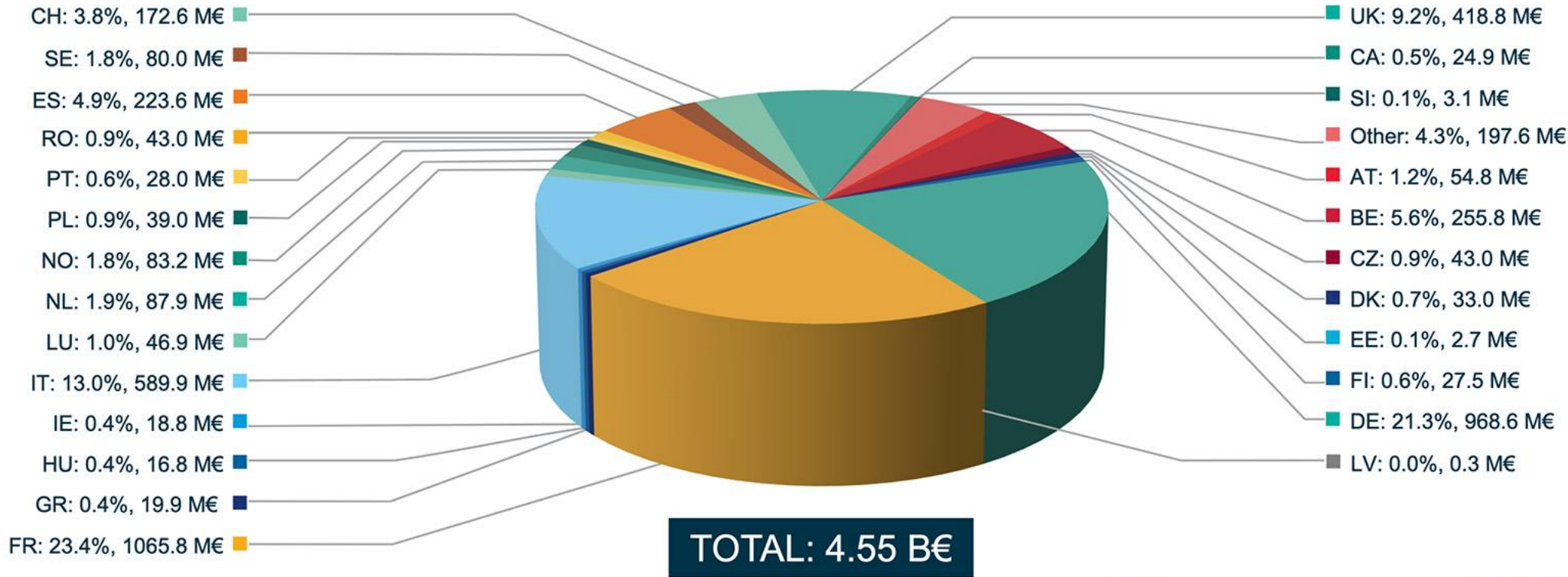
Director General

Josef Aschbacher



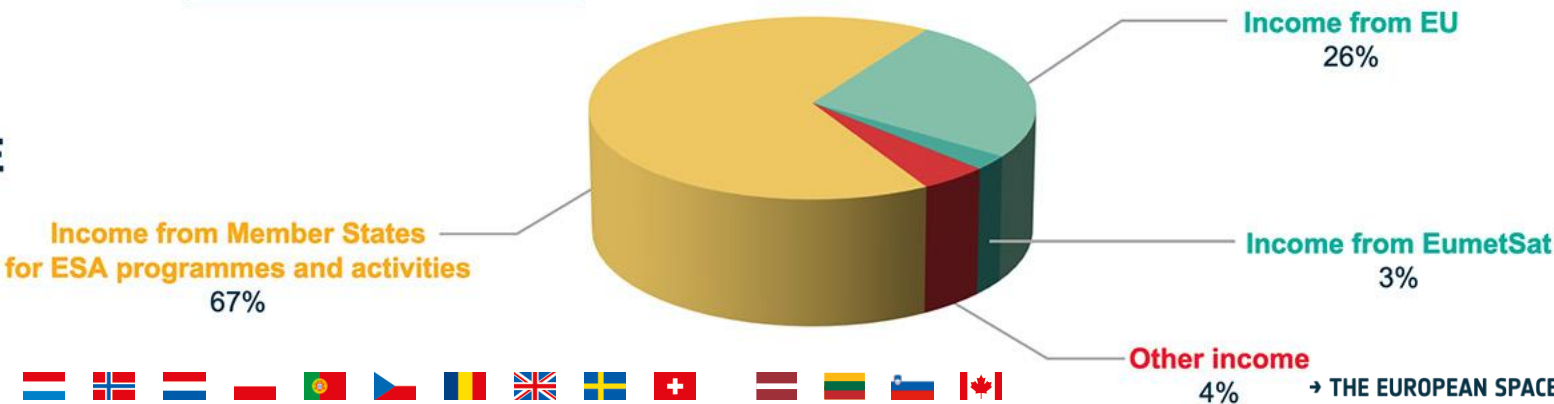
BUDGET 2021

ESA Activities and Programmes

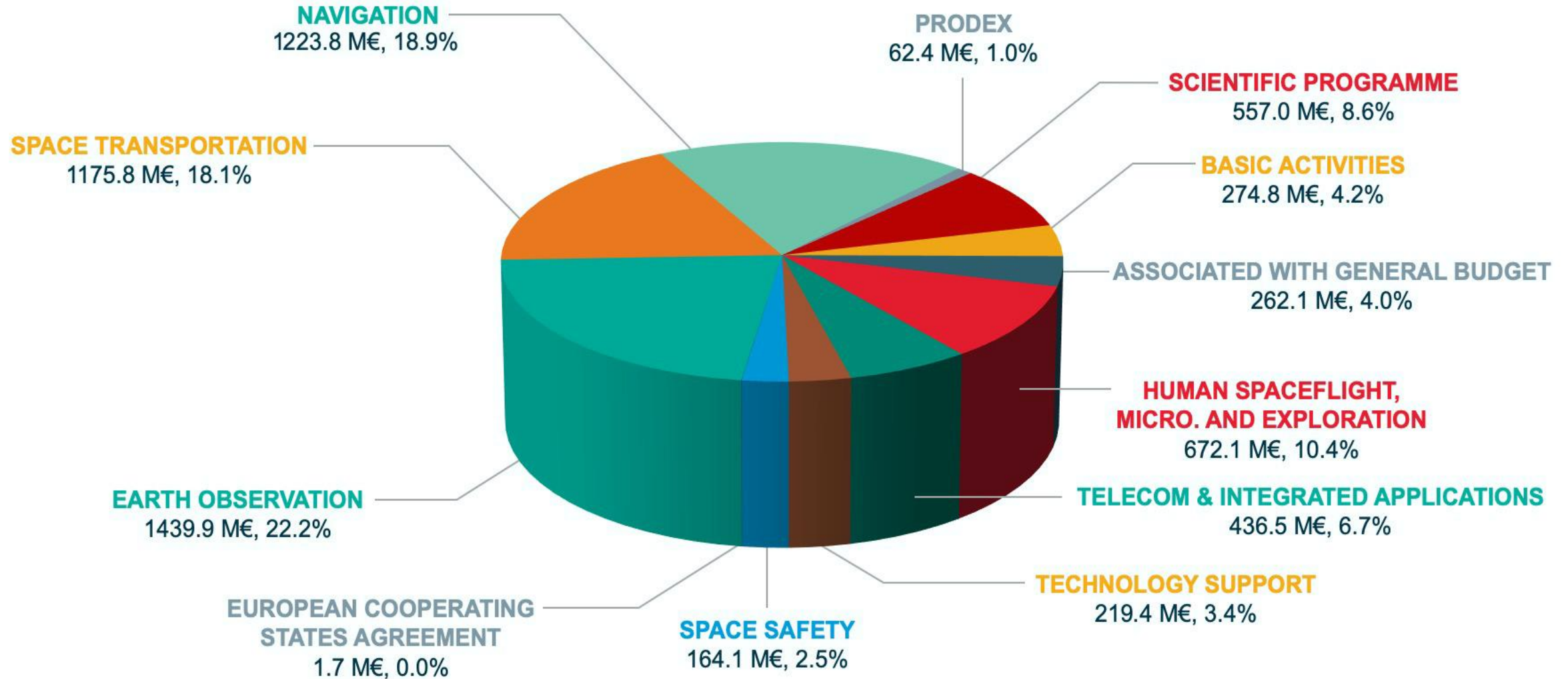


BUDGET 2021 BY FUNDING SOURCE

TOTAL: 6.49 B€



ESA BUDGET BY DOMAIN FOR 2021: 6.49 B€*



From International Relations to ESA Strategy

➤ **From 1997 to 1999**

Directorate of Strategy and International Relations

ESA Headquarters (Paris, France)

➤ **Responsible for ESA Strategy**

- **Support Director General** on ESA's strategy
- In charge of **Relations with Member States of ESA and European organisations**
- **Advisory Board member** of the United Nations Technical Commission VII – Resources and Environment Monitoring
- **Representing ESA as observer** in the Western European Union Parliamentary Assembly and Council of Europe

I learned to negotiate international agreements & work on projects outside of Europe (Africa/Japan)

What Happens in Paris HQ?

The decisions that shape ESA's present and future activities are made here.

ESA Council, ESA's governing body, is responsible for drawing up the European Space Plan and ensuring the long-term funding of the activities.

