

ESA EO Data & International Cooperation in Support of Worldwide Climate Challenges

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What is the European Space Agency?



5 500+ ESA Workforce

2022

Member States

Promoting cooperation among European States in space research, technology and applications, for exclusively peaceful purposes

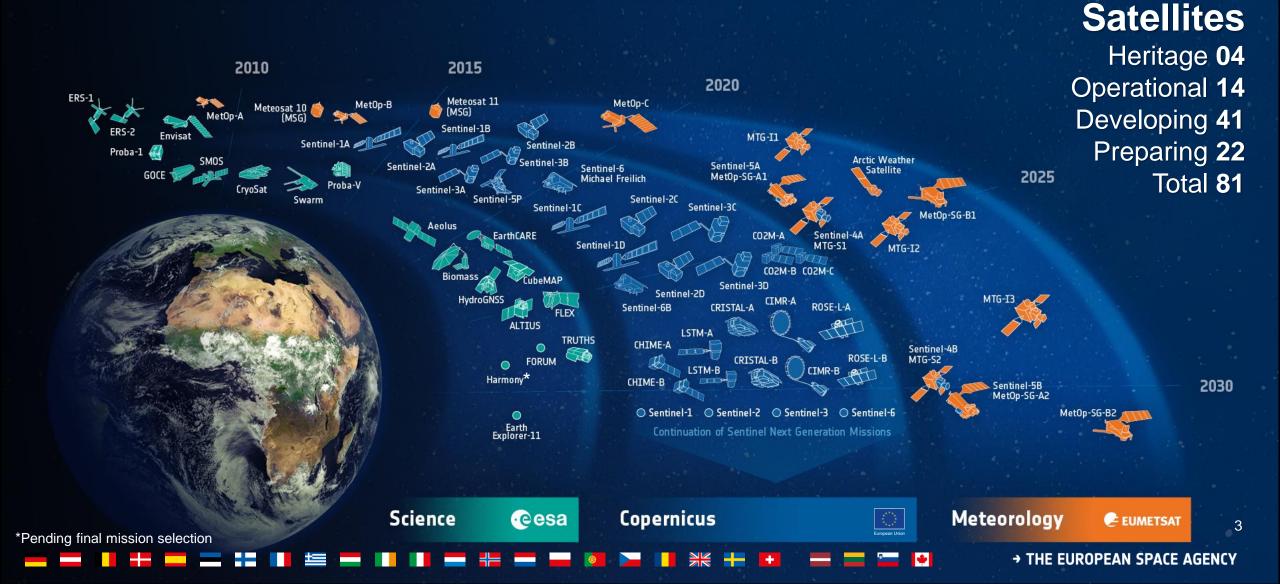
Make Space

for Europe

2022 Budget 7.2 billion = 12 per European



ESA Develops world-class EO systems with European and global partners to address Scientific & Societal challenges



Worldwide Challenges and Urgent Priorities





ESA Space for Green Future Supporting the EU Green Deal • esa

Provide European decisionmakers, industry, and society with the support they need to reach the objectives of the energy transition and the green agenda, notably carbon neutrality by 2050 with a resource-efficient society.



