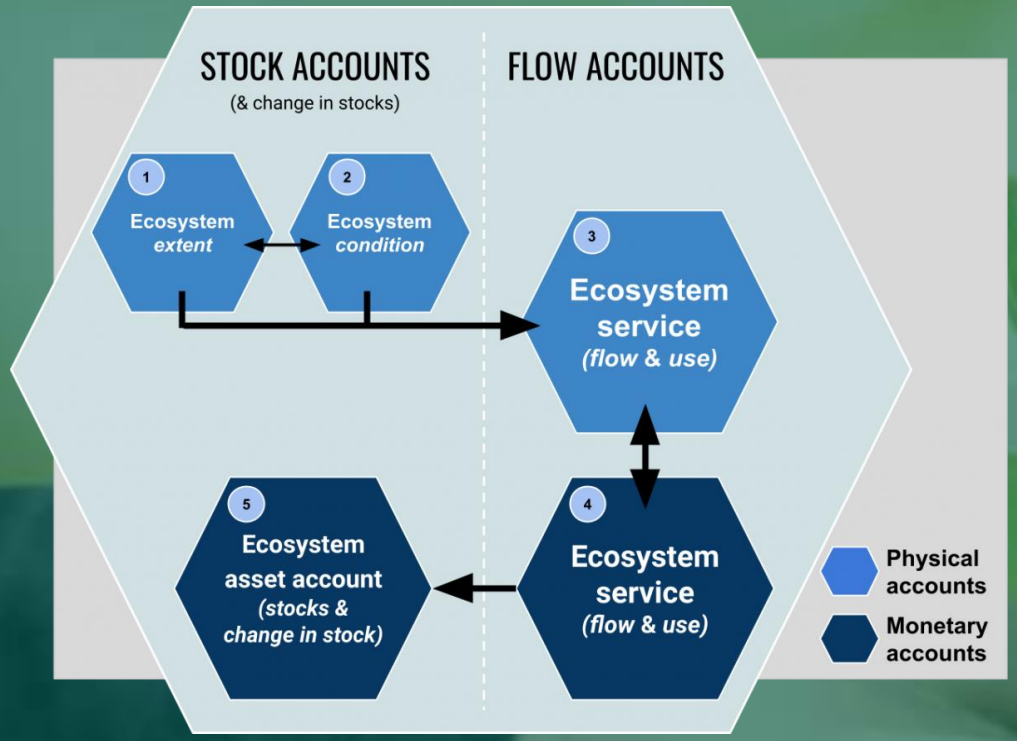
ESA Welcome

Marc Paganini, European Space Agency

PEOPLE-EA, International Workshop on EO for SEEA compliant NCA,

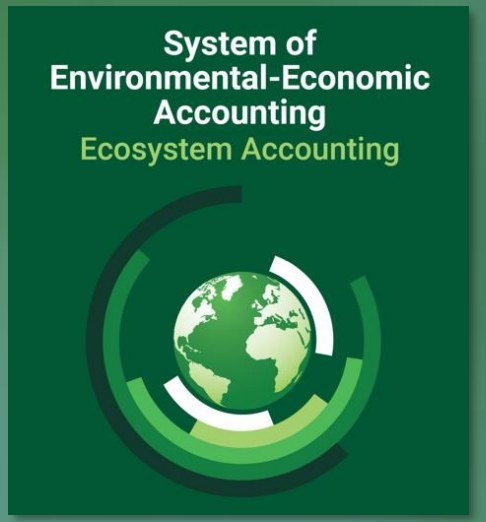
Athens, 22 & 23 May 2024

The SEEA Ecosystem Accounting (SEEA EA)



Enable countries to measure their natural capital and the contributions of nature to our prosperity.

SEEA Ecosystem Accounting adopted at the 52nd United Nations Statistical Commission, on March 2021



"The adoption of this economic and environmental framework is a historic step towards transforming the way how we view and value nature. No longer will we allow mindless environmental destruction to be considered as economic progress."

