

# ESA's new climate initiative *CLIMATE-SPACE*

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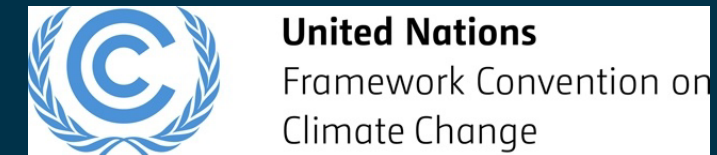
Jan Verbesselt, BELSPO  
*Earth Observation expert at ESA and  
Copernicus EU*

Susanne Mecklenburg  
*Head of ESA Climate Office*

# ESA's new climate initiative CLIMATE-SPACE

- Provides a major contribution to the international climate network:
  - Global Climate Observing System (GCOS) requirements
  - UNFCCC Paris Agreement
  - IPCC Assessment Reports
  - New users: tipping points, biodiversity & ecosystems, health
- Builds on the Climate Change Initiative (CCI)

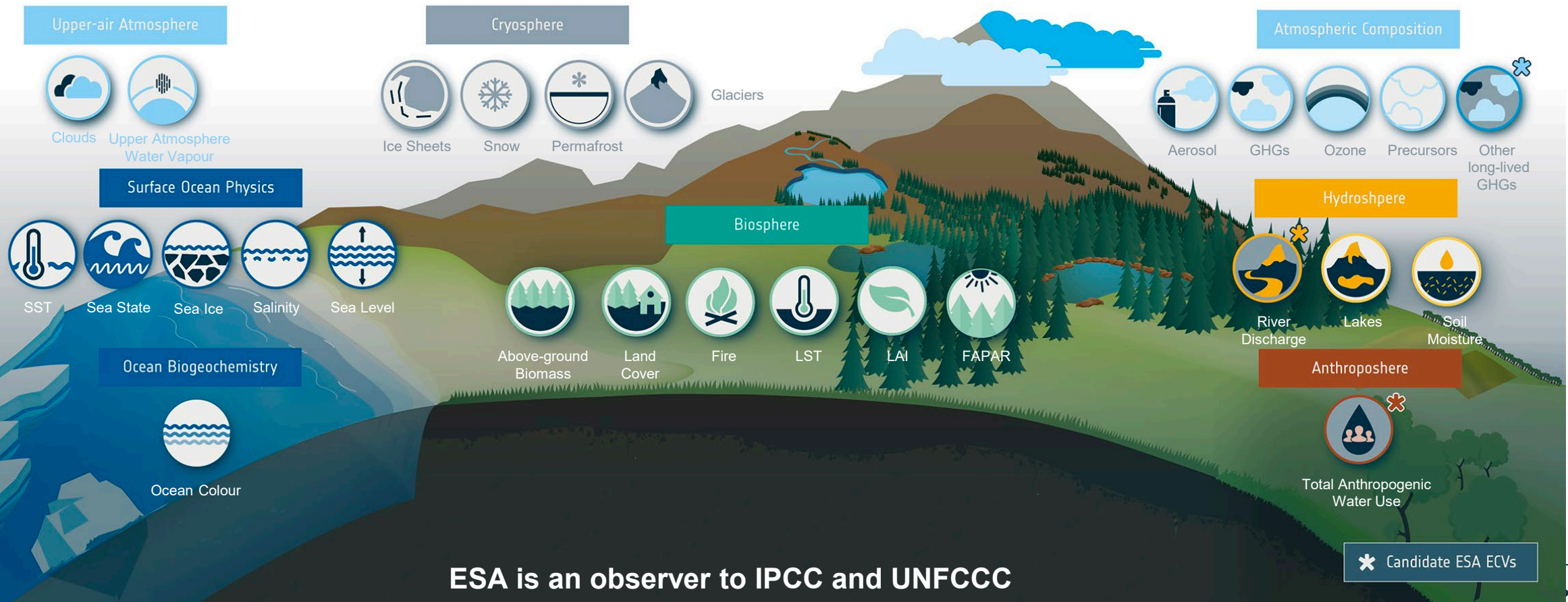
## International climate network



# ESA's Climate Change Initiative – the base to build on



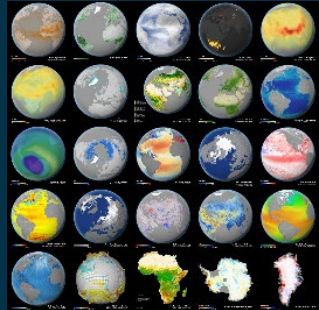
GCOS defined **55** Essential Climate Variables (ECV) | **36** benefit from space observations  
| **27\*** generated by ESA Climate Change Initiative (CCI)