Quantum Missions for Climate

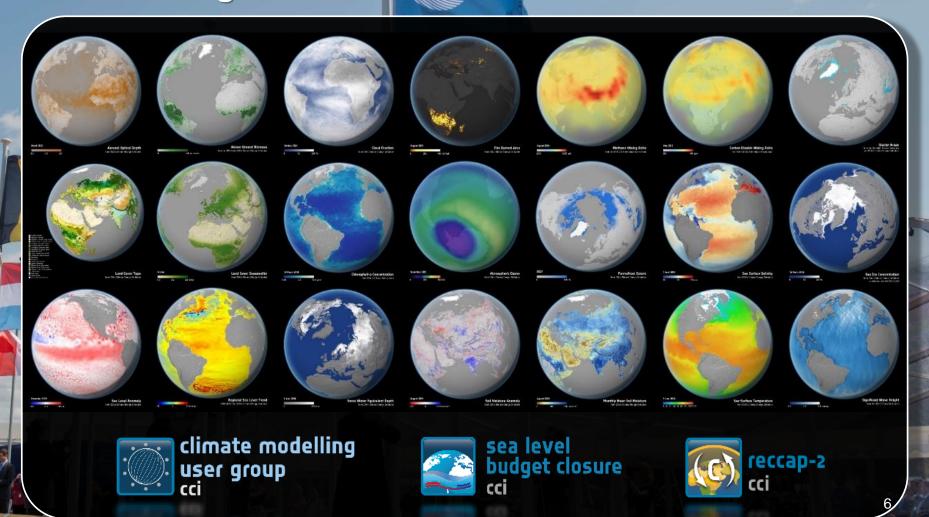
Digital Earth Boost Green Transition Accelerating Information Factories Decarbonisation

ESA Climate Change Initiative: Climate Office & ECVs @esa Central point for coordinating all Earth Observation work conducted by ESA relating to climate and climate change.

 CCI is a response to UNFCCC's need for systematic global climate observation

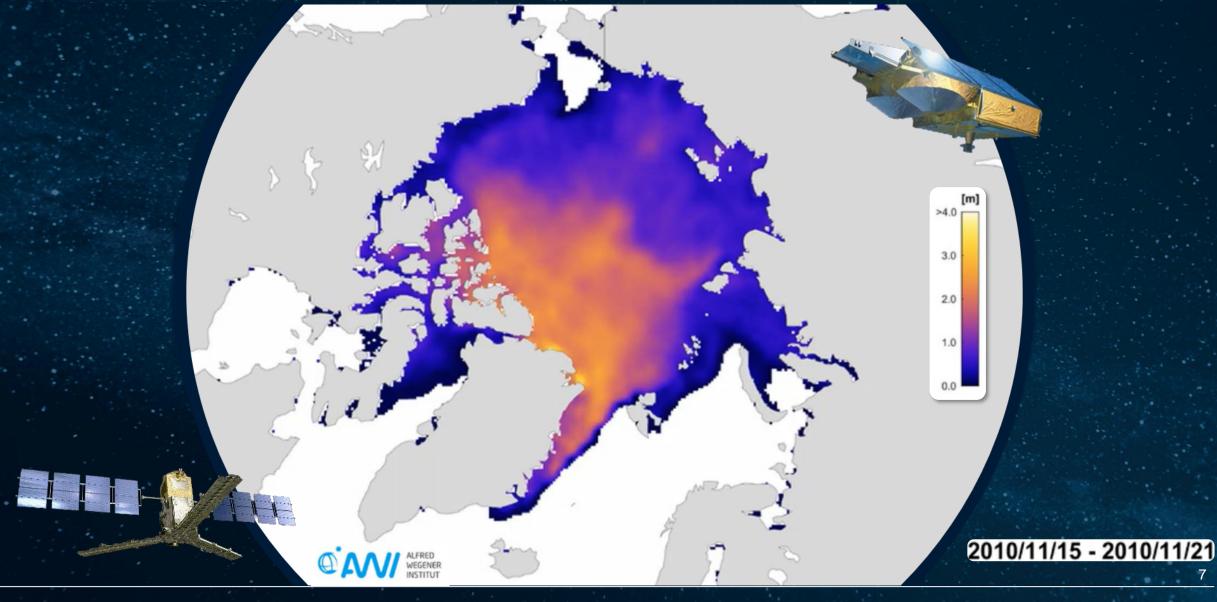
Section 23 Carlo La

- ECV datasets provide long-term empirical evidence
- 54 defined ECVs, 36 monitored from space
- 21 under development by ESA



