living planet symposium | BONN 23–27 May 2022

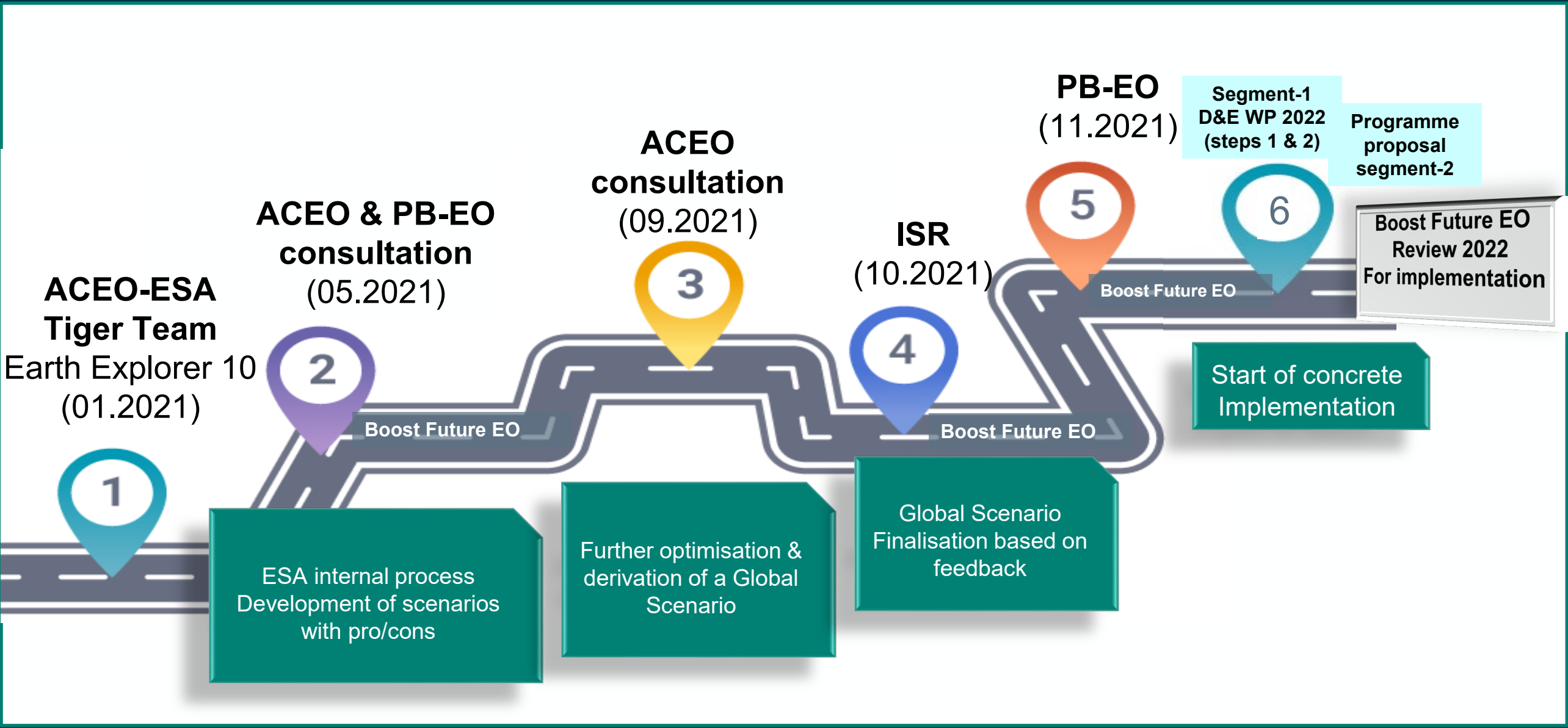
TAKING THE PULSE OF OUR PLANET FROM SPACE

EO Science Strategy Foundation Study Process and Strategy preparation milestones

Malcolm Davidson, Mark Drinkwater (ESA)