Also at HQ

Negotiations with countries wishing to join ESA

Interactions with international organisations such as UNWMO, UNEP and FAO

ESA Communication, keeping the world up to date with all that is happening at ESA.

ESA's Directorate of Space Transportation



Moving to Earth Observation and Moving to Rome/Frascati

➤ **From 1999 to 2007**

**Directorate of Earth Observation Programmes
ESA ESRIN (Frascati, Rome)**

➤ **Head of the Public and Institutional Relations Office**

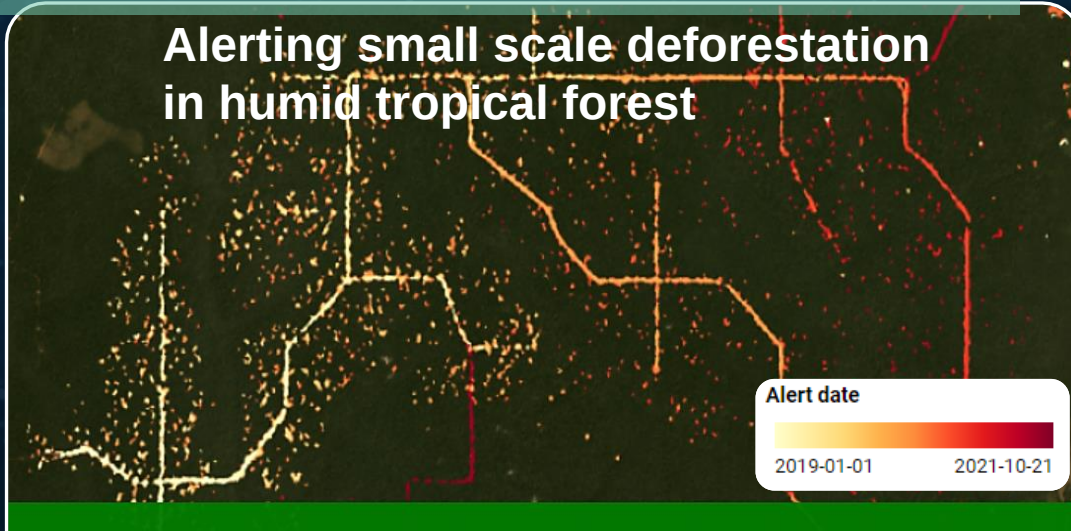
- Institutional Relations and communication activities with Italy, Spain and Portugal
- Coordination of corporate communication activities of ESA, in the field of Earth Observation, Satellite Navigation and Telecommunications
- Communication activities for ESRIN and ESAC (Spain)
- Media relations, partnerships, ESA Web page
- Responsible for Exhibits, VIP visits, PR material
- Satellite launch communication campaigns (Artemis, Envisat, Swarm, Cryosat, GOCE, Giove B, etc.)

Here I learned about
the fascinating world
of Satellite Earth
Observation

What Is Earth Observation and What Is It For?