António Guterres, Secretary-General of the United Nations

New EU regulation on ecosystem accounts to be adopted by end of 2024

SEEA EA underpins Multilateral Environmental Agreements

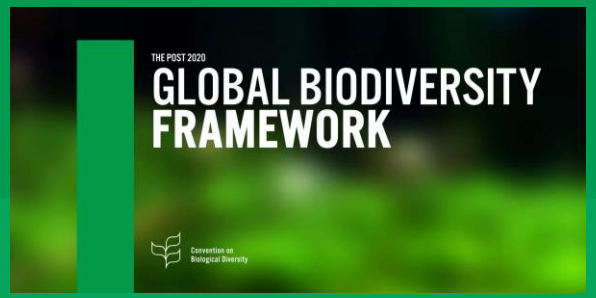
UN Convention to Combat Desertification (UNCCD)

UNCCD 2018-2030 Strategic Framework

Strategic Objective 1: to improve the conditions of ecosystems

Convention on Biological Diversity (CBD)

Post 2020 Global Biodiversity Framework (GBF) and its monitoring framework



UN Framework Convention on Climate Change (UNFCCC)

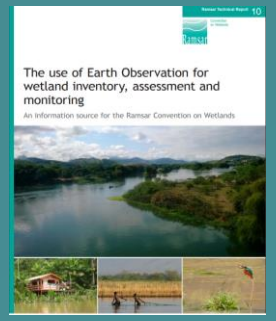
UNFCCC Paris Agreement

Glasgow Climate Pact

Ramsar Convention on Wetlands

Ramsar Strategic Plan (2016 – 2024)

Conservation and wise use of all wetlands



UN SEEA Ecosystem Accounting

International standard on Ecosystem Accounting that regulates the production of statistical accounts on ecosystem extent, condition and services, underpinning the development of monitoring frameworks of other MEAs.

Sustainable Development Goals (SDGs)

SDG Target 6.6
Protect and restore water-related ecosystems

SDG Target 14.2
Sustainably manage and protect marine and coastal ecosystems

SDG Target 15.1
Ensure conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems.

Opportunies & challenges to integrate Earth Observation in SEEA-compliant Ecosystem Accounting

Ecosystem Accounts are inherently spatial accounts
that strongly depend on the **availability of spatially explicit datasets**, including **Earth Observations**.

The emergence of **EO data streams at appropriate scales** combined with **advances in digital technologies** offer **unprecedented opportunities for countries** to efficiently monitor the **extent** and **conditions** of their ecosystems, determine **ecosystem services** and implement their **national ecosystem accounting**.

EO in Statistical Accounts

- Requires a **change of mindset in NSOs** to use Earth Observation and Big Data more widely.
- Requires **integration of many strands of expertise** including statisticians, ecologists, national mapping agencies, geo-spatial and EO experts.
- Needs to have spatially explicit accounts **consistent in space and in time.**
- Importance to have a **precise estimation of the uncertainties** for officially statistics.
- Need to have **regularly updated accounts** that allows to track the “intrinsic” variations of the subject accounts.

