



CLIMATE-SPACE INFORMATION DAY

Susanne Mecklenburg
European Space Agency
Head of ESA's Climate Office

CLIMATE SPACE

10 May 2023



Welcome and Introductions 10'

Briefing on ESA's new climate initiative CLIMATE-SPACE 60'

Overview: background, objectives & rationale (Susanne Mecklenburg)

- Procurements in thematic areas
 - Theme I – The excellence base – ECVs (Susanne Mecklenburg)
 - Theme II - Cross-ECV applications
 - Support to climate policy needs: UNFCCC Paris Agreement (Clément Albergel/Simon Pinnock)
 - Cross-ECVs (Anna-Maria Trofaier)
 - Tipping Points (Claire MacIntosh/Sophie Hebden)
 - Theme III - Linking climate observations & modelling (Simon Pinnock)
 - Theme IV - Knowledge Exchange (Eduardo Pechorro)
- Summary of tender opportunities & timescales: 2023-24

ESA Procurement process explained 30' – Nathalie Boisard

Plenary Q&A 30'

Plenary Close 11:15 CEST


11:30-16:15 – pre-booked one-to-one meetings



HOUSEKEEPING

- Audience microphones are muted
- Please switch off your cameras

For Questions:

- Type your question in the  button (via general not to specific people)
- Questions addressed during the Plenary Q&A
- An FAQ document will be circulated after 10 May

For one-to-one meetings:

- Join via the SAME Webex link you used for this plenary
- You will be automatically moved to you one-to-one meeting
- Meetings will start and end promptly (you may be cut off if you overrun)
- For technical queries – email: Lorenza.Versace@esa.int



CLIMATE-SPACE

Overview: background, objectives & rationale

CLIMATE SPACE

THE ESA CLIMATE OFFICE



- Focal point for climate activities in ESA
- Representing ESA's interests in the international climate (science, service and policy) network
- Observer at IPCC and UNFCCC
- Host to WCRP's CMIP-IPO since March 2022
- Link to Future Earth through secondment
- Flagship programme: Climate Change Initiative

www.climate.esa.int

ESA CLIMATE OFFICE & CMIP-IPO TEAM



ESA CLIMATE OFFICE



CMIP IPO



Eleanor O'Rouke
Director

Susanne Mecklenburg
Head of Climate Office

Clement Albergel
Applications Engineer

Anna Maria Trofaier
Applications Engineer

Simon Pinnock
Applications Engineer

Michael Eisinger
Applications Engineer

Claire Macintosh
Applications Engineer



Briony Turner
Project Manager

Sophie Hebden
Future Earth

Ed Pechorro
Data Engineer

Paul Fisher
Communications

Victoria Ayala
PA to Climate Office

Anna Jungbluth
Research Fellow

Alice Kolesnikov
PA CMIP IPO



Beth Dingley
Communications
Manager



Kalyani Ramanan
Graduate Trainee



Amina Maroini
Graduate Trainee



Daniel Ellis
Technical Officer

ESA UNCLASSIFIED - For Official Use



The CMIP International Project Office

- CMIP has expanded to a point where coordination of its elements requires dedicated secretariat support.
- The IPO was established in March 2022 at our host institution, ESA's ECSAT site in Harwell, UK.
- IPO team consists of:
 - Director (*Eleanor O'Rourke*)
 - Programme Manager (*Briony Turner*)
 - Science & Communications Officer (*Beth Dingley*)
 - Technical Officer (*Daniel Ellis*)
 - Part time administrative support (*Alice Kolesnikov*)

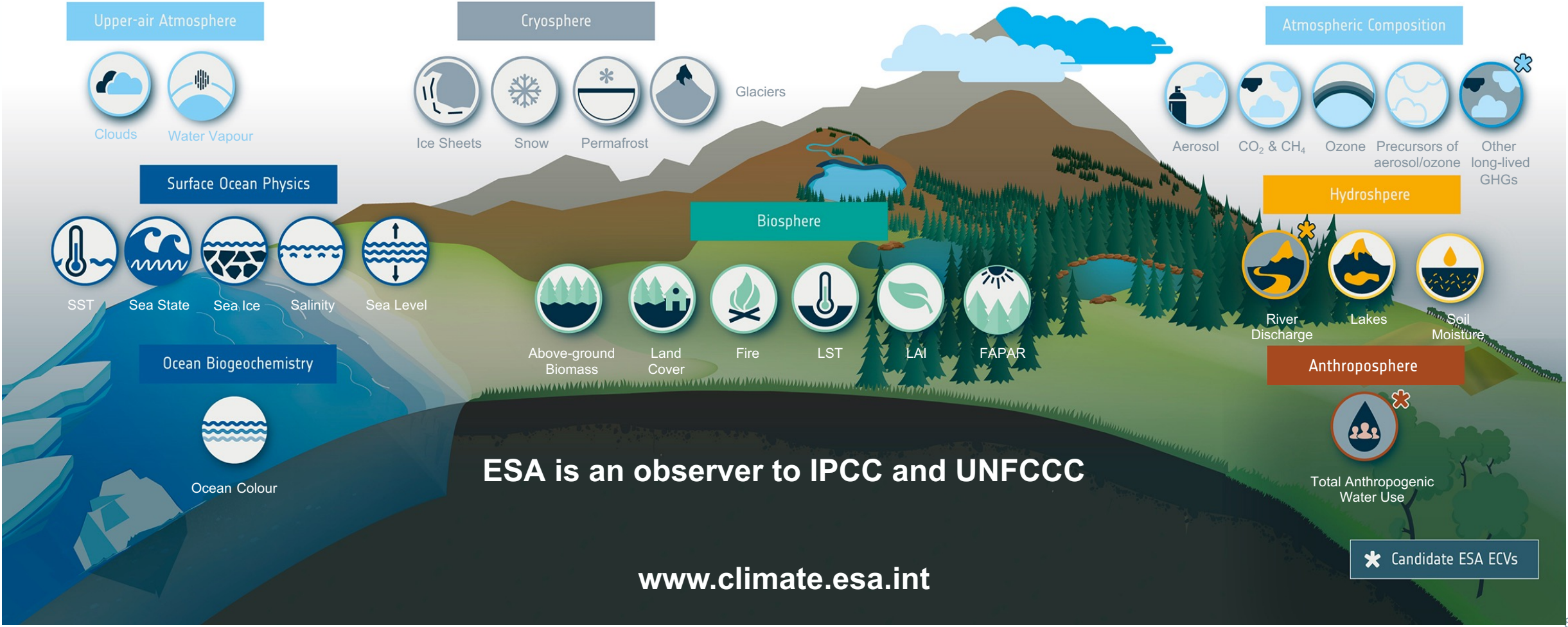


Staff from HE Space Operations under contract to ESA

ESA'S CLIMATE CHANGE INITIATIVE



GCOS defined **55** Essential Climate Variables | **36** benefit from space observations | **27** generated by ESA Climate Change Initiative