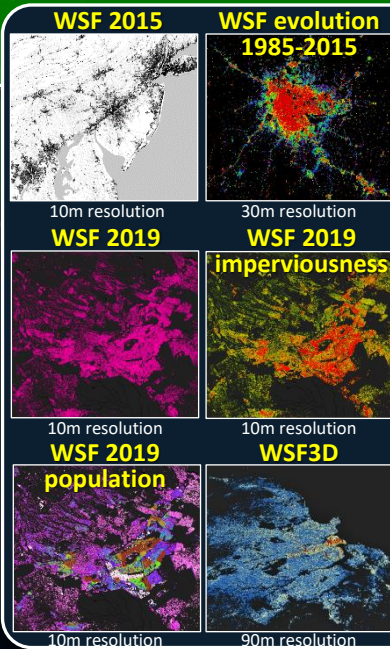
EO Mapping Our Planet

Alerting small scale deforestation in humid tropical forest

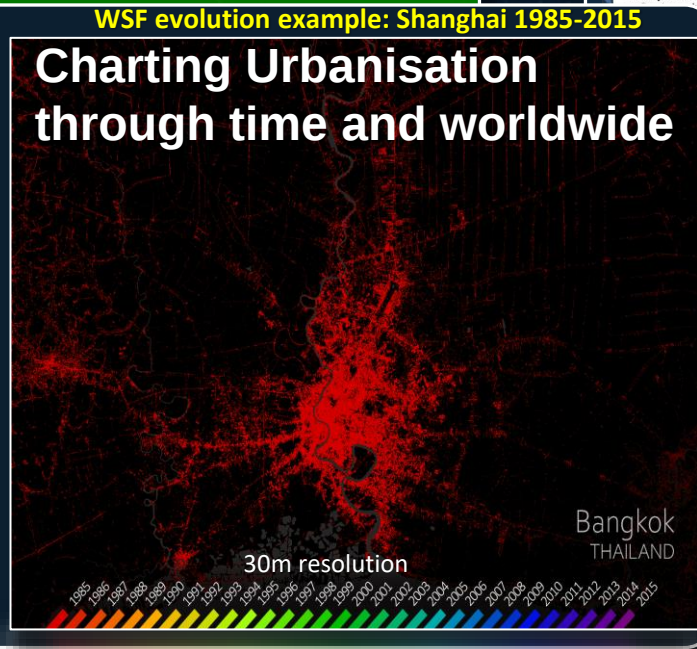


RADD

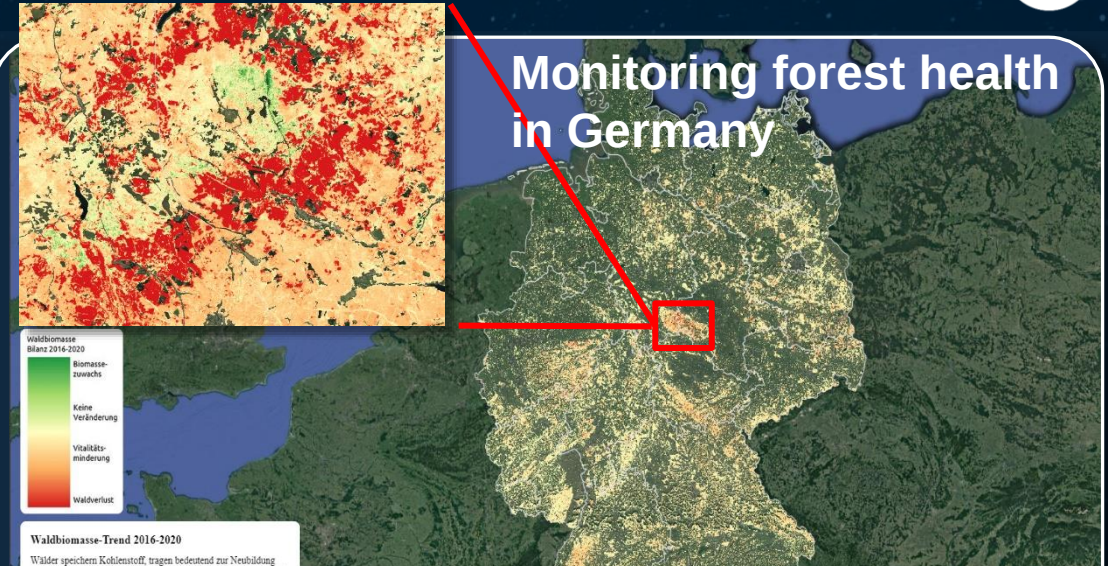
RADD



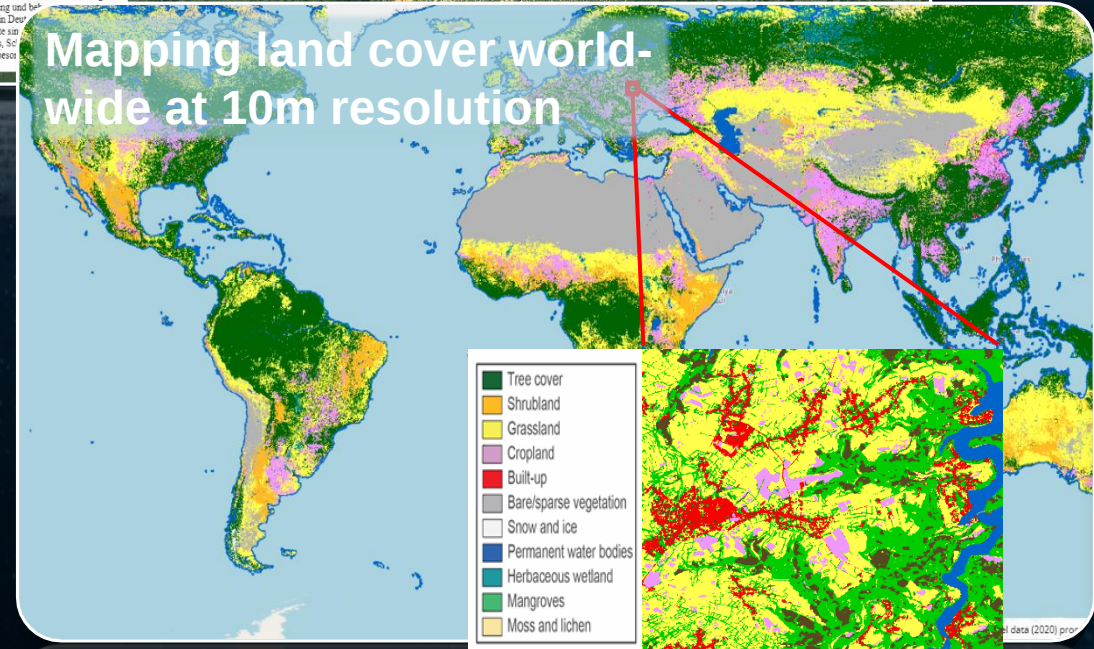
Charting Urbanisation through time and worldwide



Monitoring forest health in Germany

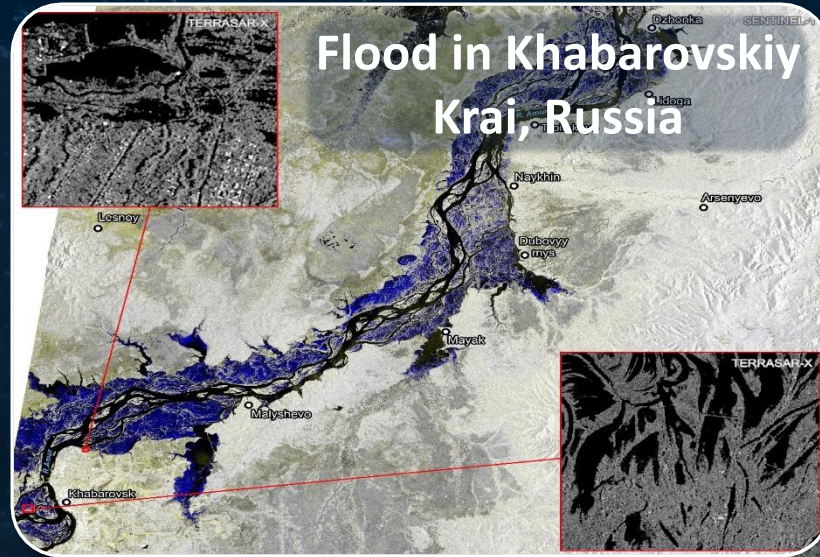


Mapping land cover worldwide at 10m resolution





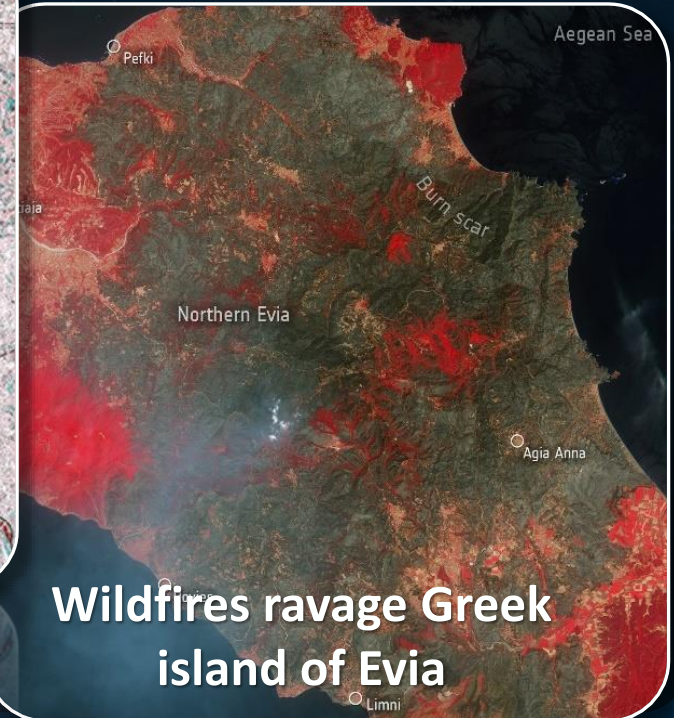
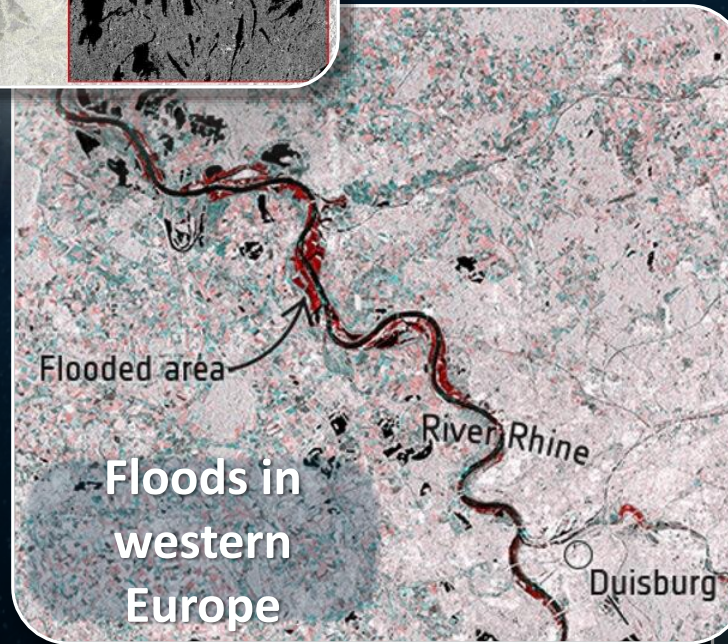
International
Charter on Space
and Major Disasters