27/05/2022

Boost Future EO initiative - roadmap



EO science strategy documents

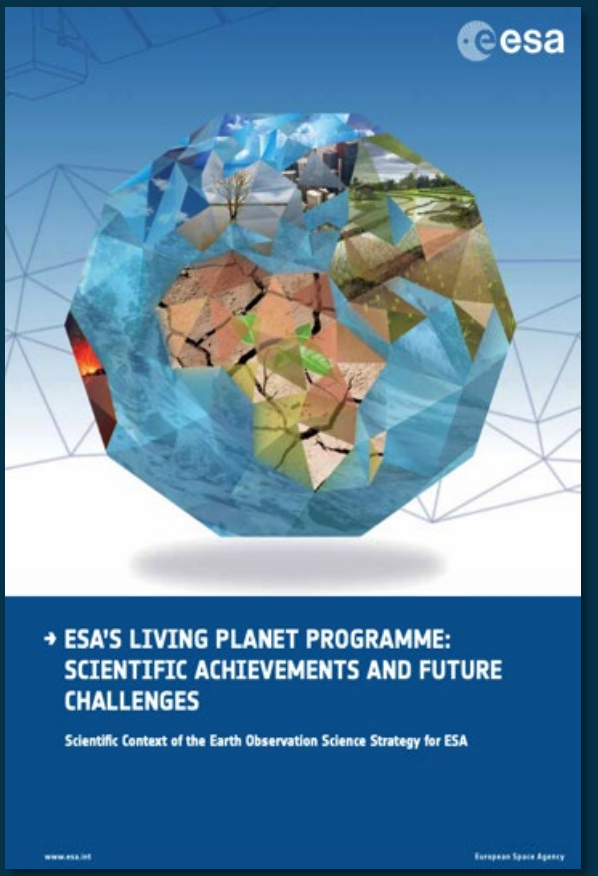
1998

ESAC

2006

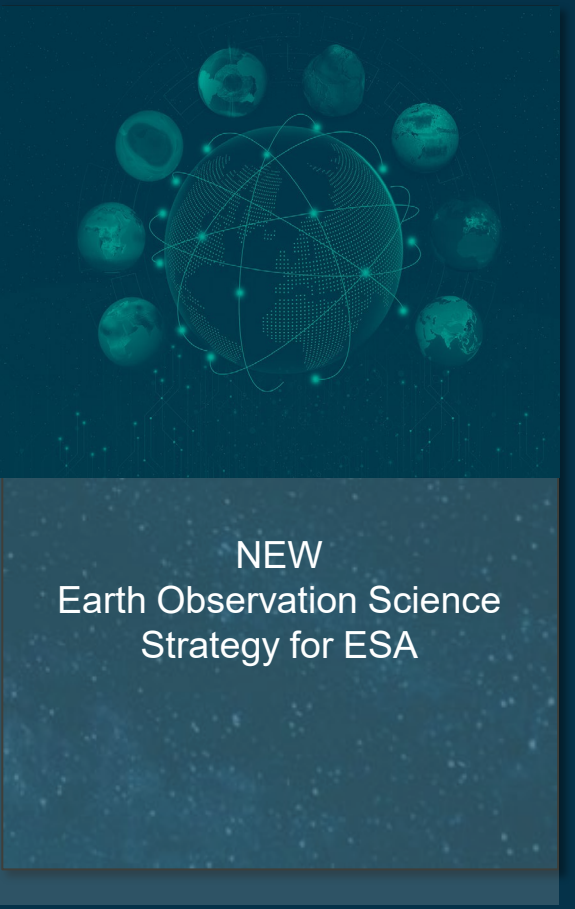
ESAC + writing team (15 persons)

2015



ESAC + writing team (13 persons)

2024



EO Foundation Studies
ACEO + panels/writing teams
(doc title / layout TBC)