ESA is an observer to IPCC and UNFCCC

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IPCC SYNTHESIS REPORT

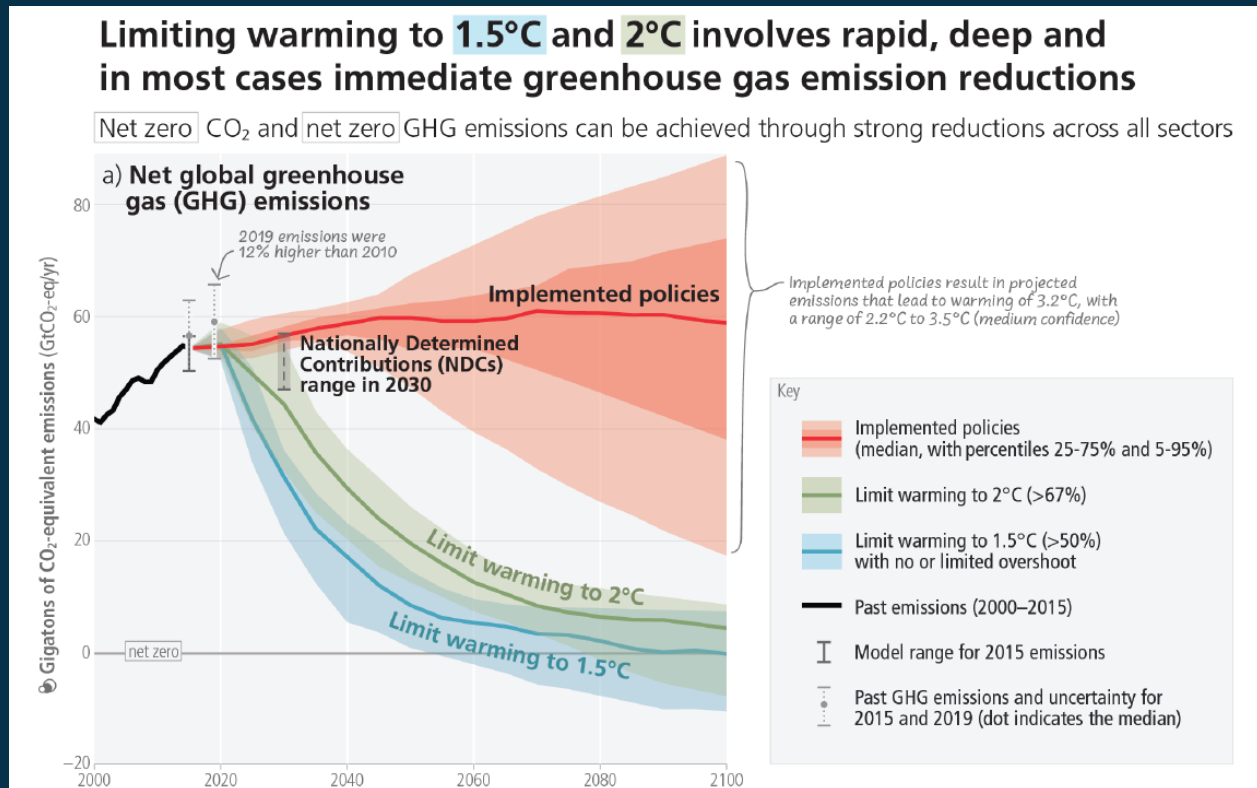
Release date: 20 March 2023

Re-emphasise the call for action in terms of taking measures for adaptation and mitigation and identifies opportunities for both.

The report warns that

- *“Currently insufficient action to limit warming to even 2deg C”*
- *“Global GHG emissions must half by 2030, to stay below 1.5”*
- *“For any given future warming level, many climate-related risks are higher than assessed in AR5 and projected long-term impacts are up to multiple times higher than currently observed (high confidence)”*
- *“Some future changes are unavoidable and/or irreversible but can be limited by deep, rapid and sustained global greenhouse gas emissions reduction.”*

WHERE WE STAND



IPCC Synthesis Report – SPM Figure 5
The impact of currently implemented policies (NDC)

“Satellite products provide a valuable complement to in situ measurements, particularly over regions where in-situ measurements are unavailable...Currently 54 essential climate variables (ECVs; Bojinski et al., 2014) are defined on...to the Copernicus Climate Change Service of the European Union, to the ESA Climate Change Initiative ESA-CCI...by the Global Climate Observing System (GCOS) program. Their observations are valuable (high confidence) for regional applications since they provide multi-channel images at very high spatiotemporal resolutions.”

“Methodological advances and new datasets contributed approximately 0.1°C to the updated estimate of warming in AR6.” → Satellite data and Earth Observation research make a bigger contribution in AR6 than AR5.”

THE INTERNATIONAL CLIMATE NETWORK

Policy drivers for CLIMATE-SPACE

- GCOS & WCRP requirements
- UNFCCC Paris Agreement
- IPCC Assessment Reports
- New users: tipping points, biodiversity & ecosystems, health
- *2030 Agenda for Sustainable Development*
- *Sendai Framework for Disaster Risk Reduction 2015–2030*
- *EU's Green Deal*

Focus on Collaboration & Complementarity & Synergy

STAKEHOLDERS

→ Defining requirements for ECVs & scientific focus

→ International policy
Global Stocktake
Mitigation & Adaption

→ National & regional interests

National Space Agencies

National Authorities responsible for emission inventories, NDCs, NAPs

ESA'S ROLE

→ Providing expert input (data and science)

→ Addressing ECV requirements & associated science

→ Pre-operational development and R&D

→ Providing scientific evidence as input to policy decision

USERS

→ Climate Science and Modelling

→ Climate services

→ New user communities?