EO for Disaster Response and Management Support

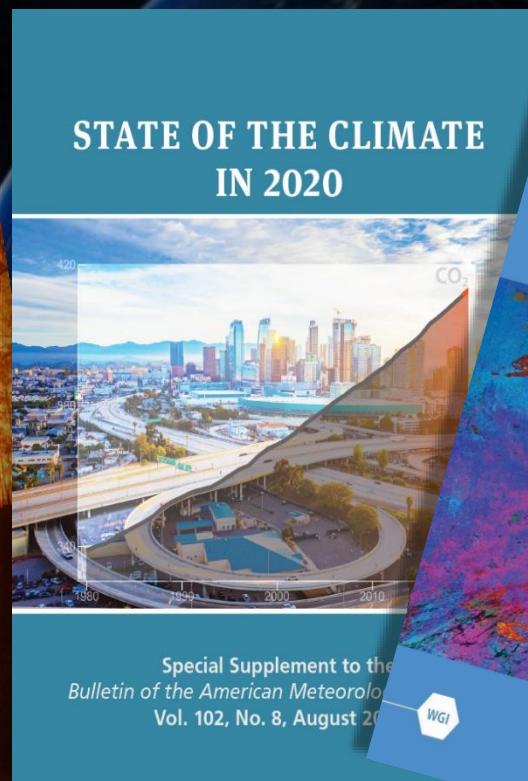


Copernicus
Emergency
Management Service



Wildfires ravage Greek
island of Evia

EO provides ever more empirical facts and evidence for climate reports



EO Supports Global and European Climate Agendas

Sustainable
Development
UN SDGs

Climate Change
UNFCCC

Climate Change
*SPACE CLIMATE
OBSERVATORY*

The **Sendai Framework** - Mitigating
environmental threats to society and strengthen
Global Resilience through novelty

The **European Green Deal** - Benefitting
strongly from ESA Earth Observation capabilities,
both now and in the future

Taking on a New Role at ESRIN

I was representing ESA as a spokesperson and had to study in depth all projects and activities

From 2007 to 2017

- Directorate of Earth Observation Programmes
- ESA ESRIN (Frascati, Rome) ESA Headquarters (2015 to 2017)

Head of Coordination Office

- Relations with EU, European Organisations and ESA Member States
- Relations with Meteorological Organizations (Eumetsat, ECMWF, WMO)
- Coordination of International Relations for the Directorate and relations with International Organizations including CEOS and GEO
- Coordinating the Director's Office (preparation of Council, Ministerial meetings, etc.)
- Coordination of communication activities for the Directorate (meetings, launch campaigns, exhibits, VIP visits etc.)
- Representing ESA in International fora (e.g. UN, COP)
- Member of the European Commission GMES Advisory Committee and ESA joint undertakings



ESRIN does much more than Earth Observation



- Earth Observation
- Space transportation
- NEO Coordination Centre
- Disaster Charter Coordination Centre
- Corporate IT
- Communication
- Archives
- ESA Security Office
- Contracts, Personnel
- Site Management

850+ personnel
on site (pre-Covid)

50.000 visitors
per year (pre-Covid)

24



ESRIN and Space Transportation



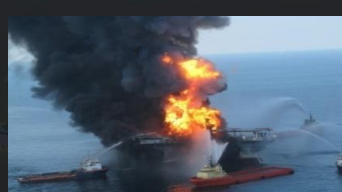
- ESRIN hosts the VEGA and Space Rider Integrated Project Team
- Vega exploitation
- Maiden flight of Vega C coming up
- Preparation of Vega E and Space Rider



Disaster Charter Coordination Centre (24/7)

Natural events

- Volcanic eruptions
- Ocean storms
- Earthquakes
- Landslides
- Tsunamis
- Ice jams
- Floods
- Fires



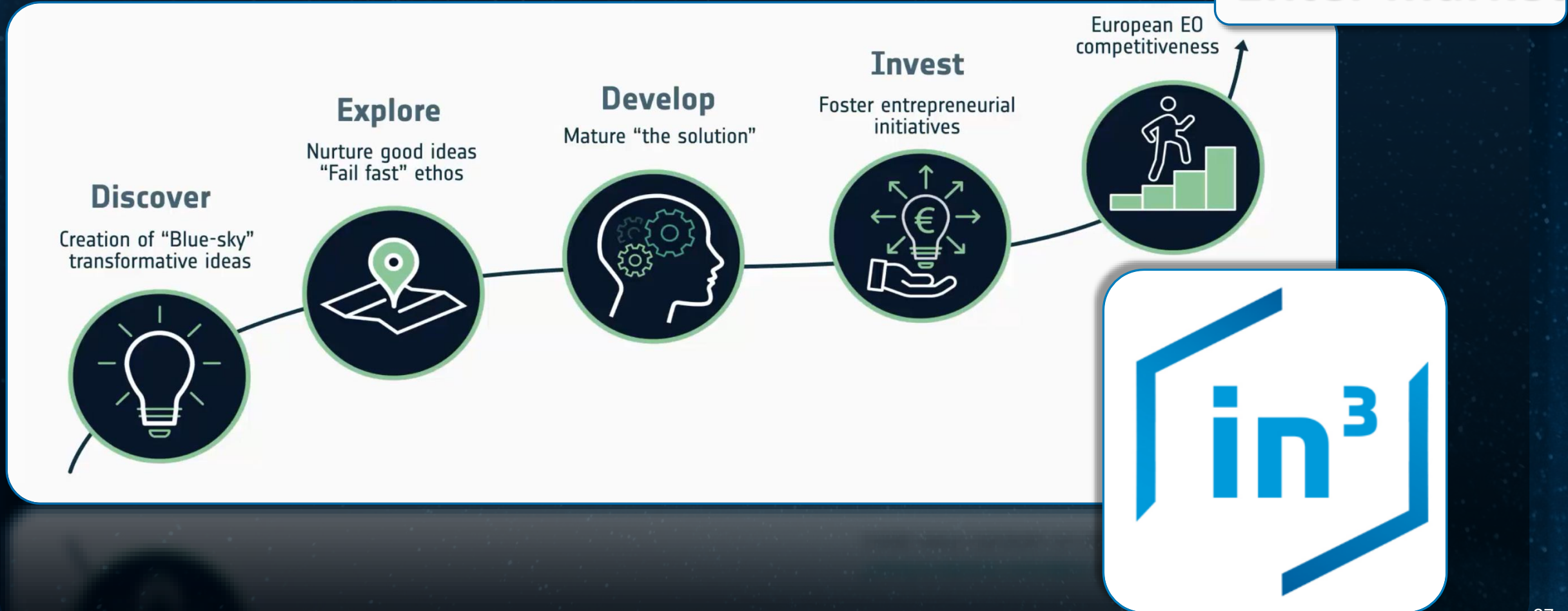
Man-made events

- Industrial accidents
- Oil spills

Hohenau Flood Impact Map (Spot 4 data, 09/04/2006)