ESA is an observer to IPCC and UNFCCC

# CLIMATE-SPACE (2023-2029): what does it cover?

## EXPANDING THE ECV PORTFOLIO



### New ECV products:

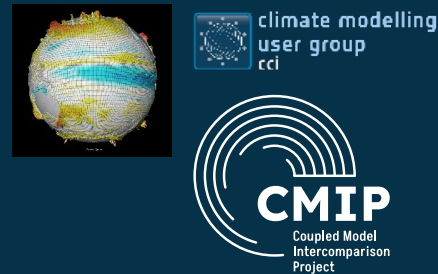
- **Long-lived Greenhouse gases** (N<sub>2</sub>O & halogenated carbon compounds)
- **River discharge**
- **Terrestrial total water use & Anthropogenic Water Use**

## RESPONDING TO UNFCCC PARIS AGREEMENT



Provide the physical evidence base required by IPCC, contributing to its forthcoming assessment reports, etc.

## LINKING EARTH OBSERVATION & CLIMATE MODELLING



Earth observation and climate modelling communities will be brought closer together to increase utility of satellite data in climate modelling activities.

- EO-based ECV demonstration studies
- **EO data-model fusion** technique development
- Cross-ECV consistency investigation
- **Support community tools** e.g. obs4MIPs and ESMValTool
- **Facilitate EO data use in CMIP**

## WORKING WITH CLIMATE SERVICES

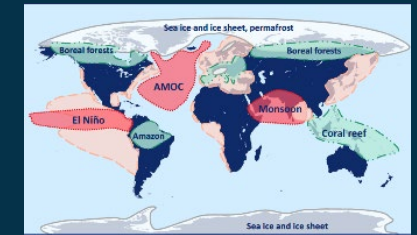


Jointly agreed priorities with C3S include:

- transfer of **biomass, permafrost** and **land-surface temperature** ECVs,
- enhancing the link to the modelling community through the provision of vegetation parameters and root-zone soil moisture products
- new topics, such as **biodiversity** and **terrestrial hydrology**



## CROSS-ECV & TIPPING POINTS R&D



Cross-ECV exploitation studies will support the science needs relevant to IPCC assessments etc.; Earth system cycle understanding, climate sensitivities & tipping points.

Potential studies may focus on:

- **Carbon, energy & water** cycle research
- **Climate extremes**
- **Lateral exchange of fluxes** between land, ocean, cryo- and atmosphere,
- **Atmospheric radiation closure** studies (aerosol, cloud, albedo, & LST ECVs)

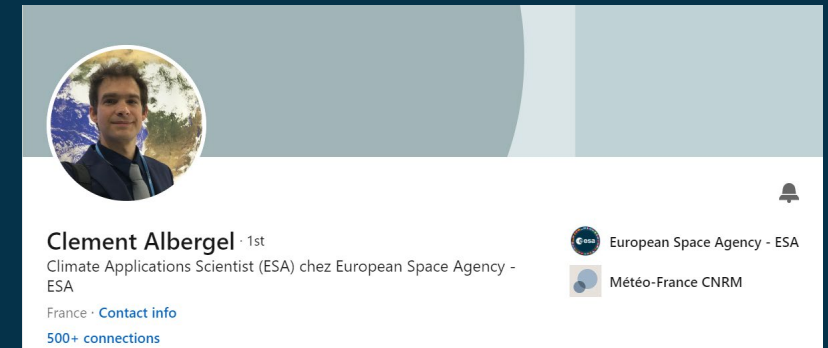
- This program was approved by ESA member states in Feb 2023
- Procurement plan awaiting approval by ESA financial boards in April/ May 2023
- ITTs will follow in summer 2023, focussing on new activities:
  - Expanding ESA's portfolio of ECVs (Theme I)
  - Cross-ECV applications (Theme II)
  - Linking climate observation & modelling (Theme III)
- Majority of funding will be spent in science (% of total funding by topic)!

- Register to the ESA STAR system – for new calls updates



- Follow:

- climate.esa.int & Twitter (@esaclimate)



- **Upcoming ESA Climate Space info day to be announced in May**
  - Format: Online
  - Morning: Programme briefing inc. tender opportunities, timescales and Q&A
  - Afternoon: 1-2-1 meetings with ESA Climate Office personnel

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# Are you ready to discover more?



[www.esa.int](http://www.esa.int)