National Climate modelling Community

National Climate Services

GATHERING EVIDENCE FROM

Expert advice

- Climate Science Advisory Board

Science community

- CCI Science Leads' interaction and feedback, www.climate.esa.int

Stakeholders

- Climate Modelling User Group's "Foresight Report" led by UK Met Office
- https://climate.esa.int/media/documents/CMUG_D1.2-Foresight-Report-V4.1_8EMjic8o.pdf
- ESPI "Horizon Study", EO to support climate policies in Europe
- Workshops with Copernicus services and EUMETSAT

Preparing CLIMATE-SPACE

- RECCAP-ESA <https://climate.esa.int/en/projects/reccap-2/>
- Tipping Points in the Earth's Climate <https://climate.esa.int/en/news-events/remote-sensing-tipping-points-climate-system/>
- Space-based Earth observation in support of the UNFCCC Paris Agreement, Hegglin M et al., Front. Environ. <https://doi.org/10.3389/fenvs.2022.941490>

Member States

- CCI Mid-Term Review (ESA/PB-EO(2021)9)
- Bilateral "Climate Days" with ESA member states



frontiers | Frontiers in Environmental Science

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Check for updates

OPEN ACCESS

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Buchwitz M, Fawcett D, Ghent D, Kulk G,
Sathyendranath S, Shepherd TG,
Quegan S, Rothlisberger R, Briggs S,

Space-based Earth observation in support of the UNFCCC Paris Agreement

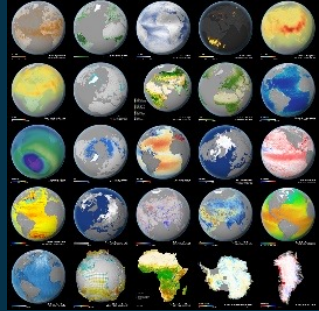
Michaela I. Hegglin^{1,2,3*}, Ana Bastos⁴, Heinrich Bovensmann⁵, Michael Buchwitz⁵, Dominic Fawcett⁶, Darren Ghent⁷, Gemma Kulk⁸, Shubha Sathyendranath⁸, Theodore G. Shepherd^{1,9}, Shaun Quegan¹⁰, Regine Rothlisberger¹¹, Stephen Briggs^{1,12}, Carlo Buontempo¹³, Anny Cazenave¹⁴, Emilio Chuvieco¹⁵, Philippe Clais¹⁶, David Crisp¹⁷, Richard Engelen¹⁸, Suvarna Fadnavis¹⁹, Martin Herold²⁰, Martin Horwath²¹, Oskar Jonsson²², Gabriel Kpaka²³, Christopher J. Merchant^{1,24}, Christian Mielke²⁵, Thomas Nagler²⁶, Frank Paul²⁷, Thomas Popp²⁸, Tristan Quaife^{1,24}, Nick A. Rayner²⁹, Colas Robert³⁰, Marc Schröder³¹, Stephen Sitch⁶, Sara Venturini³², Robin van der Schalie³³, Mendy van der Vliet³³, Jean-Pierre Wigneron³⁴ and R. Iestyn Woolway³⁵

Hegglin et al. (2022) Front. Environ

CLIMATE-SPACE (2023-2029): MAIN PILLARS



EXPANDING THE ECV PORTFOLIO

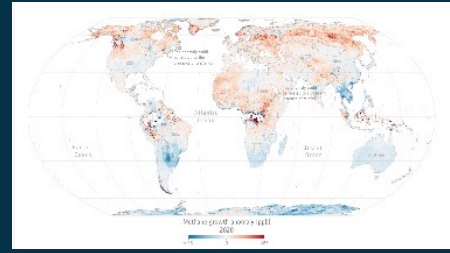


New ECV products will be developed in response to evolving user requirements e.g. GCOS 2021 Status report (GCOS-240) including:

- **Other Long-lived Greenhouse gases** (N₂O & halogenated carbon compounds)
- **River discharge**
- **Terrestrial total water use & Anthropogenic Water Use**

R&D will also improve existing satellite-based CDR and integrate new sensor data e.g. Copernicus Expansion and Extension

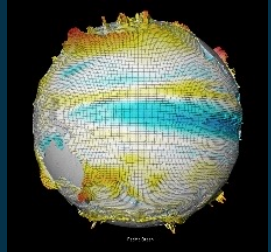
RESPONDING TO UNFCCC PARIS AGREEMENT



Provide the physical evidence base required by IPCC, contributing to its forthcoming assessment reports, as well as contributing to the State of the Climate reports issued by e.g. WMO, BAMS, C3S, to inform decision and policymakers to take action.

Support national and international obligations under the UNFCCC Paris Agreement, working closely with ESA Member States.

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** to e.g. obs4MIPs and ESMValTool
- **Facilitate EO data use in CMIP & model experiments**
- Continue to host **CMIP's International Project Office** at ESA ECSAT.

WORKING WITH CLIMATE SERVICES

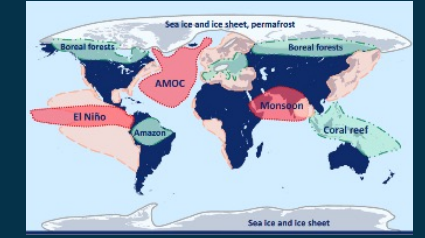


Work closely with climate service providers, including Copernicus services - C3S, CMEMS, CAMS, CLMS, CEMS - Eumetsat's CDOP, & national climate services, to provide research and pre-operational development.

Jointly agreed priorities with include:

