

The European Space Agency

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EUROPE'S GATEWAY TO SPACE

WHAT

22 Member States, 5000 employees

WHY

Exploration and use of space for exclusively peaceful purposes

WHERE

HQ in Paris, 7 sites across Europe and a spaceport in French Guiana

HOW MUCH

€6.68 billion = €12 per European per year



What Does ESA Do?



ALL OF THIS IS POSSIBLE THANKS TO THE COLLABORATION OF MEMBER STATES

ESA is active across **every area** of the **space sector**

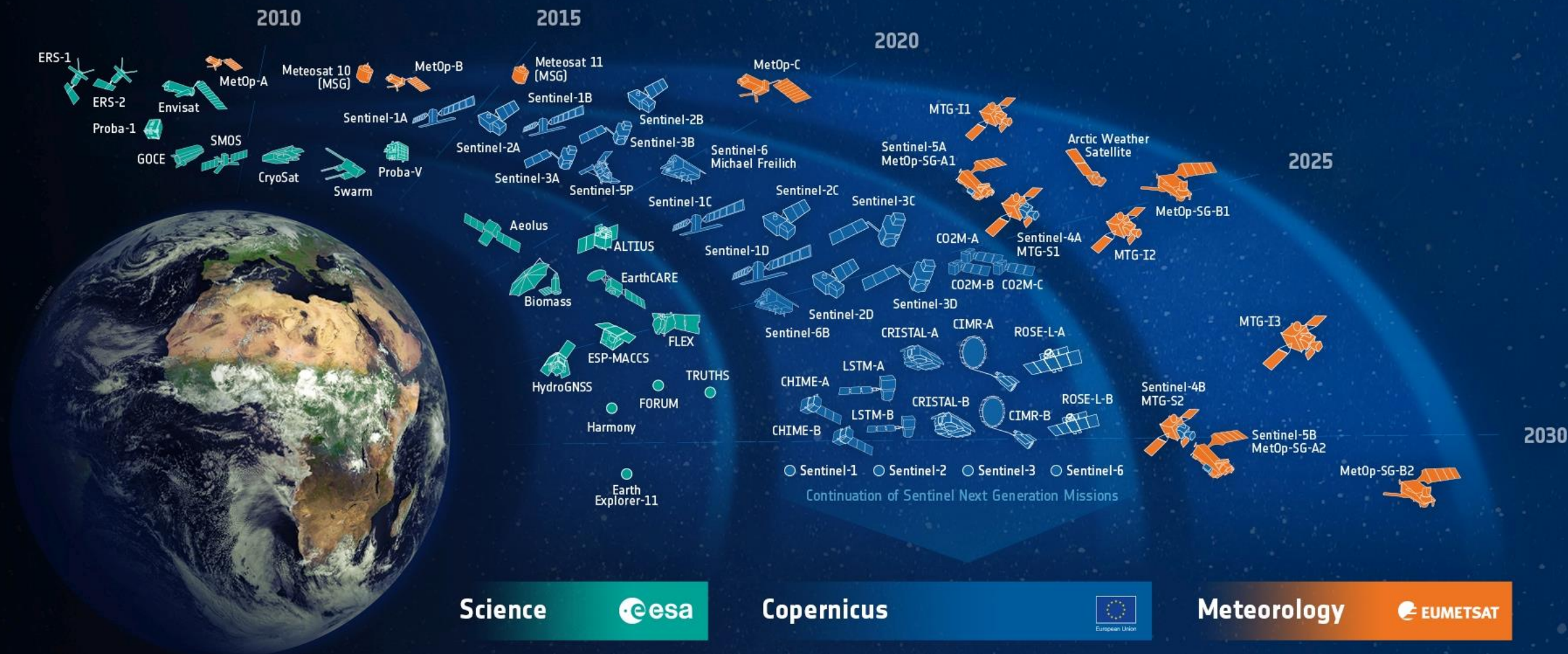
World leader in science and technology

Over 80 satellites developed, tested, and operated **since 1975**

More than 220 launches from Europe's Spaceport in Kourou



ESA-DEVELOPED EARTH OBSERVATION MISSIONS



EO African Framework for Research,
Innovation, Communities & Applications



EO AFRICA

GDA
Global Development Assistance



from EO R&D activities to EO mainstreaming
in partnership with AUC, EC, African stakeholders