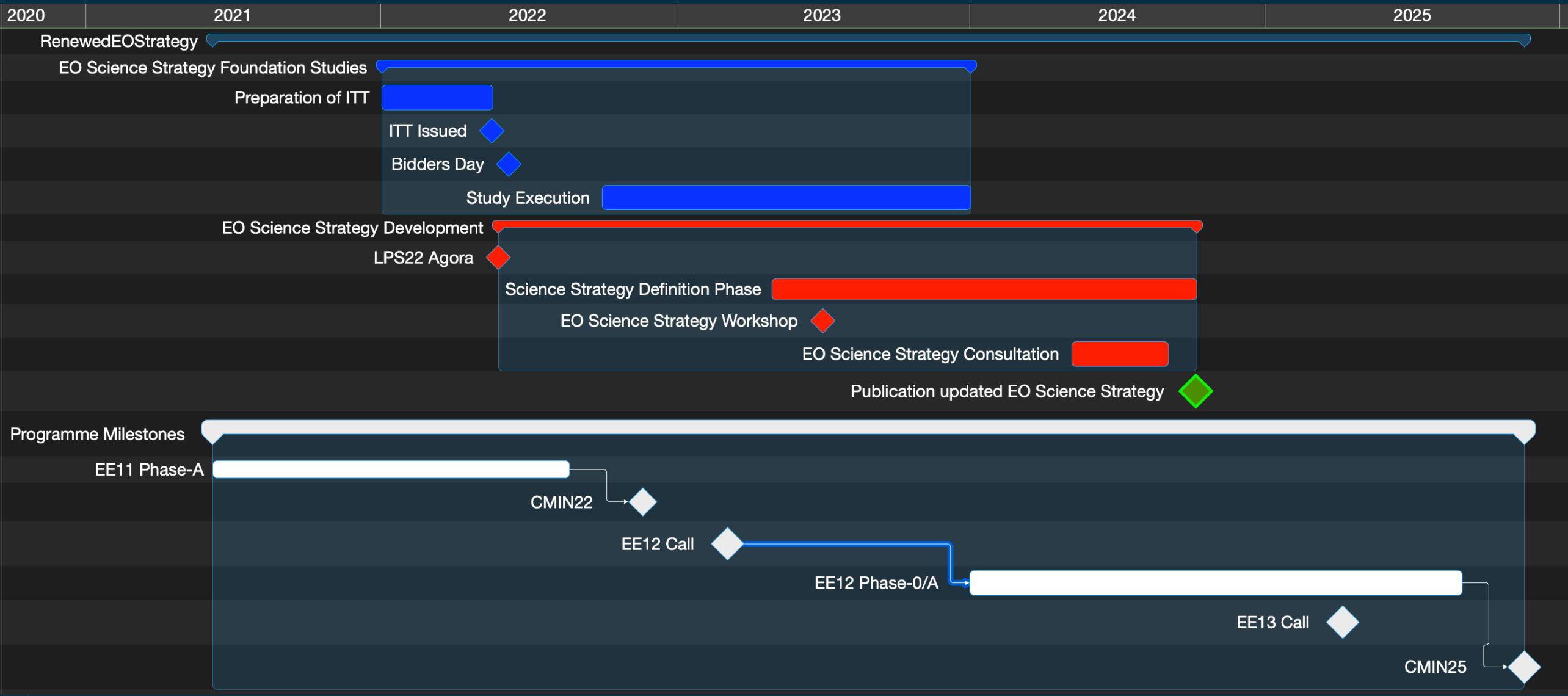
Key elements of Boost FutureEO

Boost Future EO is a global scenario with 5 steps:

Step 1: New approach to revision of LPC including integration of EO community through dedicated studies
Step 2: New EO Mission Ideas (NEOMI)/On-boarding activities
Step 3: Call for ideas followed by Phases 0 and maturation activities for 'commended' missions
Step 4: Selection of missions for Phase A and implementation of Phase A
Step 5: Selection of missions for implementation followed by Phase B/C/D/E1

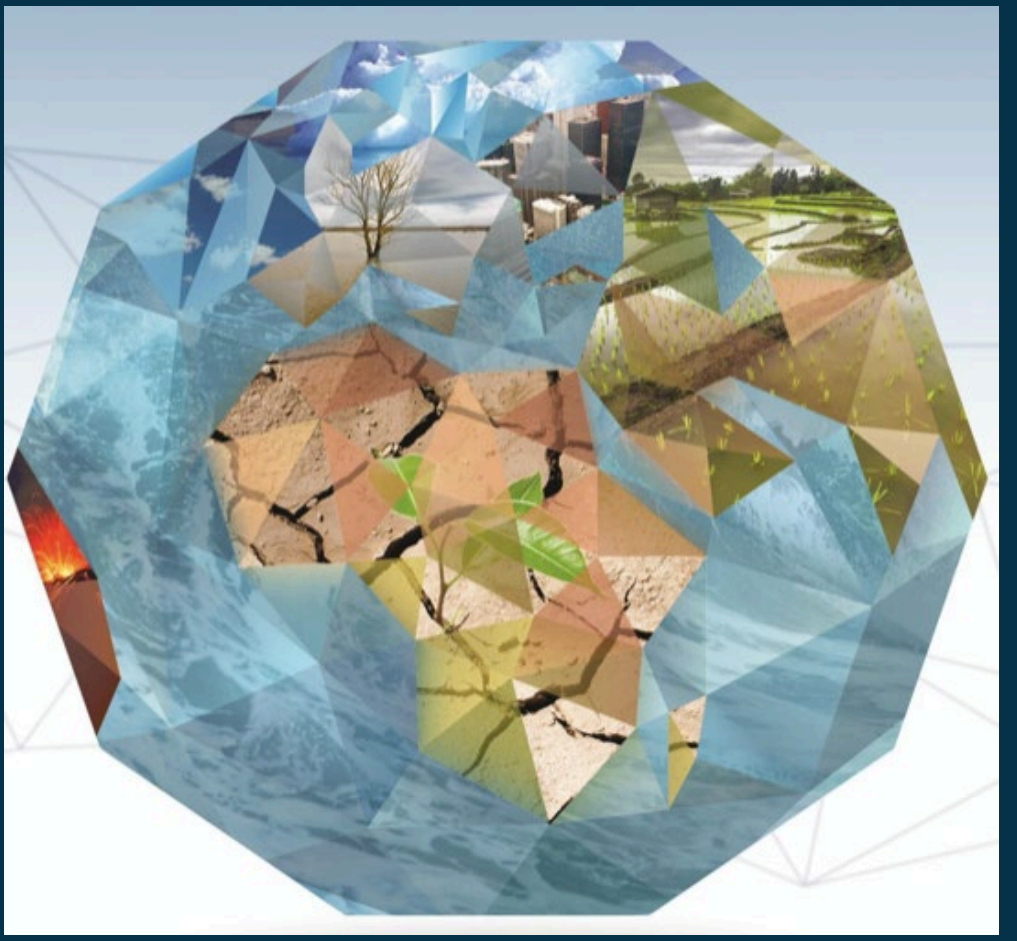
- This global scenario is **cyclical, synchronised with Councils at Ministerial level (e.g. programme funding events)**
- Aims to **strengthened interaction with the Science Community** (ACEO, UCM, LPS, on-boarding of a new generation of scientists)
- Provides a **long-term perspective** for the preparation of Earth Explorer missions (and beyond).
- Full steps will be fully deployed as from EE-13; scenario adapted for EE-11 and EE-12.