Investing in EO industry innovations with “InCubed” **Enter market**



Taking on a larger Role and Commuting between Paris and Rome

➤ From 2017 to 2021

Directorate of Earth Observation Programmes

ESA Headquarters (Paris, France)

➤ Head of Strategy, Programme & Coordination Office

- Manage team of 25 people over 4 ESA sites
- Reporting to the Director of EOP
- Coordinate relations with Members States and EU institutions
- Manage the Programme Board
- Prepare Council and Ministerial Council
- Manage EO international relations and communication
- Ensure the internal coordination in the EO Directorate



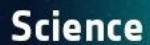
I learned to manage a team, interact with other directorates, and could take stock of all I had done in the previous 20 years at ESA

Representing ESA at Glasgow COP26



15 in operation

18 under preparation



Copernicus Sentinels (First Generation)



250 TB
of EO data
disseminated
daily to
society



sentinel-1

→ RADAR VISION



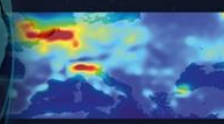
sentinel-2

→ COLOUR VISION



sentinel-3

→ A BIGGER PICTURE



sentinel-4

→ EUROPEAN AIR MONITORING



sentinel-sp | sentinel-5

→ GLOBAL AIR MONITORING



sentinel-6

→ CHARTING SEA LEVEL

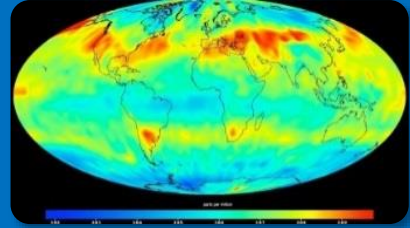


→ THE EUROPEAN SPACE AGENCY

Sentinel Expansion Missions



CO2M - Anthropogenic CO₂ Monitoring



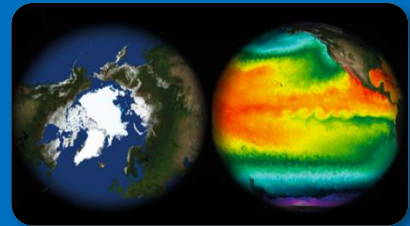
Causes of
Climate Change

CRISTAL – Polar Ice & Snow Topography



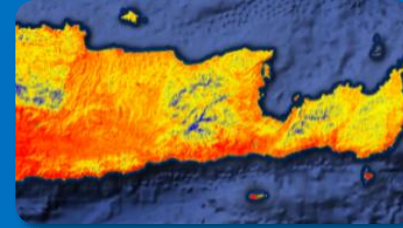
Effects of
Climate Change

CIMR – Passive Microwave Radiometer



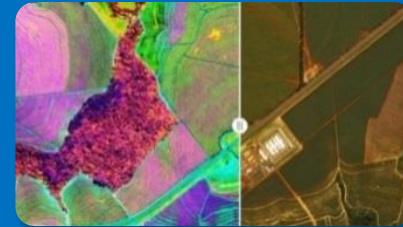
Sea: Surface Temp.
& Ice Concentration

LST – Land Surface Temperature Mission



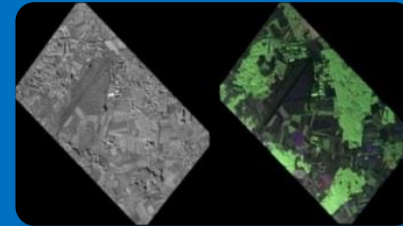
Agriculture & Urban
Management

CHIME – Hyperspectral Imaging Mission



Food Security, Soil,
Minerals, Biodiversity

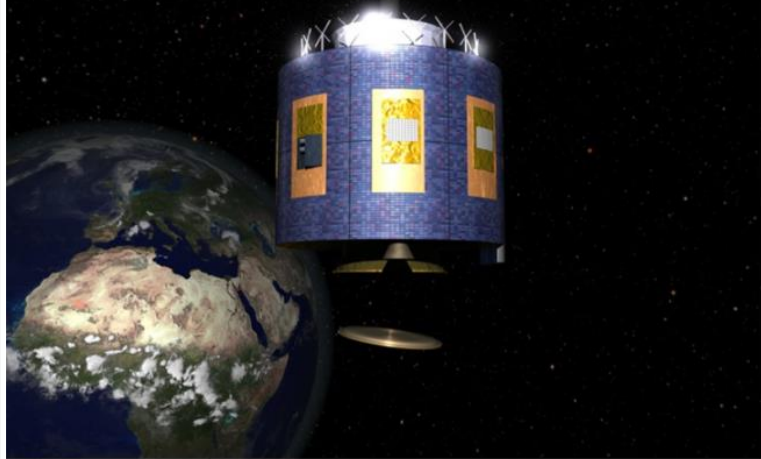
ROSE-L – L-band SAR Mission



Vegetation & Ground
Motion & Moisture

Meteorology

Meteosat SG



MetOp



< Current Systems

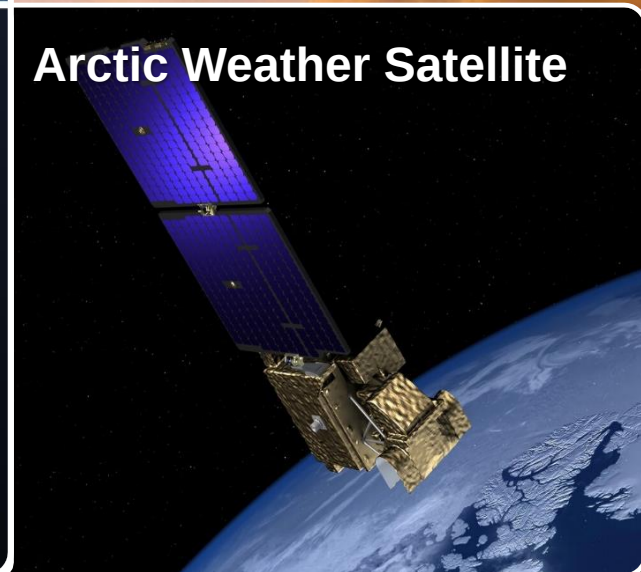
Meteosat TG



MetOp SG



Arctic Weather Satellite



< Post-2020
Systems

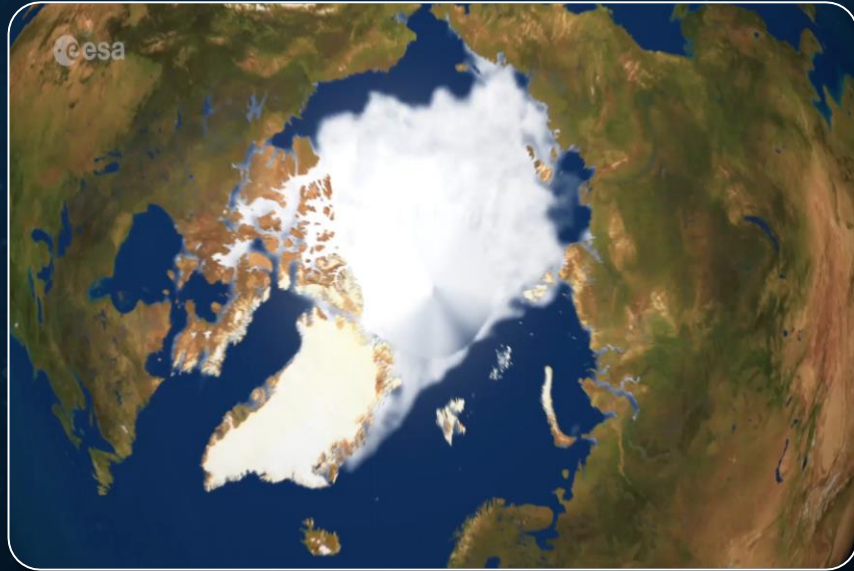
- Next big step in data exploitation
- Develop technology of the future (AI, data analytics etc.)