EO AFRICA



Fostering
Partnership



Facilitating
R&D



Leveraging
Digital Tools



Reinforcing
Capacity



Enhancing
Data Accessibility



Objective: continental rangeland monitoring over Africa at 10m spatial resolution, to address **regional livestock management under climatic pressure**

Major activity: Develop and demonstrate algorithms based on Sentinel1&2 for rangeland extent and type, rangeland biomass, and livestock carrying capacity indicator.

Core users engaged: FAO, WFP, International Livestock Research Institute (ILRI, Kenya), GEOGLAM RAPP (Rangeland and Pasture Productivity), WorldBank, EC-DG.JRC



Planning: **Under negotiation**

Duration: **2 years**

Budget: **EUR1.2m**

Objective: National Incubators will facilitate the adoption of EO data for **sustainable agricultural practices and drought monitoring** with national R&D partners in selected African countries

Major activity: Develop, demonstrate and validate algorithms and EO data based products at national scales in close collaboration with African experts and national stakeholders



Planning: ITT launch Q4 2021

Duration: 2 years

Budget: 4 x EUR400,000 (four projects to be funded)

"Explorers" projects

Objective: to test experimental techniques and new EO data sources, such as the ECOSTRESS (thermal) and PRISMA (hyperspectral) collections as well as multi-mission data sets

Major activity: develop & transfer algorithms, perform scientific experiments and campaigns, disseminate and publish results



Planning: ITT launch Q4 2021

Duration: 1-2 years

Budget: 4 x EUR300,000 (four projects to be funded)

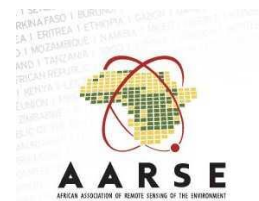
Objective: to facilitate **African-European R&D collaboration** and exchange in know-how

Major activities – identify **African research challenges**, launch **European-African research calls**, develop a **Digital Space Campus** for Africa as part of a bi-lingual African Space Academy (cooperation with UN training centers, Pan-African Space University, national space agencies), and build partnership programs with **African innovation hubs** (e.g., AfriLabs, AIMS)

Funding for future research calls:

EUR750,000 to be allocated via open research calls for “tandem projects”.

RDF Advisory Board :



Theme: EO for managing water scarcity and safeguarding food security in Africa in **collaboration with African Union Commission**

Who can apply: African-European research tandems

- two consecutive calls for 12-month projects
- EUR25,000 research budget (EUR750,000 total) + ICT infrastructure + technical/scientific support

Timeline of the first call – OPEN NOW

- FIRST Announcement : <https://www.eoafrika-rd.org/eo-africa-rd-research-proposals/>
- Proposal submission deadline: 31st December 2021, 12:00 CET
- Announcement of funded proposals: 31st January 2022
- Research period: 1st March 2022

Second call for the next round is expected in November 2022, with the research period starting from March 2023

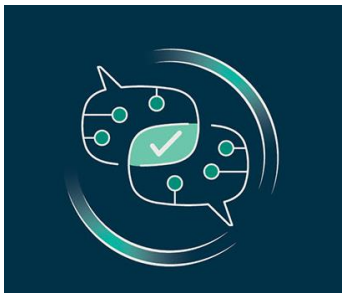
<http://eoafrika-rd.org>

African Research Fellows

Objective: Strengthen the collaborative efforts by hosting African Research Fellows at ESA/ESRIN.