Timeline – Renewed EO Strategy and Programme Milestones



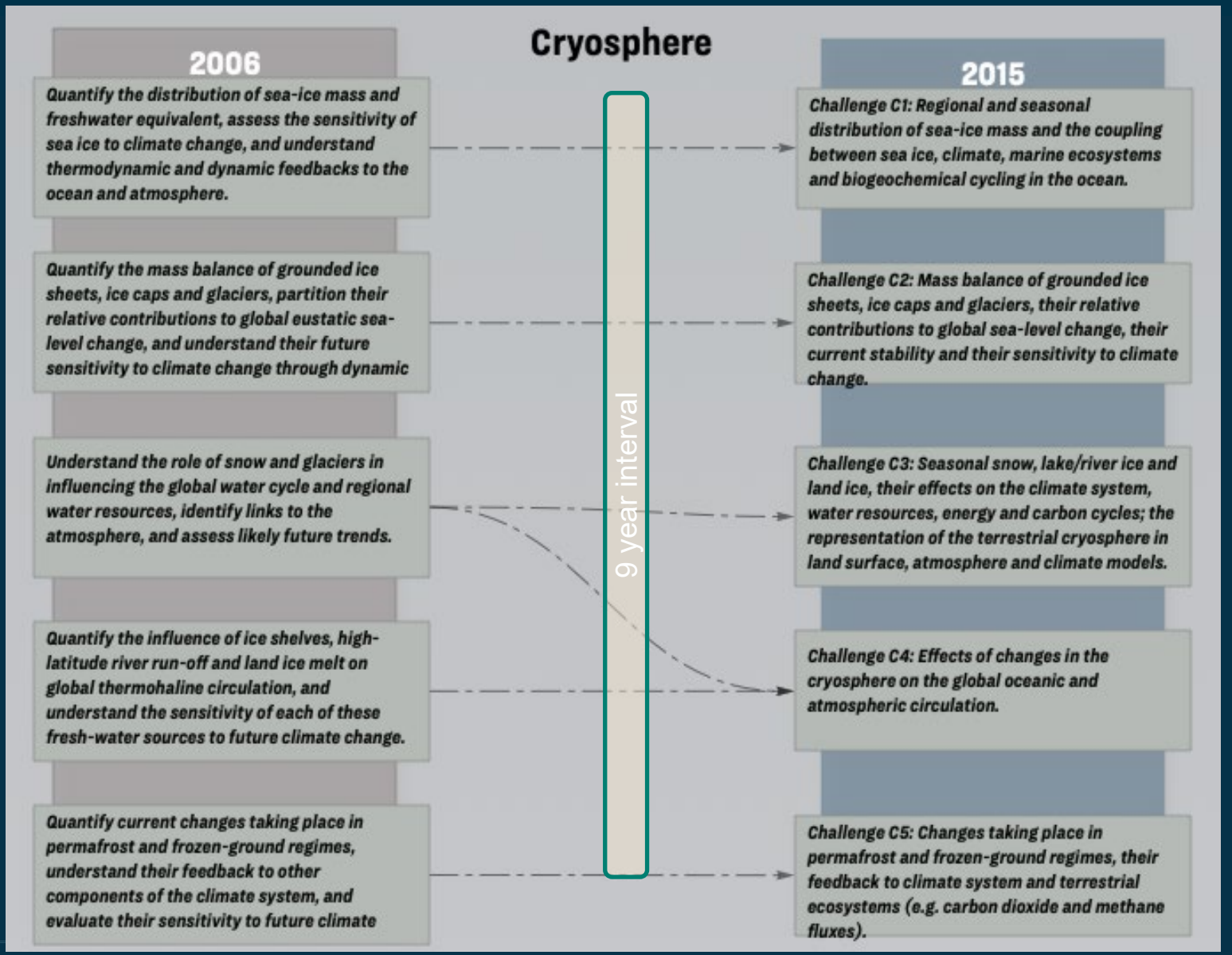
Step 1: Towards a renewed EO strategy

- FutureEO requires renewed EO science strategy document as basis for attractive and successful EE calls
- The implementation of BoostFutureEO will lead to:
  - More EE missions to select for Phase-A
  - Recommendations for up to 4 commended, but non-selected, candidate missions
  - More frequent and larger UCMs with ACEO recommendations for down-selection of candidates, and selection of missions for implementation
- Context for EO strategy document has changed since 2015, e.g. Copernicus missions, new NASA Decadal Survey, New Space and Commercial EO, new strategies elaborated by relevant national, international organisations including space agencies
- New approach to EO Science strategy includes “Foundation” studies as input to ACEO to provide the building blocks of a renewed EO science strategy.