- transfer
- 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 & tipping

KNOWLEDGE EXCHANGE BEING A CLIMATE AMBASSADOR

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



- **Theme I** – The excellence base – ECVs (Susanne Mecklenburg)
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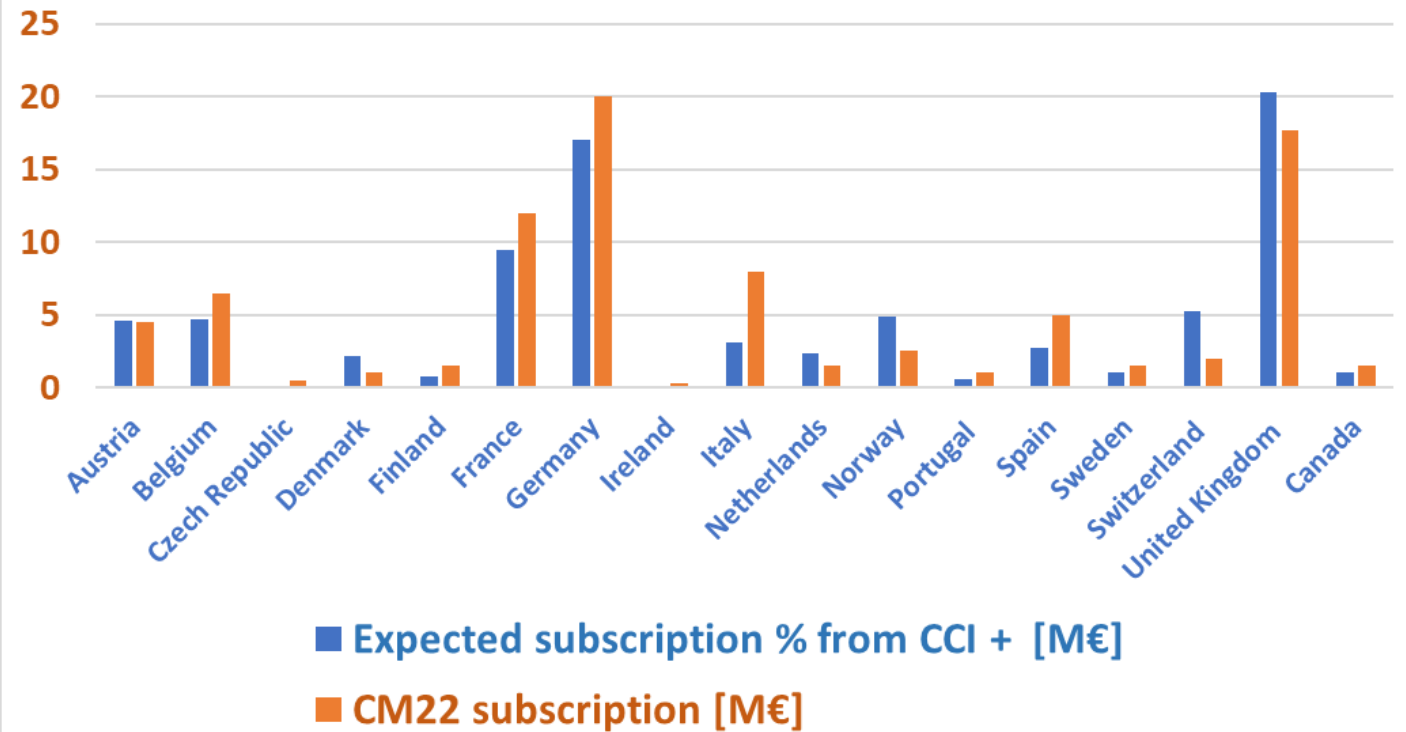
Implementation approach (in a nutshell)

- Maintain and extend the existing Excellence Base T-I
- Focus on establishing new activities under T-II/ III
- Evolve and adapt T-IV

A few observations

- **Over-subscription** additional ~ 6 M€ (total ~87 M€)
- **Larger financial envelop** CCI+ ~8 M€ /y → CLIMATE-SPACE 14 M€ /y
- **National funding distribution largely maintained**

Subscription to CLIMATE-SPACE CM22

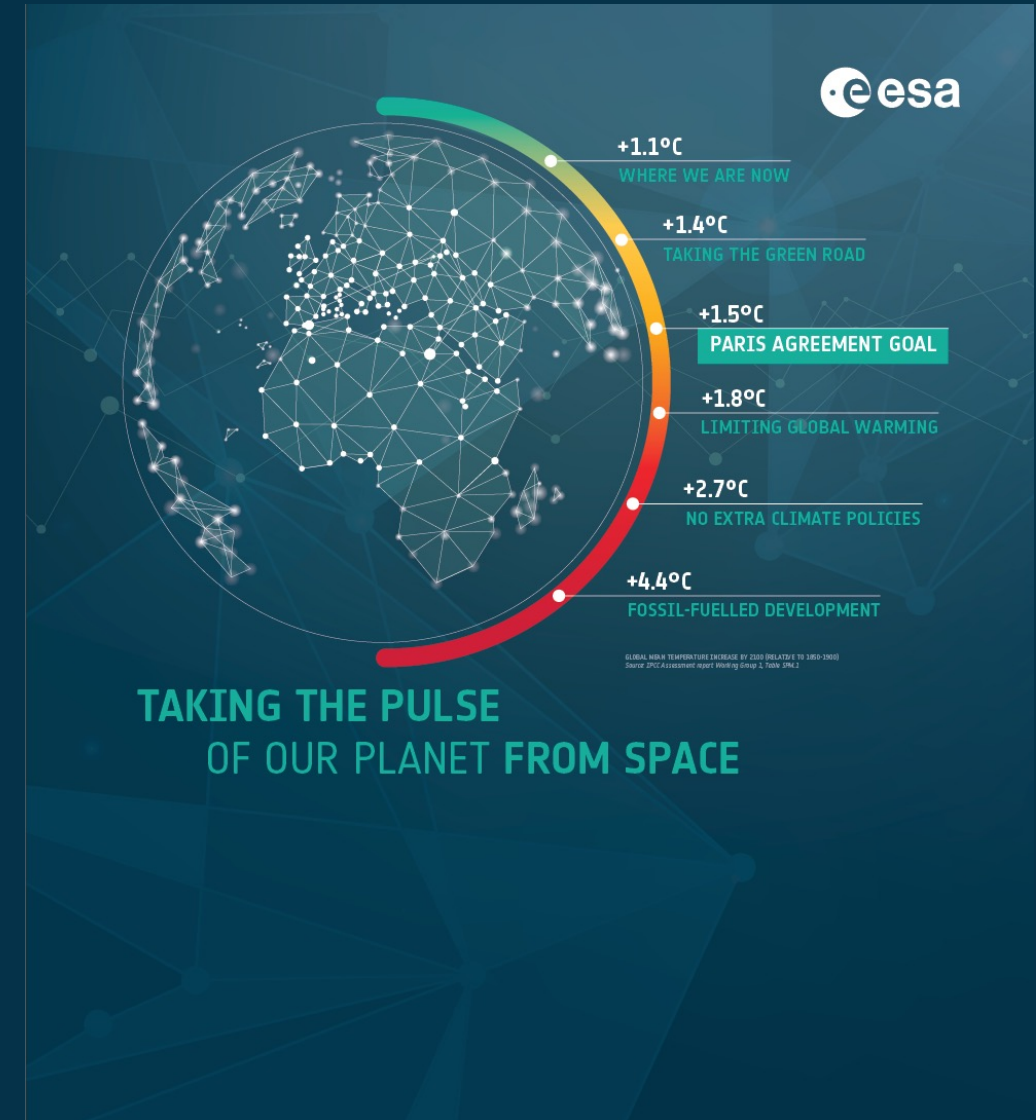


Funding Member States
 Main F, DE, UK
 New CZ, IE
 More BE, FI, F, DE, I, E, S
 Less DK, N, NO, CH, UK