Major activities:

- Water resources management
- Food security
- 1-year length fellowship at ESA's premise (ESRIN, Italy)



Planning: first call is closed, proposals evaluations are done

Duration: new calls foreseen

categorized as Standard ESA International Research Fellow



- **eoworld:** 2008-2015 | €10m
 - small-scale demonstrations of EO services
- **EO4SD:** 2016-2023 | €25m
 - consolidate requirements
 - engage stakeholders
 - regional demonstrations of EO
- **GDA:** 2020-2024 | €30m
 - mainstream & transfer EO into operational processes, and
 - Integrate geo-information in development aid's best practices



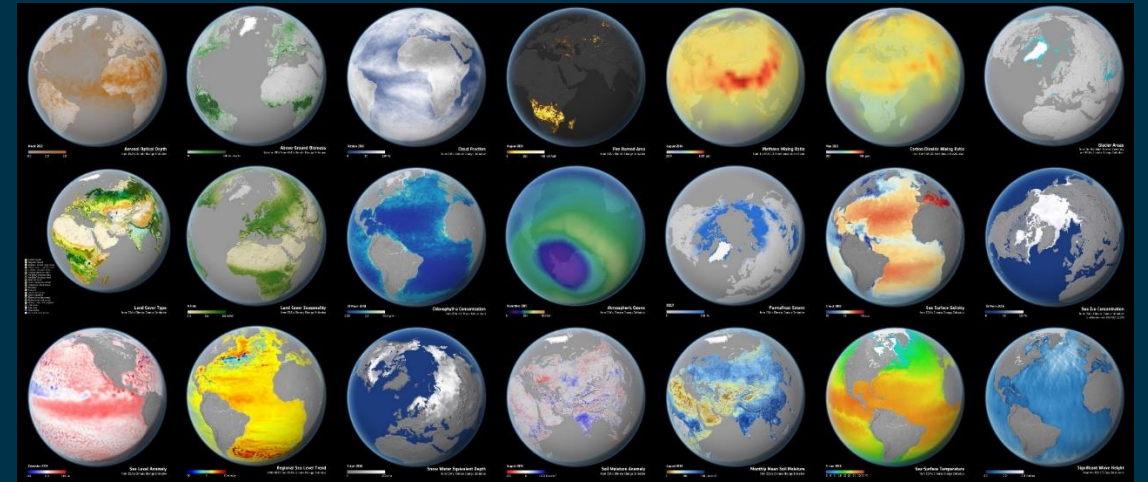
- Coastal
 - World Bank's **WACA program** 
 - ESA support to the West Africa Coastal Observatory
 - Partners: Centre de Suivi Ecologique, 10 West African countries
- **Urban & Resilience**
 - ESA support on urbanization trends, flood risk, Green cities
 - Partners: Open African Cities Initiative, TURP (Tanzania)
- **Nature Based Solutions**
 - ESA support on disaster & climate resilience and adaptation, urban sustainability
 - Initial support for the Emergency Locust Response Program
- Discussion on **African Development Bank partnership**
 - Urban & Municipal Development Fund



Observer at IPCC and UNFCCC

Climate Change Initiative

- WMO defined **54** Essential Climate Variables
- **36** benefit from space observations
- **21** generated by ESA Climate Change Initiative