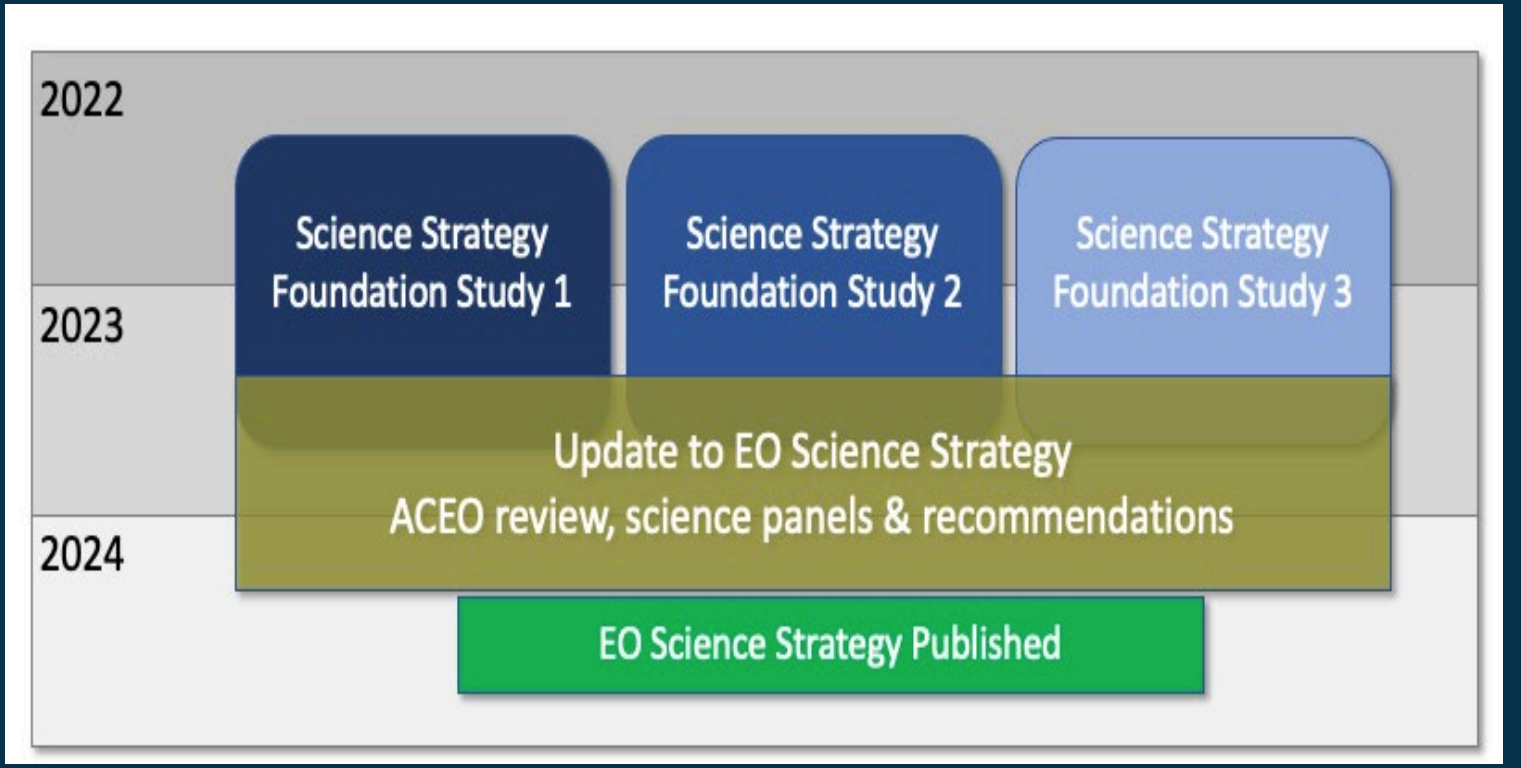
Some limitations of current Living Planet Challenges

- Formulation of challenges general and static with time
  - Global (e.g. no indication of geographic areas)
  - Formulated based processes e.g. "*Understand role of snow and glaciers in global water cycle*"
  - Not strongly linked to gaps in geophysical information
  - Domain specific and not cross-cutting
- Too many challenges
  - 25 challenges versus 10 selected Earth Explorers in 21years
  - Incompatible with 6 year cycle proposed by BoostFutureEO



Process to update the EO Science Strategy

- **New process: Science Strategy Foundation Studies**
  - Expand community involved in contributing to Future EO Strategy
  - Research and propose updated candidate science questions
  - Document study results
- **Definition Phase**
  - Review of output of Foundation Studies
  - Independent Science Panels
  - ACEO to chair panels, guide and support updated of EO Science Strategy