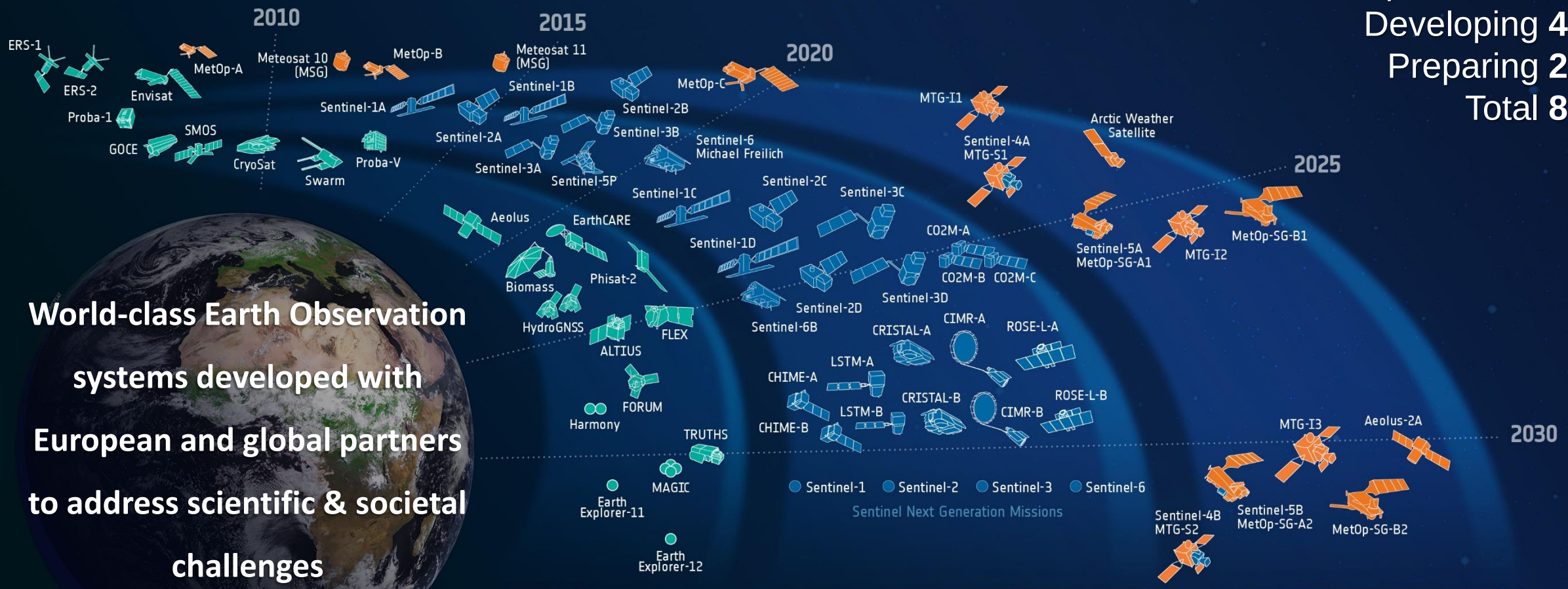
EO Enabling Elements

- Need to adopt a **data flow strategy** similar to the SDGs.
- Request from the statistical community to have **“Accounts Ready Data”** which can simplify their integration into official statistics.
- Need for **practical methodological guidelines** (datasets, tools and models) **with operational examples** to help countries integrating EO within their national systems on ecosystem accounting.
- The importance to have **adequate infrastructures (data factory following FAIR principles)** to enable country appropriation of EO technology in ecosystem accounting.

ESA's Earth Observation Missions

Satellites

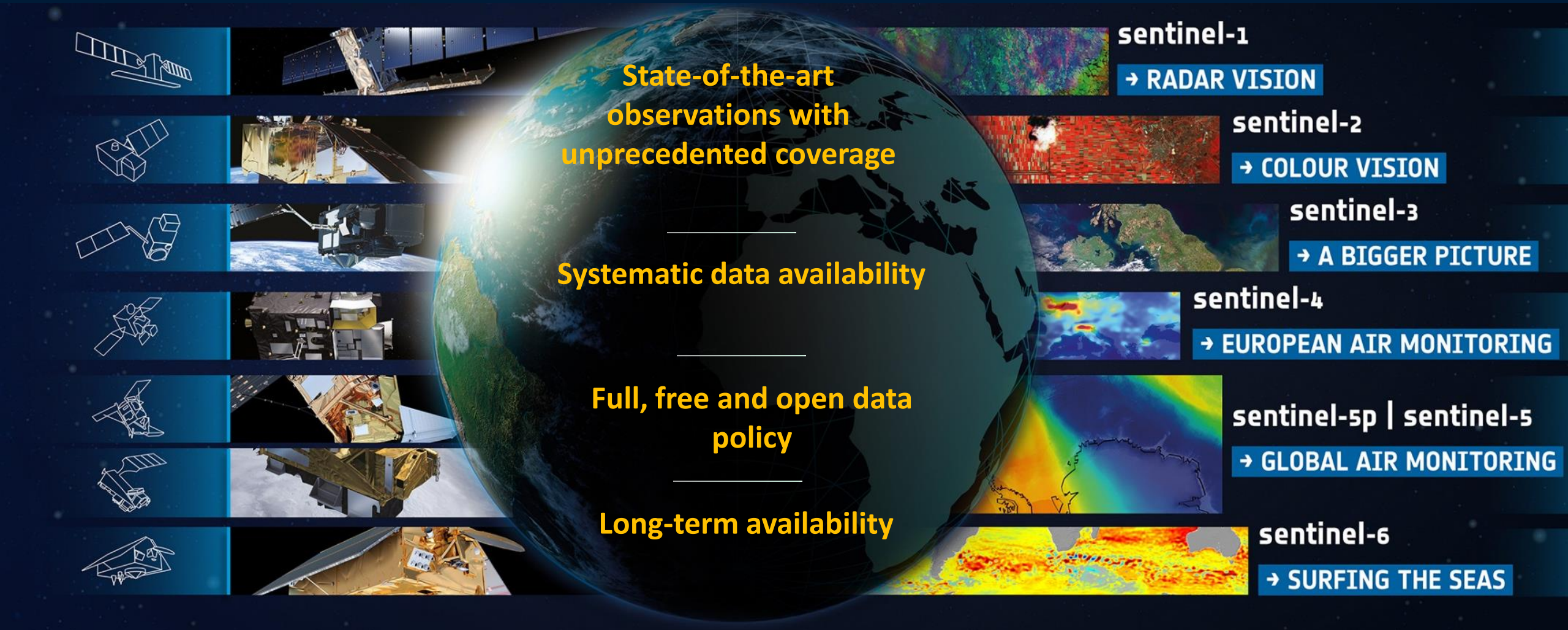
Heritage **06**
Operational **14**
Developing **41**
Preparing **22**
Total **83**