Based on experience from CCI

- Take into account evolving user needs (e.g. GCOS, IPCC, UNFCCC Paris Agreement)
- Take into account advice by the ESA Climate Science Advisory Board (CSAB)
- Continue a strong focus on trusted scientific excellence, i.e. the high-quality climate data records
- Provide the R&D leading to high-quality CDRs to further our understanding of Earth system cycles
- Continue and enhance the link between the climate observation and modelling communities (e.g. CMIP, ESMValTool, obs4MIPs)
- Work closely with climate service providers: Copernicus services, EUMETSAT and national climate services
- Provide the physical evidence base required by IPCC, WMO, BAMS, C3S, etc to inform decision and policymakers to take action
- Support national and international obligations under the UNFCCC Paris Agreement
- Contribute ESA's expertise to international climate network
- Act as a climate ambassador



THEME I – The Excellence Base

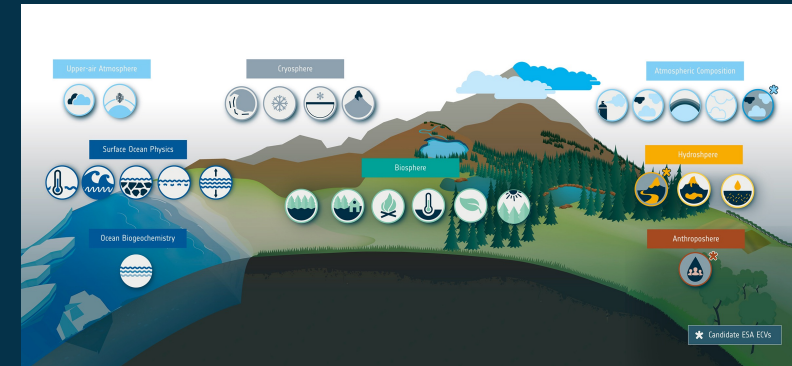


Two objectives

1. **Extending** the existing portfolio of 28 Essential Climate Variables projects based on **evolving** user requirements (e.g., GCOS, IPCC, UNFCCC, Paris Agreement, CMIP-7, R&D for operational services etc) as well as exploiting ESA's new satellite missions until end of 2026.

2. **Expanding** the existing portfolio of Essential Climate Variables responding to **new** requirements (e.g. evapotranspiration, turbulent fluxes-ocean, fluorescence, lightning etc); new additions to the ECV portfolio to be chosen according to pre-defined selection criteria (defined in implementation plan)

Anticipated CCNs: 28
RFQ released starting Q1 2024 | 0.5-2 M€
Procurement mechanism: Direct negotiation



Anticipated Contracts: 3
ITT to be released in Q2 2024 | 0.5-2 M€
Procurement mechanism: Open competitive tender

THEME II – Cross-ECVs

- Support to climate policy needs: UNFCCC Paris Agreement
 - *Global land carbon budget and its attribution to regional drivers (Clément Albergel)*
 - *Regional Climate process study, field campaign over the Amazon (Clément Albergel)*
 - *GHG Emissions (Simon Pinnock)*
- Cross-ECVs (Anna Maria Trofaier)
- Tipping Points (Claire MacIntosh/ Sophie Hebden)



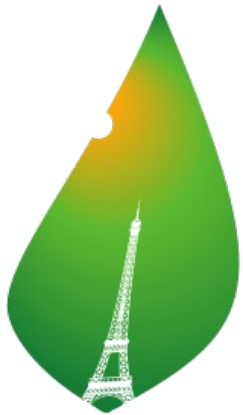
United Nations Framework
Convention on Climate Change

Tasked with preventing
'*dangerous*' human
interference with the climate
system



United Nations Framework
Convention on Climate Change

Tasked with preventing
'dangerous' human
interference with the climate
system



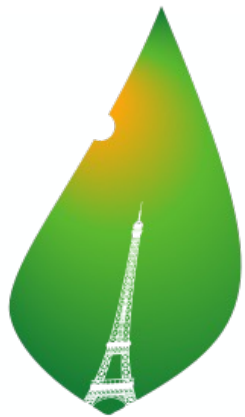
Legally-binding treaty to limit global
warming to well-below 2C, and
preferably 1.5C

PARIS2015



United Nations Framework
Convention on Climate Change

Tasked with preventing
'dangerous' human
interference with the climate
system



Legally-binding treaty to limit global
warming to well-below 2C, and
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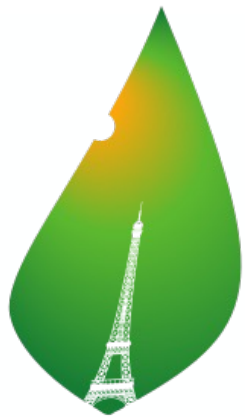
PARIS2015

*Parties to the UNFCCC are specifically called on for “Strengthening scientific knowledge on climate, including research, **systematic observation of the climate system** and early warning systems, in a manner that informs climate services and supports decision-making” (Art.7.7c)*