climate modelling
user group
ccj

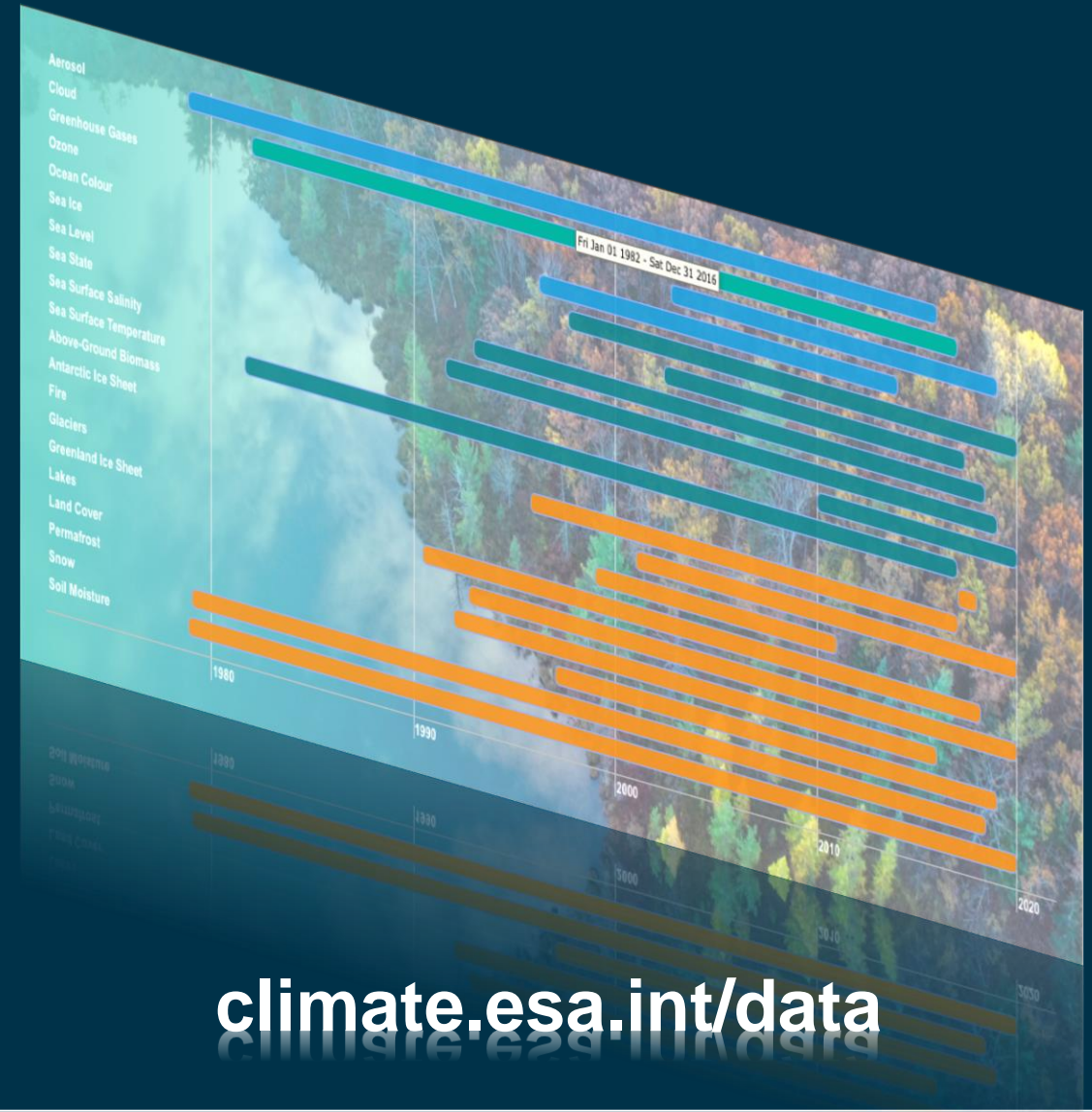


sea level
budget closure
cci

reccap-2
cci

Hosted and managed by CEDA on JASMIN

- 20 ECV products, 350TB ->180 datasets
- Free and open access
- Global coverage (where applicable)
- Long timeseries (20-30 years)
- Gridded (e.g. $\frac{1}{4}$ degree)
- Validated (by in situ observations) and tested
- Bias corrected (e.g. between different satellites)
- Uncertainty characterisation (per pixel, correlated...)
- Various temporal resolution (daily, monthly...)
- Can be sourced back to algorithm choice
- Level 1, 2 or 3
- Consistency between CCI_ECV datasets
- Full documentation & version control
- Supporting information, e.g. cloud masks



<https://eo4society.esa.int/eo-africa/>