AI →

Earth science

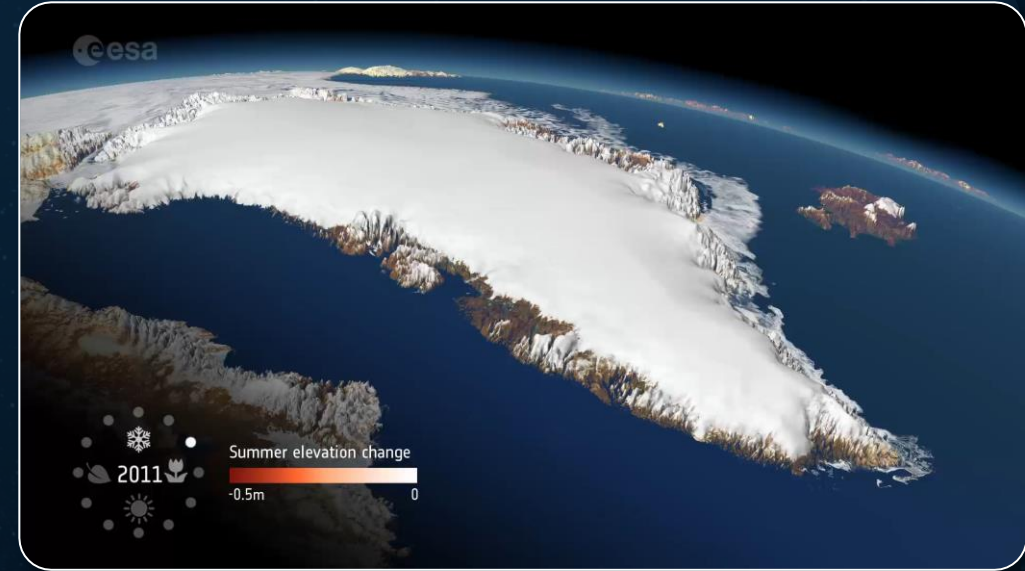
Smart solutions

Tracking Changes in the Arctic



Arctic Ocean Ice Free
by Summer 2050

Greenland losing more
ice per year than gained
from snowfall



Meltwater runoff from
Greenland becoming
more erratic



Glaciers



Glaciers

contribution to sea level

6.6mm

per decade

20%

2003-2013

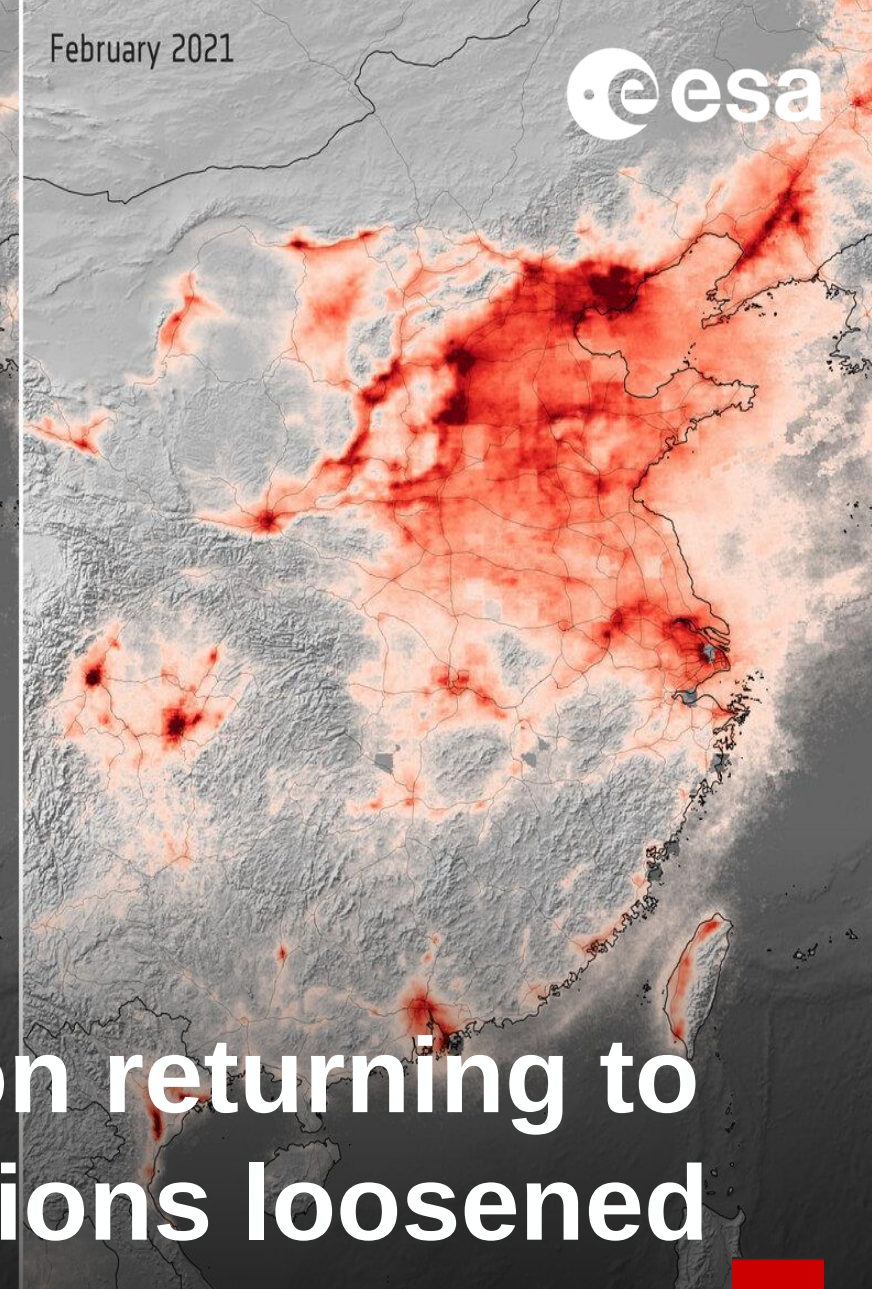