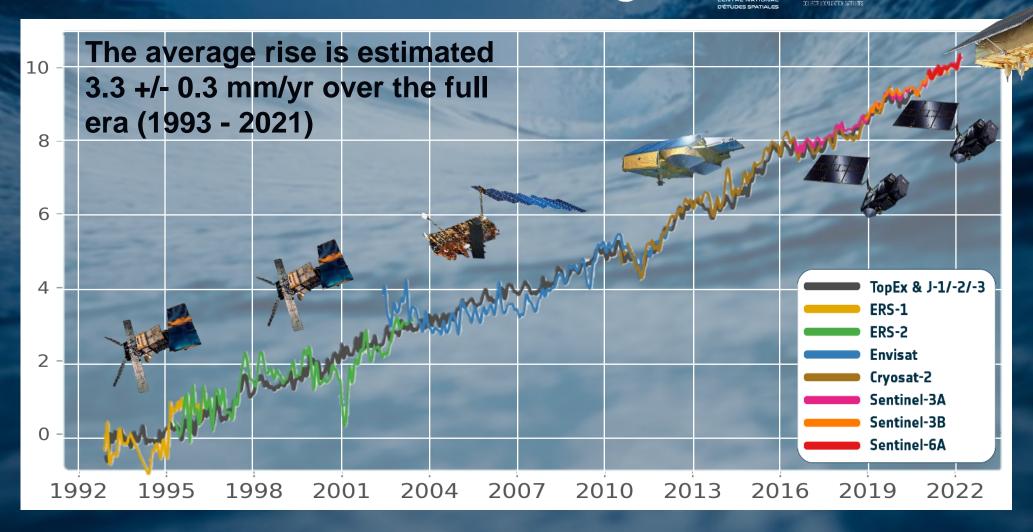
Arctic Sea-Ice Thickness seen by SMOS/CRYOSAT





Sea-Level Measurements Continued by Copernicus Sentinel-3 & 6 • esa

Time-series of Mean Sea Level from Altimetry Cesa cres



★ THE EUROPEAN SPACE AGENCY

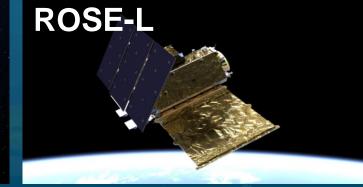
EUMETSAT

Deforestation and Biodiversity Loss as seen by Sentinel-2 Cesa Rondonia, Brazil Sentinel 2 5 June 2019

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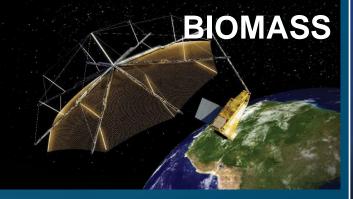
Expanding European EO Capacity in Support of Climate Research • esa













Data challenges & Solutions

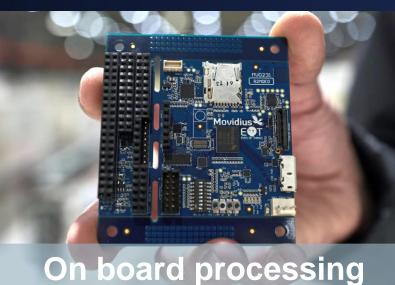


3 days of ESA EO data dissemination



Digital Twins





Quantum Computing





(Snow reference data)