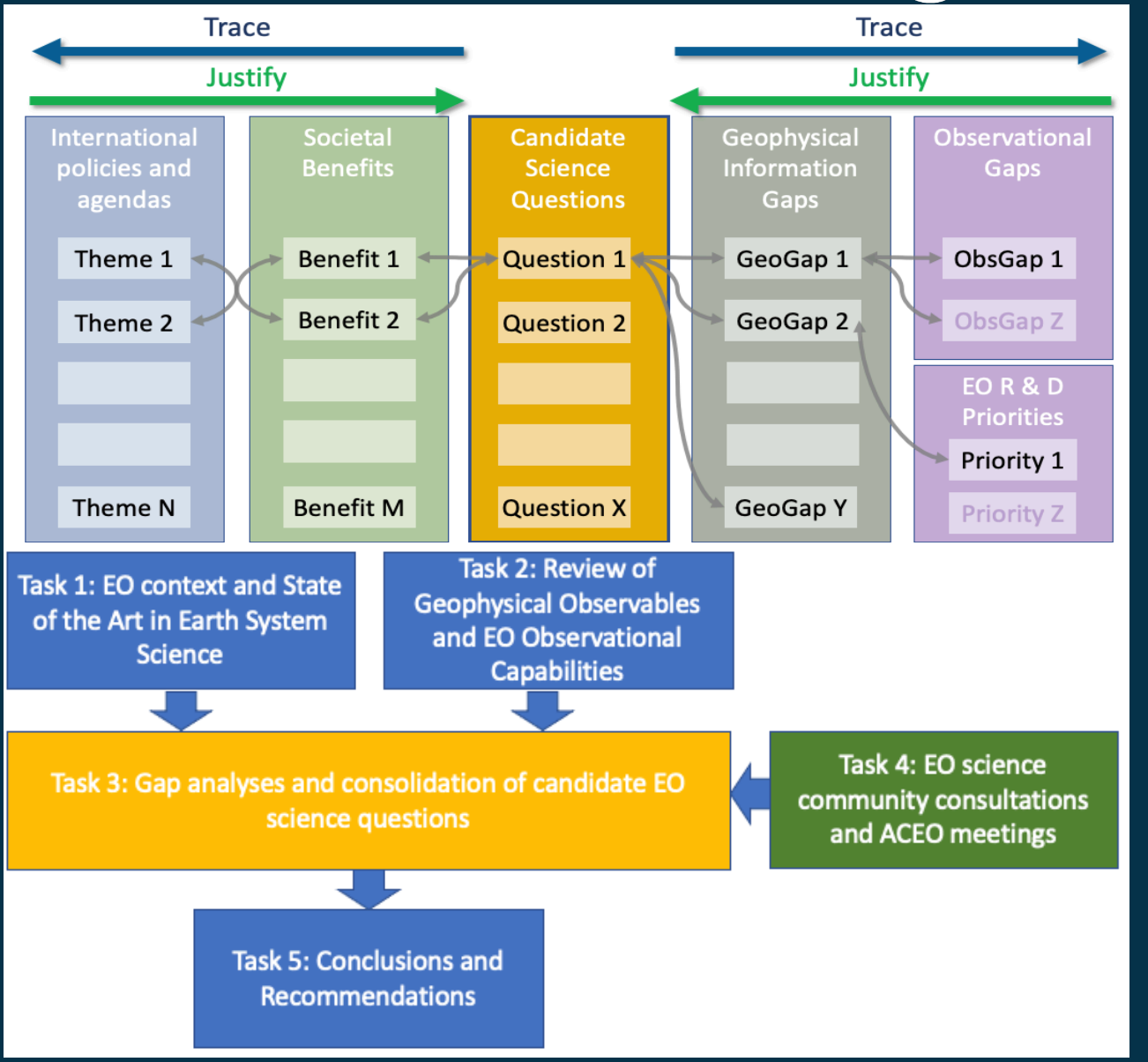
The main building blocks of the “foundation” studies ?

Study work centered 5 blocks (1 main – 4 traceability)

- Research and propose candidate cross-cutting Earth system science questions to orient the future EO science strategy (main block)
- Trace candidate questions to gaps in geophysical information from EO and future R & D priorities
- Trace and document links between candidate questions and societal benefits, international policies and agendas

Study to explicitly build on other initiatives and work

- Previous ESA EO Science Strategy (2015)
- 2021 Independent Science Review Report (I
- Earth Science and EO strategies elaborated by relevant national, international organisations including space agencies
- Information geophysical observables and observations from other missions
- State of the art and R & D trends in the use of EO data and addressing Earth Science Questions