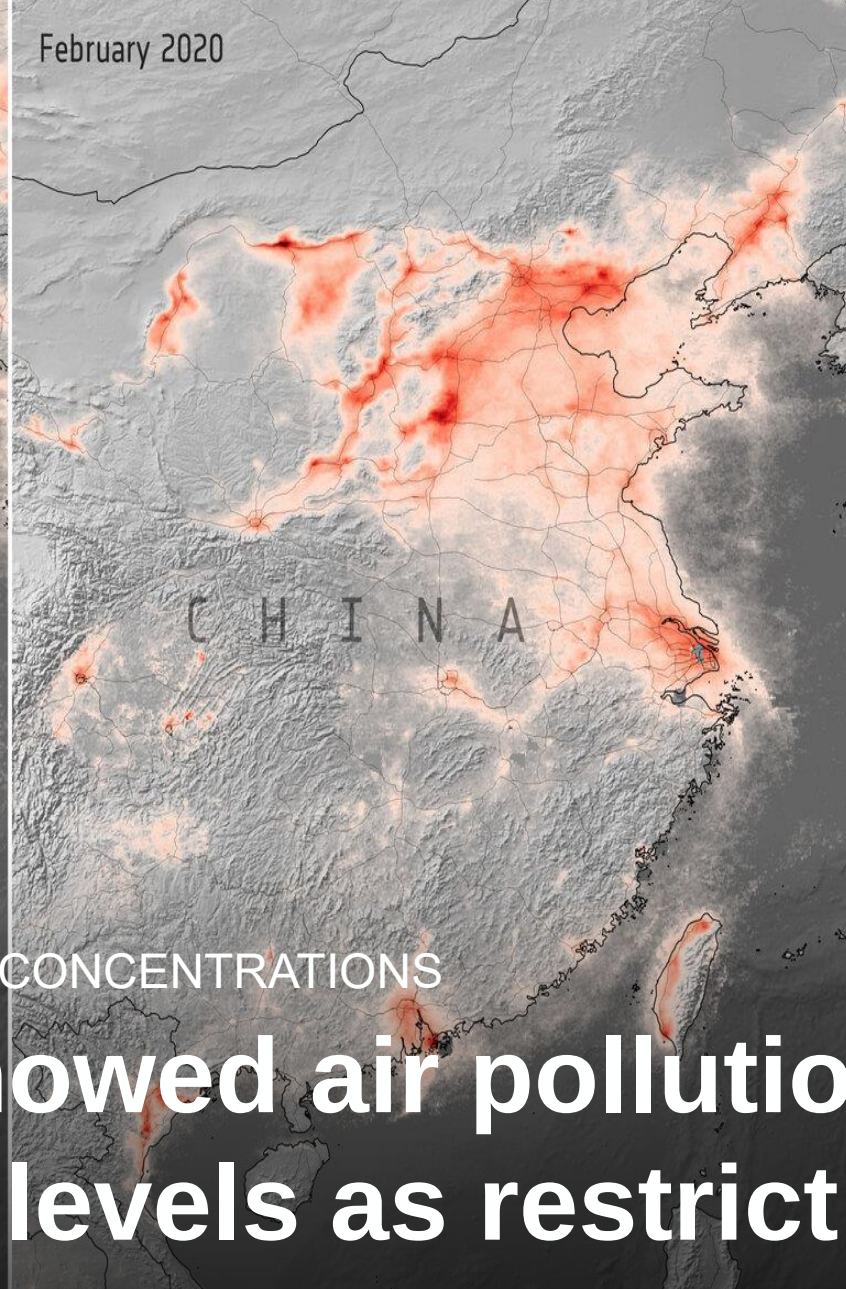
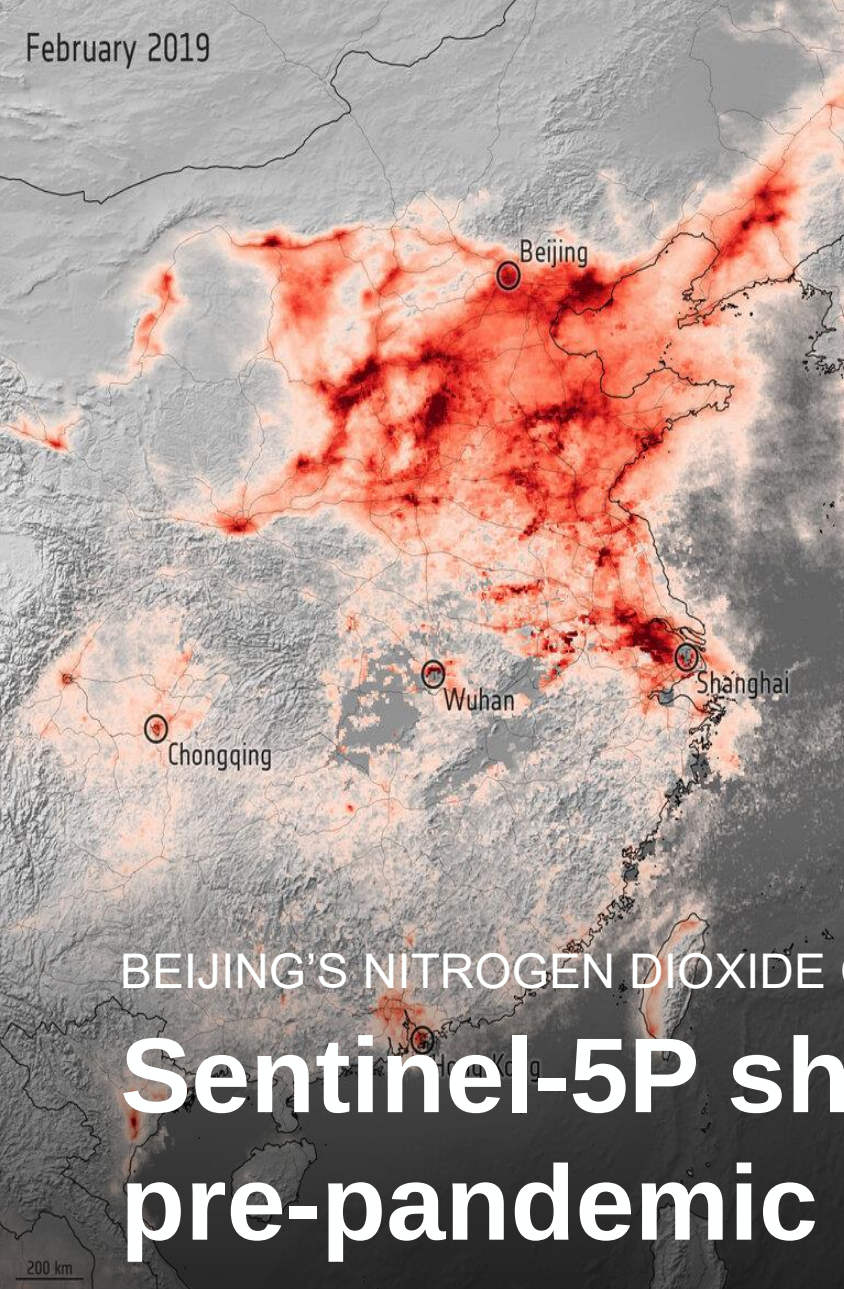


Columbia Glacier in Alaska
Copernicus Sentinel-2
and Landsat

Over 9000 gigatonnes of
ice has been lost from
glaciers since 1961

Raising sea level by 27 mm

Nature
Zemp *et al.* 2018



BEIJING'S NITROGEN DIOXIDE CONCENTRATIONS

Sentinel-5P showed air pollution returning to pre-pandemic levels as restrictions loosened