United Nations Framework
Convention on Climate Change

Tasked with preventing
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Legally-binding treaty to limit global
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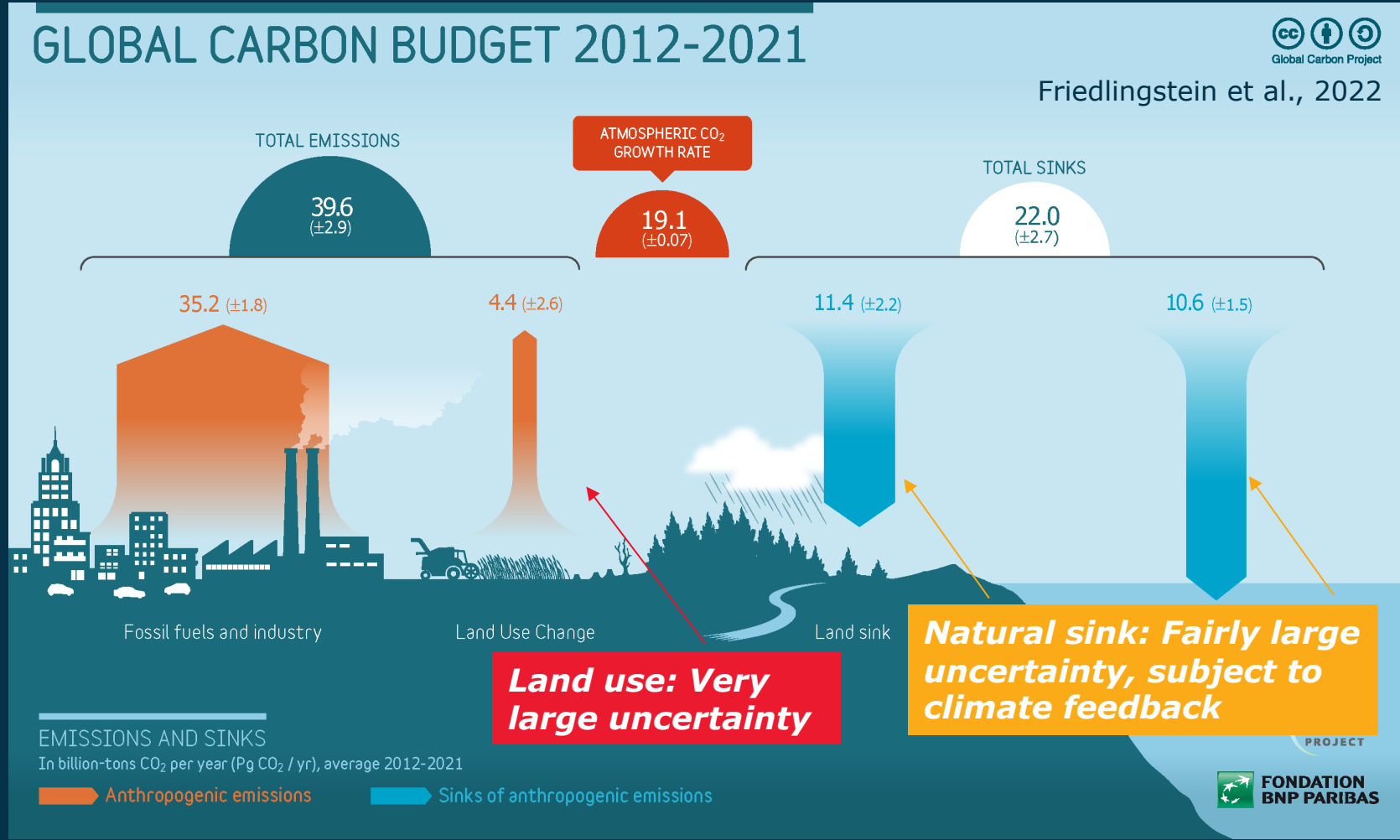
PARIS2015

*Parties to the UNFCCC are specifically called on for “Strengthening scientific knowledge on climate, including research, **systematic observation of the climate system** and early warning systems, in a manner that informs climate services and supports decision-making” (Art.7.7c)*

Climate-Space implementation under this theme will follow the structure of the UNFCCC PA, focusing on mitigation, adaptation and resilience-building, capacity building, loss and damage

3 ITTs in 2023

ITT: Global land carbon budget and its attribution to regional drivers



ITT: Global land carbon budget and its attribution to regional drivers

The two most important anthropogenic GHGs (CO₂, CH₄) are associated with sizeable natural land sources and sinks. The net land CO₂ flux is a key sink component of the global carbon budget and is made of regionally different carbon sources and sinks that are sensitive to climate variability and human activities related to land use and land use change. Regional attribution of the loss and regrowth fluxes to land use change, degradation, and natural fires is crucial to evaluate the stability of the net land CO₂ flux.

Quantifying and attributing natural sources and sinks of GHGs on the land (1) to support atmospheric inversions seeking to quantify the anthropogenic component of emissions (2) to monitor the impacts of climate change on the behaviour of natural sources and sinks

1. Top-down monitoring of atmospheric GHG concentrations and their inversion to estimate anthropogenic emission fluxes;
2. Bottom-up estimation of anthropogenic GHG sources and sinks arising from managed change in land use
3. Providing information to support national scale emission inventory verification activities
4. Tracking progress at global level of the cumulative effect of national mitigation efforts

Anticipated Contracts: 1

ITT to be released in Q3-Q4 2023 | 2-3 M€

Procurement mechanism: Open competitive tender

ITT: Regional Climate process study, field campaign over the Amazon

There are focal areas on the globe where there is greater modelling uncertainty about current and projected emissions of GHG, the Amazon is one of them. A large-scale field experiment focusing on the Amazon, has the potential to bring together a complete suite of observations and models in specific critical zones currently regarded as tipping points of terrestrial emissions.

The main objective of this research is to better understand the spatio-temporal variation in carbon stocks and fluxes (CO₂, CH₄) associated with different land cover types in the Amazon to

1. Inform the calibration of growth and recovery timescales in the parameterization of forest types in models
2. Improve the representation of degradation fires in models
3. Confirm emission factors associated with deforestation vs land management fires, and forest degradation,
4. Bridge the scales – using drone lidar and ground-based measurements to calibrate space-borne derived biomass estimates (e.g., BIOMASS) for the different forest types

Anticipated Contracts: 1

ITT to be released in Q3-Q4 2023 | 2M€

Procurement mechanism: Open competitive tender

ITT: GHG Emissions

The main objective of this project is to mature the emerging new tools for climate services supporting national governments and industry to implement rapid mitigation actions in response to the UNFCCC Paris Agreement and the Global Methane Pledge.

The project will focus on **research and development** needed to support the identification and characterisation of **GHG emission sources with high potential for rapid mitigation**, such as fugitive emissions of methane from coal mining, oil and gas extraction, and waste/landfills. This new and rapidly developing field exploits the availability of multi-scale observations from many recent and upcoming missions including Sentinel-5P, Sentinel-2, GHGSat, EnMAP, PRISMA, Landsat-8, WorldView-3, GOSAT-GW and MethaneSAT.

Activities:

1. To inform users and prioritise future developments: perform **systematic intercomparison** of existing capabilities for multi-tiered emission hotspot monitoring, making use of merged information from satellite instruments observing at different scales.
2. **Validate** and **improve** existing retrievals, and **test** promising new techniques as new satellite instruments become available.
3. Develop a framework for robust uncertainty estimation.
4. Advance and qualify automated/machine-learning approaches.
5. **Scale-up** demonstrated capabilities to global level to facilitate their implementation as new climate services.