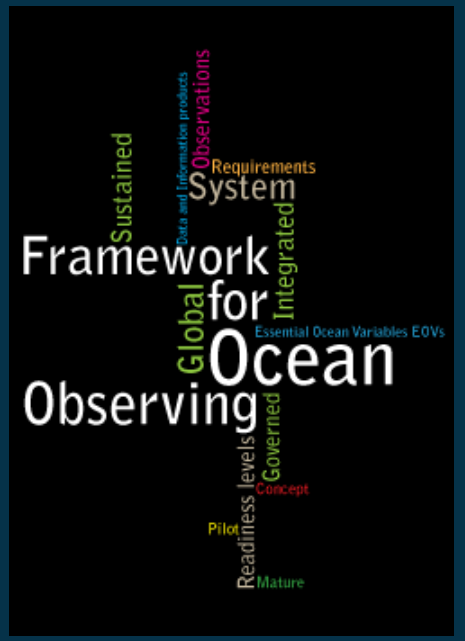


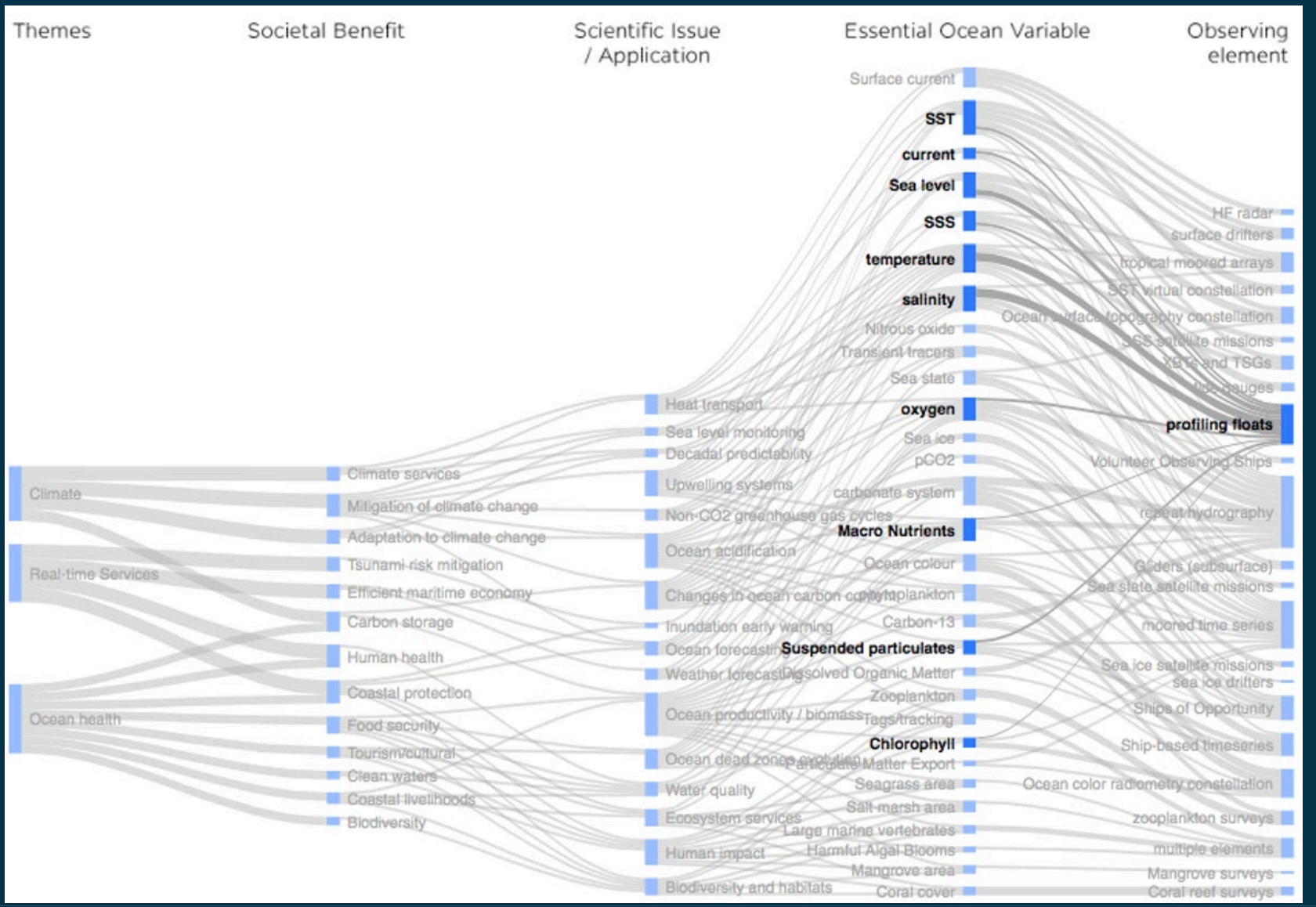
Establishing a link to EO observables – an example from the Global Ocean Observing System (GOOS)