Nitrogen dioxide tropospheric column



March 16, 2021



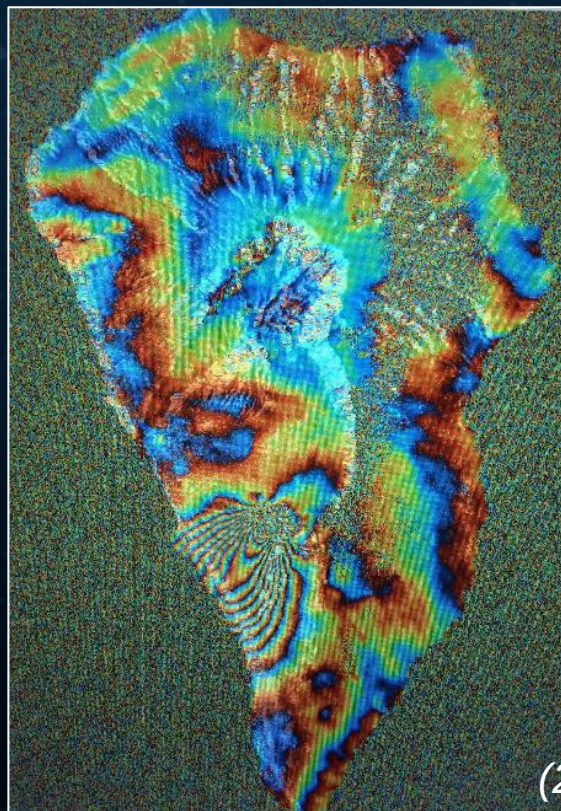
→ THE EUROPEAN SPACE AGENCY

RACE: Rapid Action on Coronavirus and EO



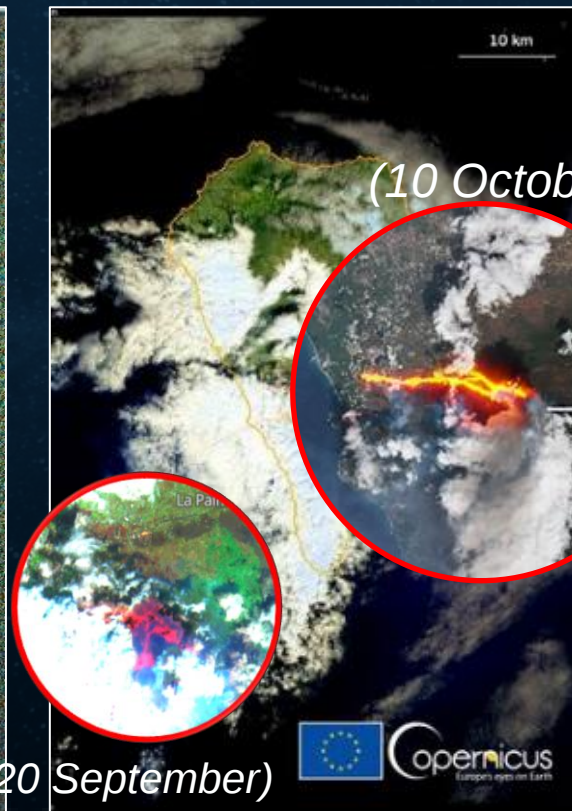
Copernicus Monitoring Volcano Eruption on La Palma

Before the eruption

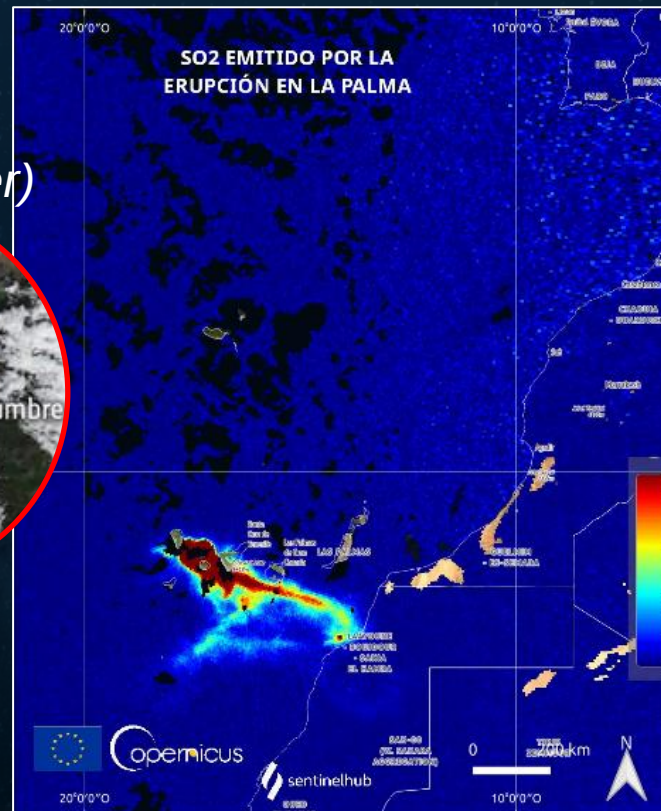


Sentinel-1 interferogram (14-20 Sep)
[courtesy Pablo J. González]

Eruption started on 19 September 2021

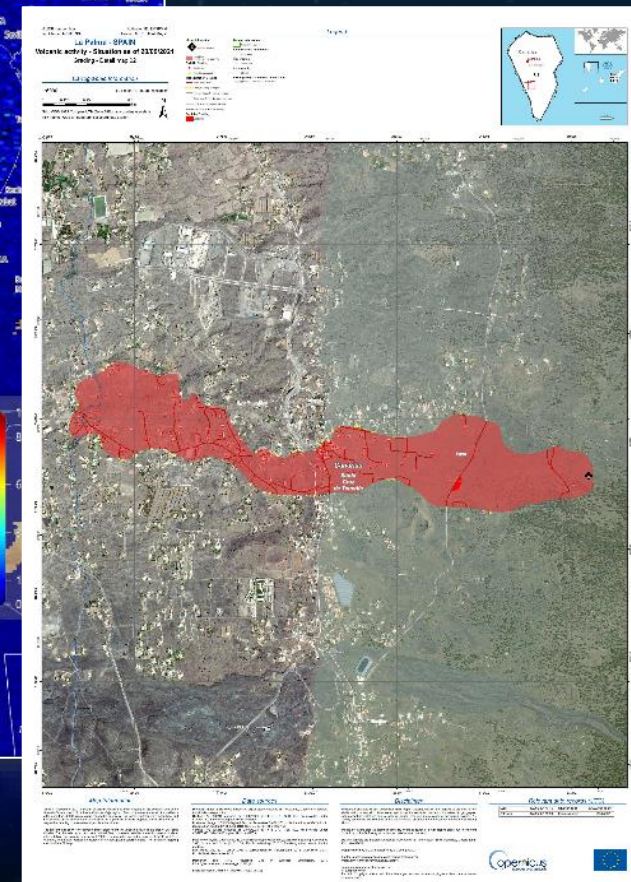


Sentinel-2



Sentinel-5P (SO₂, 20 September)

**First lava map produced
by Copernicus Emergency
Management Service**



Based on **Sentinel-1** and
Cosmo-Skymed data

Copyright: Contains modified Copernicus Sentinel data (2021)

2022 and Beyond - Director of EO Programmes and Head of ESRIN

- Tackle the priorities of 2022, including preparations of ESA summit and the Ministerial 2022
- Continue evolving in a cooperative European environment with long-term strategy vision
- Continue working at ESA in a job I enjoy and find stimulating



What are your plans
for the future?



If you like Space...

If you like multi-cultural environments...

And intercultural exchanges...

**If you want to cooperate internationally on
technology, science and innovation...**

**If you want to be at the centre of European
and worldwide challenges...**

Then ESA is the place for you!

Then ESA is where you want to be!

Space is fascinating...

Space is a great place to work!

Closing thoughts

MAKE SPACE FOR EUROPE

www.esa.int