World-class Earth Observation systems developed with European and global partners to address scientific & societal challenges

Science esa | Copernicus European Union | Meteorology EUMETSAT

The European Copernicus Programme



➔ *Know more: https://copernicus.eu and https://sentinels.copernicus.eu*

PROGRAMME OF THE EUROPEAN UNION

Copernicus
Europe's eyes on Earth

co-funded with esa

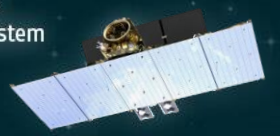
CHIME

Copernicus Hyperspectral Imaging Mission for the Environment

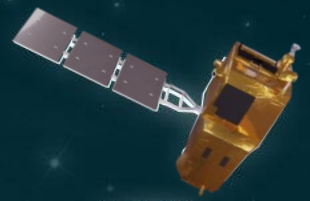
- soil properties
- crop health
- biodiversity
- water quality

ROSE-L

L-band Radar Observing System



- geohazards
- polar ice
- forest management
- food security
- maritime surveillance



LSTM

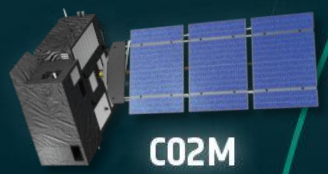
Land Surface Temperature Monitoring

- sustainable agriculture
- water resources management
- drought
- urban heat islands

CIMR

Copernicus Imaging Microwave Radiometer

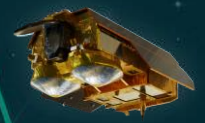
- sea-ice concentration/extent
- global ocean and cryosphere
- soil moisture and vegetation



CO2M

Copernicus Anthropogenic Carbon Dioxide Monitoring

- carbon dioxide and methane from human activity



CRISTAL

Copernicus Polar Ice and Snow Topography Altimeter

- sea-ice thickness
- ice sheets and glaciers
- snow
- polar oceanography
- coastal and inland waters

Food Security and Water Management

Monitoring Land and Natural Resources

Combatting Climate Change

Copernicus Sentinel Expansion Missions

Safeguarding the Arctic

https://eo4ea-2022.esa.int

EARTH OBSERVATIONS FOR ECOSYSTEM ACCOUNTING

United Nations

System of Environmental Economic Accounting

Programme of the workshop

https://eo4ea-2022.esa.int

Bring together experts in Earth Observation and in Ecosystem Accounting to discuss the key challenges that need to be addressed in order to mainstream the use of EO in the production of national ecosystem accounts.

3 panels

- Importance of EO for SEEA Ecosystem Accounting
- MEA monitoring programmes that SEEA EA can support
- National implementation of SEEA EA and EO opportunities/challenges in national accounts

8 Sessions

- Ecosystem Extent, Condition and Services
- Thematic Accounts: Urban ecosystems, Forests, Marine/Coastal ecosystems, Agroecosystems
- Operationalisation of EO data flows in the compilation of national ecosystem accounts.