Anticipated Contracts: 1

ITT to be released in Q2 2023 | 2-3M€ | 3 years
Procurement mechanism: Open competitive tender

THEME II – Cross-ECVs

- Support to climate policy needs: UNFCCC Paris Agreement (Clément Albergel, Simon Pinnock)
- **Cross-ECVs (Anna Maria Trofaier)**
- Tipping Points (Claire MacIntosh/ Sophie Hebden)

ITT: Open Call on cross-ECV

Objective:

Scientific studies that tackle questions that will advance water, energy and carbon cycle science, as well as our understanding of the Climate System as part of the Earth System and its complex interactions.

Proposals should therefore

- Maximise the exploitation of CCI ECVs
- Focus on specific topics that directly respond to identified scientific needs (e.g. WCRP Strategic Plan 2019-2028, GCOS updated implementation plan 2022, IPCC AR6)

Anticipated Contracts: 2-4

ITT to be released in Q3 2023 | 0.5-2 M€ per contract

Procurement mechanism: Open competitive tender

Example Activities:

- To address open scientific questions, (e.g. fluxes of energy, water, and carbon, studies of the coastal interface, etc.)
- To harness EO assessing different cycle components and strategies for closing observational gaps (e.g. consistency study on regional water cycle closure/budget).
- To develop a framework that may translate knowledge to regional/local scales and hence support adaptation strategies.

Relevant background documents:

1. GCOS updated implementation plan 2022
2. IPCC AR6
3. Closing the Water Cycle [see Dorigo et al. (2021) doi.org/10.1175/BAMS-D-19-0316.1]
4. Heat in the Earth System (Improving our knowledge of the Energy Cycle) [see von Schuckmann et al. (2020) doi.org/10.5194/essd-12-2013-2020]
5. Carbon Cycle [see Crisp et al. (2022) <https://doi.org/10.1029/2021RG000736>]

THEME II – Cross-ECVs

- Support to climate policy needs: UNFCCC Paris Agreement (Simon Pinnock Clément Albergel)
- Cross-ECVs (Anna Maria Trofaier)
- **Tipping Points (Claire MacIntosh/ Sophie Hebden)**

Use of EO for Tipping Points research

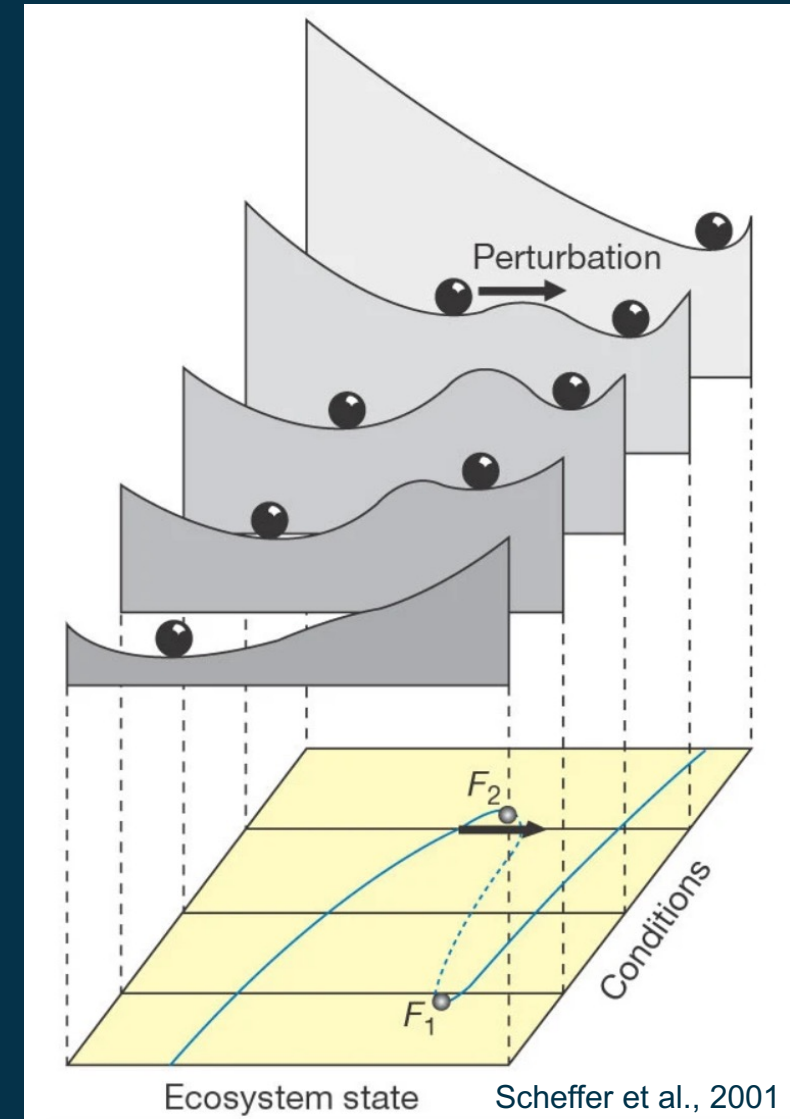
Tipping elements in Earth's climate system are an important source of ambiguity regarding climate prediction and global climate sensitivity, with implications for carbon budgets and adaptation. Narrowing these knowledge gaps is important to inform policy decisions.

With this ITT we aim to improve the observational evidence in support of IPCC science to address uncertainties relating to potential tipping points in the climate system, their interactions and impacts.

Anticipated Contracts: 2-4

ITT to be released in Q1 2024 | 0.5-2 M€ per contract

Procurement mechanism: Open competitive tender



Use of EO for Tipping Points research

The scope of this ITT will be:

- (a) Case studies that focus on particular tipping elements, developing and exploiting the available satellite remote sensing data records, testing, intercomparing and evaluating indicators for detecting abrupt shifts.
- (b) Comprehensive process studies using multiple satellite datasets and numerical simulations to assess status of tipping elements, mechanisms and impacts.
- (c) Sub-components of projects can include data assimilation of EO records into models, model development, evaluation and benchmarking, impact studies.
- (d) Not prescriptive on tipping element focus: there are opportunities for EO to make a significant contribution across cryosphere, biosphere and ocean science (see background documents).