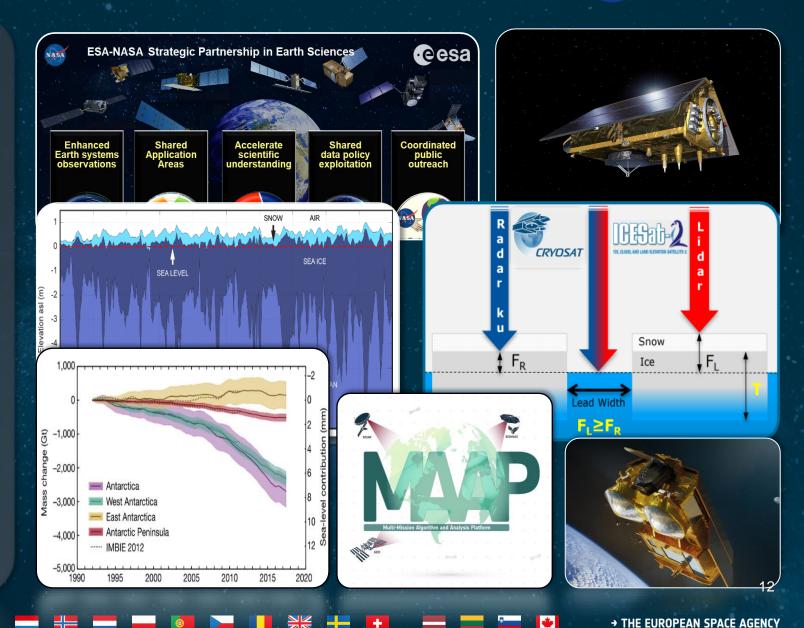
Artificial Intelligence (Sea-ice charting)

International Cooperation on Climate Change: ESA-NASA



- Strategic Partnership in Earth Sciences
- Sentinel-6 Michael Freilich
- IceBridge/CryoVEx
- CRYO2ICE
- IMBIE

- Multi-mission Algorithm and Analysis Platform (MAAP)
- Cristal (Sentinel-9)
- Next Generation Gravity Mission (NGGM)

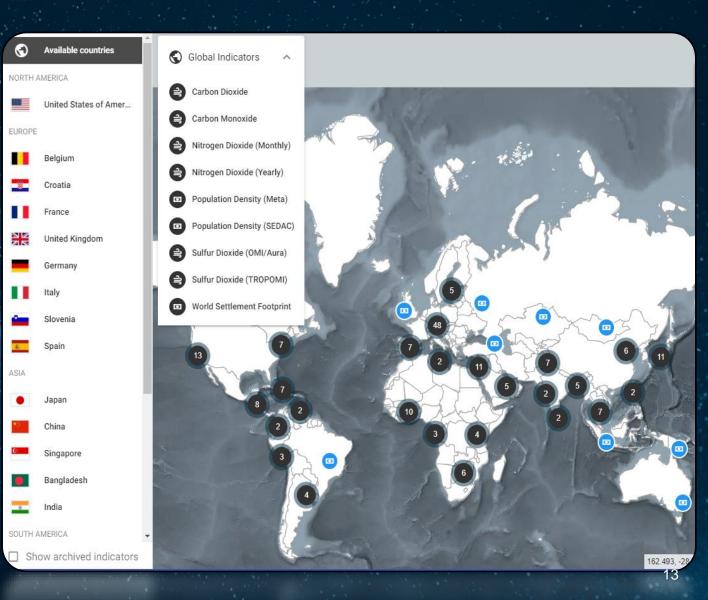


Tri-Agency Environmental Dashboard Cooperation

Continuous cooperation on EO science and technology

Demonstrating joint capabilities of NASA-ESA-JAXA to:

- Observe global environmental changes;
- Communicate findings through storytelling for the general public;
- Promote Open Science and collaborative development



ESA EO African Capacity Building



Facilitate the adoption of Earth Observation and related space technology in Africa

EO African Framework for Research, Innovation, Communities & Applications





Leveraging Digital Tools



Reinforcing Capacity







SCO – Space Climate Observatory

NEWS



AEM Agenzia AGEOS Spaziale ENCIA ESPACIA Italiana PRATILIAN SPACE AGENC belspo SFFG esa GISTDA CONA Netherlands Space Science & Technology Portugal 👑 Rymdstyrelsen Office for Space Technology Space PACE OFFICE ROSCOSMO INITED NATION وكالة الإمارات للفض الهيئة السعودية للفضاء SAUDI SPACE COMMISSION UK SPAC programme

Signers of the SCO Declaration of Common Interest

A world observatory on the impacts of climate change, consisting of an group of space agencies and international organizations

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