12 panellists

15 session chairs

7 guided discussions

50 oral presentations

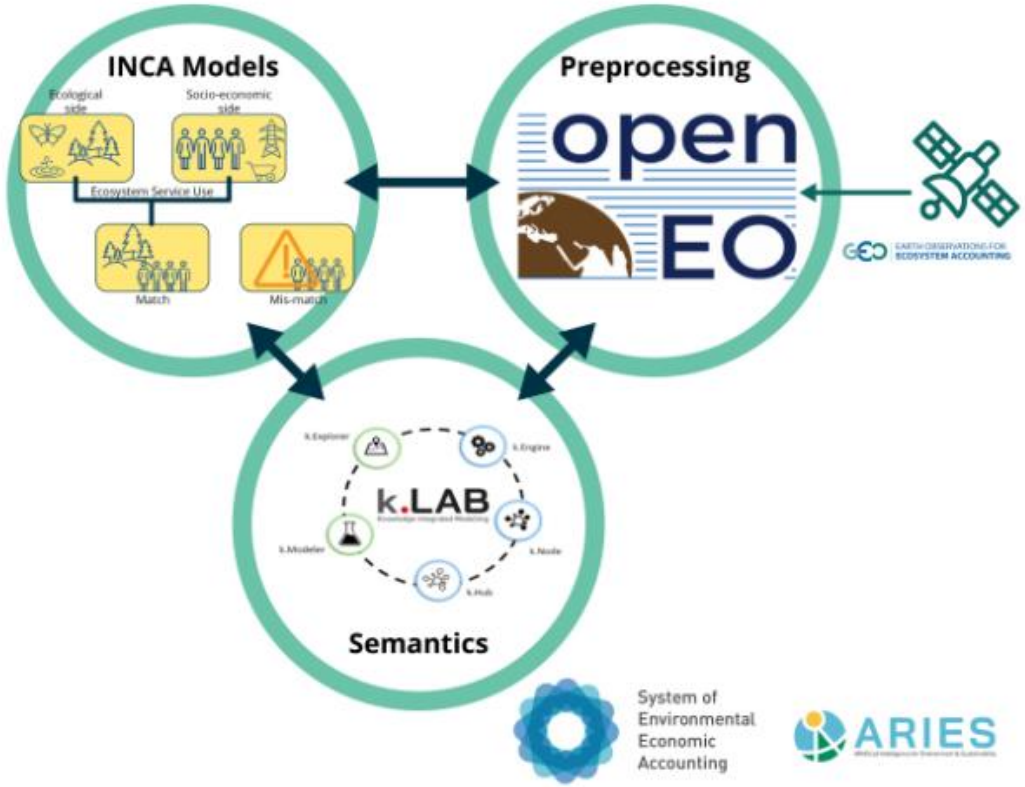
800+ participants

PEOPLE Ecosystem Accounting (2022-2024)

PEOPLE Ecosystem Accounting

- Review the **opportunities and challenges of integrating EO data in ecosystem accounting** for terrestrial and freshwater ecosystems.
- Co-develop high-quality **EO-based ecosystem account models** with countries.
- Showcase and validate **pilot demonstrators** to prove the value.
- Contribute to the international collaborative efforts to **advance the use of EO in ecosystem accounting** and support countries developing their national ecosystem accounts.
- Prepare a **R&D roadmap** to scale-up the use of EO in ecosystem accounting

https://esa-people-ea.org/



EO4EA Data Platform Architecture Blueprint

ESA future Biodiversity projects related to SEEA EA

World Ecosystem Extent Dynamics	In partnership with UNSD, IUCN, EUROSTAT, EEA, DG JRC, DG ENV, GEO : Development and demonstration of a globally applicable EO solution for mapping the extent of ecosystems and monitoring their changes (Ecosystems Extent Dynamics), with country demonstrations in Europe and outside of Europe.
EO for EBVs & GBF indicators	In partnership with GEO BON : Development of state-of-the-art EO solutions for the production of a number of EBVs in terrestrial, freshwater or marine ecosystems, addressing different EBV classes, and their integration in the GBF monitoring framework (e.g., headline indicators).
Ecosystem Conservation: action with CSOs/NGOs	In partnership with IUCN and WWF : Development a set of harmonised EO blueprint procedures for (a) monitoring of protected areas conditions and management effectiveness, and (b) site suitability identification of high-priority areas to be protected
EO for Nature-Finance	In partnership with TNFD, IMF, UNEP-FI, DG ENV : Development of EO data and tools in support to Nature Finance: (a) quantify and monitor dependencies and impacts on nature of end-to-end supply value-chains, and (b) specific finance and economic scenarios such as, nature-debt swap mechanisms; integration of NCA in GDP reporting; financial nature-risk indicators; nature-/bio-credits.

EO for Ecosystem Conditions and Services

The activity "**EO for Ecosystem Conditions and Services**" is part of a series of ESA projects that aim to carry out R&D activities and pilot demonstrations to showcase the value of Earth Observations in the SEEA Ecosystem Accounting.