Use of EO for Tipping Points research

Relevant background documents:

1. IPCC AR6 WG1, chapters 5, 8 and 9.
2. Brovkin, V., *et al.* (2022) [Past abrupt changes, tipping points and cascading impacts in the Earth system](#)
3. Wang, S., *et al.*, (2023) [Mechanisms and Impacts of Earth System Tipping Elements](#)
4. Forzieri, G., *et al.* (2022) [Emerging signals of declining forest resilience under climate change](#)
5. Swingedouw, D., *et al.* (2020) [Early Warning from Space for a Few Key Tipping Points in Physical, Biological, and Social-Ecological Systems](#)
6. Workshop report: [Climate Tipping Points: Earth Observations to Address a Key Climate Uncertainty](#)

THEME III – Linking observations and models

Objective:

- Strengthen the interface between satellite-based climate observations and modelling.
 - Maximise the exploitation of CCI ECVs in modelling and model-analysis to support climate science and services, e.g. IPCC, CMIP-7, CORDEX, climate reanalysis
 - Support priorities of the new WCRP Core Project on Earth System Modelling and Observations (ESMO)

Example Activities:

- R&D supporting tools and systems for model benchmarking (e.g. ESMValTool, obs4MIPs, observation simulators).
- Investigate the consistency of multiple ECVs in climate models and observations, and diagnose model and/or observational errors.
- Develop new ways to inform models with observations, particularly for high priority areas of model development, such as extreme events and high resolution modelling.
- Improve the use of observational uncertainties in climate modelling.
- Develop techniques for assimilation into long term reanalysis, or the use of observations for model initialization, and assess improvements in model skill.

Anticipated Contracts: 3-6
ITT to be released in Q2 2024 | 0.5–1.5M€
Procurement mechanism: Open competitive tender

THEME IV – Knowledge Exchange



Scope

- A Data Management Centre
 - Data curation, discoverability, access, metadata, quality control, interoperability, standards. To FAIR.
 - A Data Tool
 - Analysis and manipulation of ESA ECV datasets for scientific use particularly in a multi-ECV context.
 - A Storytelling Tool
 - Communicating role of satellite-derived data in climate science to the general public.
 - A Data Visualisation Innovation Lab
 - Identifying, cultivating and scaling-up knowledge exchange innovation.
 - Digital Media Presence & Management
 - Multiple channels. Analytics
 - Public Events
 - Interactive public installations. Culturally impactful.
 - Training and Education Resources
 - Building knowledge and skills across multiple types of stakeholders including general public.
 - Realisation of a Knowledge Exchange Strategy
 - To attain very high reach in support of Paris Agreement Art. 12.
- Project Management

Scope

- A Data Management Centre
 - Data curation, discoverability, access, metadata, quality control, interoperability, standards. To FAIR.
- A Data Tool
 - Analysis and manipulation of ESA ECV datasets for scientific use particularly in a multi-ECV context.
- A Storytelling Tool
 - Communicating role of satellite-derived data in climate science to the general public.
- A Data Visualisation Innovation Lab
 - Identifying, cultivating and scaling-up knowledge exchange innovation.
- Digital Media Presence & Management
 - Multiple channels. **Analytics**
- Public Events
 - Interactive public installations. Culturally impactful.
- Training and Education Resources
 - Building knowledge and skills across multiple types of stakeholders including general public.
- **Realisation of a Knowledge Exchange Strategy**
 - To attain very high reach in support of Paris

Project Management

| Crucial |

- # Multi- & cross- sector management.
- # Deep management expertise.
- # Certification & standards typically - PRINCE2 Practitioner, PMP ISO 21500, ISO 21502, ISO 21503
- # Tailored Agile | FFP

- | Crucial | # Specialist management by major cross-sector international communications organisation
- # Scaling-up via partnerships
- # Scaling-up via leading & supporting collaborations across sectors.

Knowledge Exchange Strategy 2023-2030 due to be released 2023 Q4 by ESA Climate Office.

Vision

To reach every European by the end of the decade with a climate science message.

Mission

To maximise awareness, access, use & understanding of climate data from space.

Anticipated Contracts: 1

ITT to be released in Q4 2023 | 7-8 M€ | 3 years

Procurement mechanism: Open competitive tender

Relevant background documents

- Website - climate.esa.int | CCI Open Data Portal – climate.esa.int/data | Climate from Space - cfs.climate.esa.int
- CCI KE @ CCI Colocation 2022 - climate.esa.int/media/documents/Session5_v1PF_FINAL_1.pdf
- CCI KE @ CCI Colocation 2021 - climate.esa.int/media/documents/2021-10-06_CCI_Colloc_CCI-KE_v2.pdf
- CCI animations - [www.esa.int/ESA_Multimedia/Keywords/System/Climate_Change_Initiative/\(result_type\)/videos](https://www.esa.int/ESA_Multimedia/Keywords/System/Climate_Change_Initiative/(result_type)/videos)
- Climate from Space application @ GitHub - github.com/ubilabs/esa-climate-from-space
- CCI Open Data Portal paper @ Data Science Journal - datascience.codata.org/articles/10.5334/dsj-2020-016
- CCI Toolbox @ GitHub - github.com/cci-tools
- CCI Data Ontology @ GitHub - github.com/cedadev/cci-vocabularies
- CCI Data Standards - climate.esa.int/media/documents/CCI_DataStandards_v2-3.pdf
- Tertiary education training kit - climate.esa.int/educate/climate-for-science-excellence/tertiary-training-kit/
- Journey of a Pixel @ LPS22 - climate.esa.int/JourneyOfAPixel

ESA MATCH – FINDING POTENTIAL PARTNERS

ESA's industry matchmaking tool

Supports the visibility of ESA-registered entities

Facilitates partnering/teaming between companies

Includes:

- **searchable space industry directory**
- **marketspace** for organisations to advertise offers and needs
- **ability to send messages** to other entities via the tool

Register to can make full use of all functionalities

→ <https://doing-business.sso.esa.int>



Summary of tender opportunities & timescales: 2023-24



Procurement	Type of procurement	Schedule	Number of contracts	Contract value [M€]
Extension of existing ECV contracts	Direct negotiation	Q1 2024	28	0.5-2
New ECV	Open competitive tender	Q2 2024	3	0.5-2
Global land carbon budget and its attribution to regional drivers	Open competitive tender	Q3-Q4 2023	1	3
GHG emissions	Open competitive tender	Q2 2023	1	3
Regional Climate process study, field campaign over the Amazon	Open competitive tender	Q3-Q4 2023	1	2
Cross-ECV	Open competitive tender	Q3 2023	2-4	0.5-2
Tipping Points	Open competitive tender	Q1 2024	2-4	0.5-2
Linking Observations and Models	Open competitive tender	Q2 2024	3-6	0.5-1.5
Knowledge Exchange	Open competitive tender	Q4 2023	1	7-8

Further opportunities for project working with new user communities to be announced in the course of 2023/24



Questions & Answers

Please raise you hand (virtually) OR type you questions in the chat