Taken from presentation

Essential Ocean Variables: a common focus for Sustained Global Ocean Observing

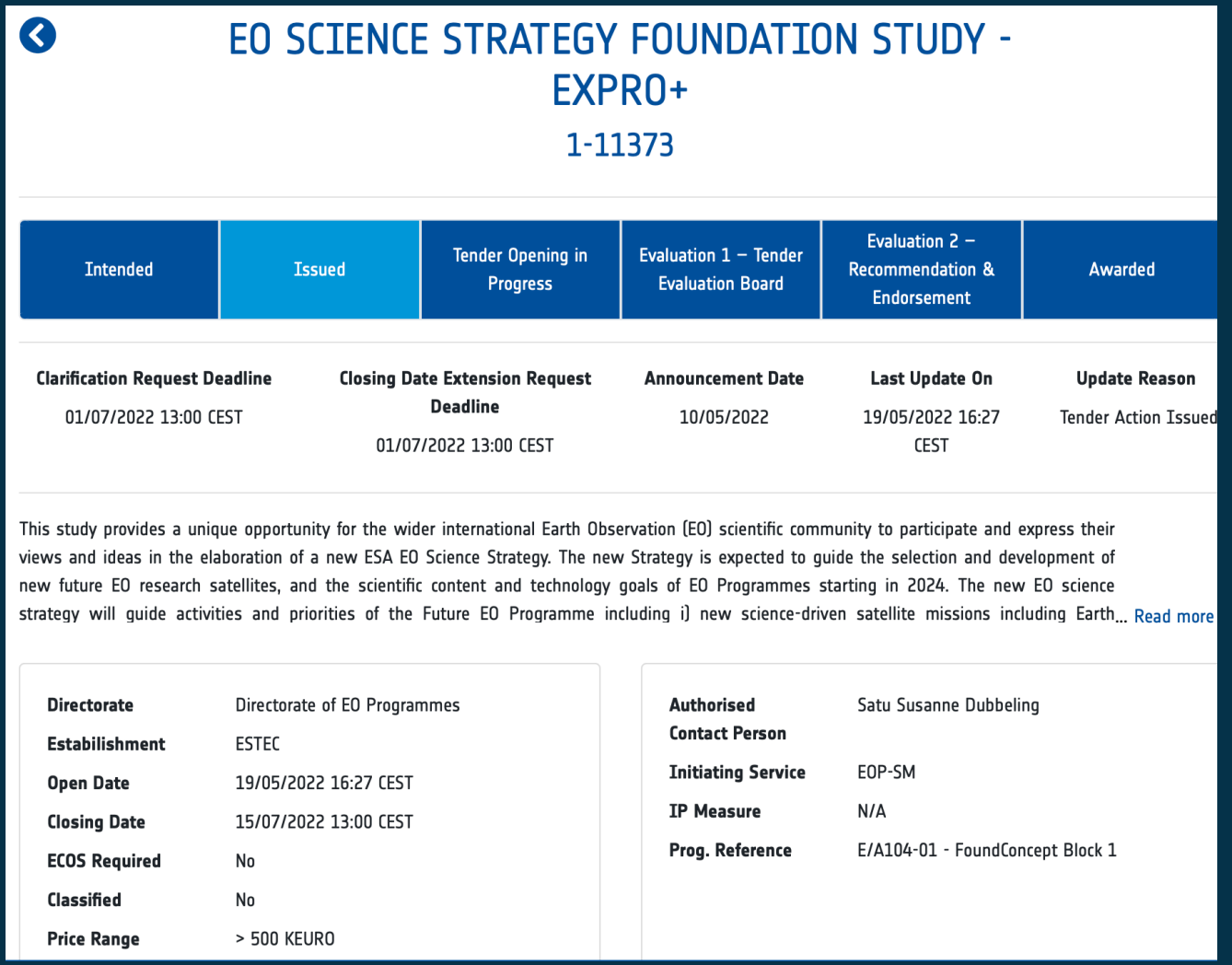
By Lindstrom et al. at EOV-Ocean Sciences Town Hall (2016)





EO Science Strategy Foundation Study ITT details

- ITT published on May 19th (last week)
- Proposal deadline July 15th
- Foundation studies fully funded for 15 months and open to science community for up to 3 parallel consortium bids
- Funding: 500keuro
- Bidders Day on June 9th 14:00-15:30 (for info. & questions). Register via https://bit.ly/3wwBAof or email to MSD.Meetings@esa.int
- Specific tender conditions:
  - All Earth science domains re-presented in the study team
  - Appointment of a science lead responsible for "*scientific integrity*"



EO SCIENCE STRATEGY FOUNDATION STUDY - EXPRO+

1-11373

Intended	Issued	Tender Opening in Progress	Evaluation 1 – Tender Evaluation Board	Evaluation 2 – Recommendation & Endorsement	Awarded

Clarification Request Deadline	Closing Date Extension Request Deadline	Announcement Date	Last Update On	Update Reason
01/07/2022 13:00 CEST	01/07/2022 13:00 CEST	10/05/2022	19/05/2022 16:27 CEST	Tender Action Issued

This study provides a unique opportunity for the wider international Earth Observation (EO) scientific community to participate and express their views and ideas in the elaboration of a new ESA EO Science Strategy. The new Strategy is expected to guide the selection and development of new future EO research satellites, and the scientific content and technology goals of EO Programmes starting in 2024. The new EO science strategy will guide activities and priorities of the Future EO Programme including i) new science-driven satellite missions including Earth... Read more

Directorate	Directorate of EO Programmes
Establishment	ESTEC
Open Date	19/05/2022 16:27 CEST
Closing Date	15/07/2022 13:00 CEST
ECOS Required	No
Classified	No
Price Range	> 500 KEURO

Authorised Contact Person	Satu Susanne Dubbeling
Initiating Service	EOP-SM
IP Measure	N/A
Prog. Reference	E/A104-01 - FoundConcept Block 1

https://esastar-publication-ext.sso.esa.int/ESATenderActions/details/42846

Bidder’s Day Registration – only a mouse click away