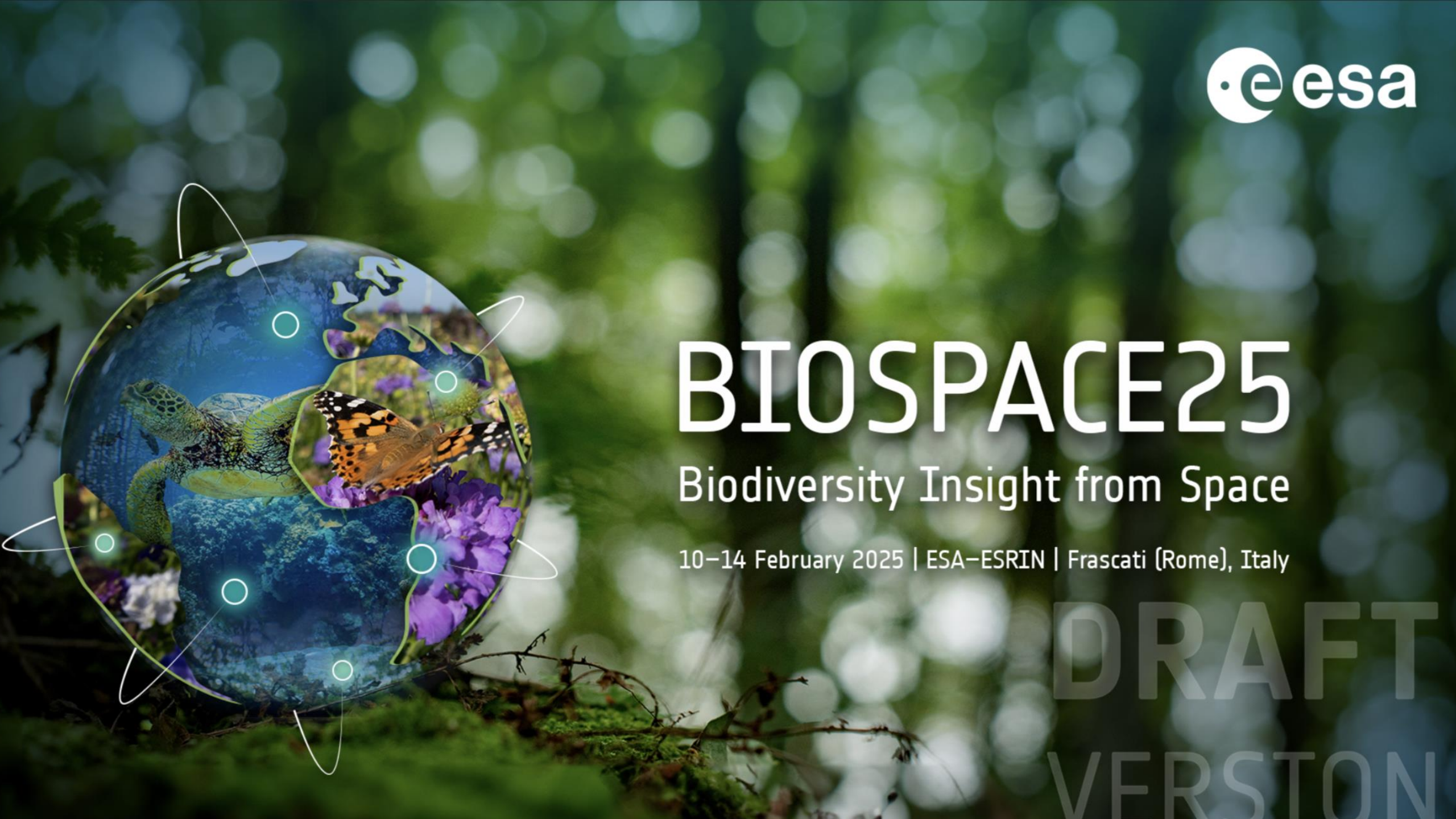
The activities will build on the findings of the **PEOPLE Ecosystem Accounting** project, scheduled to be completed in 2024 Q4.

The project will conduct a review of the opportunities and challenges to **integrate EO as a trusted source of information on the conditions and services of ecosystems,** and develop innovative and robust EO-based solutions to assess the conditions of ecosystems (through condition indicators) and estimate the services these ecosystems provide to society (through ecosystem modelling).

This activity will result in **2 parallel projects,** which will address **different ecosystem biomes** (selected among terrestrial, freshwater, marine and transitional realms).

The activity will **be conducted in cooperation with existing initiatives** from European and international partners (including UNSD, SEEA EEA TC, EUROSTAT, EEA, DG JRC) which will be involved in the Advisory Board.

Plan: ITT 2025-2026 | Duration: 24 months | Budget: ~1,200 KEUR, 2 contracts | PEOPLE-series


esa
BIOSPACE25
Biodiversity Insight from Space
10–14 February 2025 | ESA–ESRIN | Frascati (Rome), Italy
DRAFT
VERSION

I wish you all an inspiring workshop

www.esa.int