

EO for Ecosystem Conservation and Restoration. Open Information and Consultation Day for CSOs/NGOs.

Setting the scene.

Giuseppe Ottavianelli
Head of the Applications Section
Directorate of Earth Observation Programmes

14 October 2022

14 October 2022

09:30-09:50 **Setting the Scene** -*G. Ottavianelli*

09:50-10:00 **Space data & technology for CSOs** -*P. Hvistendahl*

10:00-10:30 **Biodiversity, Sustainable Water Management and Resilient cities** -*M. Paganini*

10:30-10:50 **Marine and Coastal Ecosystems** -*M.H. Rio*

10:50-11:10 **Atmospheric Composition Applications and GHG-related Monitoring** -*A. Delavois*

11:10-11:40 **Forestry Ecosystems and Management** -*F.M. Seifert*

11:40-12:00 **Agriculture and Soil** -*Z. Szantoi*

12:00-12:30 **Plans and Activities, Q&A, Closing Remarks** -*G. Ottavianelli, Audience, Panelists*

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



12 in heritage
15 in operation
41 in development
22 in preparation
(90 in total)

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

Timeline of Earth Observation Satellites:

- 2010:** ERS-1, ERS-2, Envisat, MetOp-A, Meteosat 10 (MSG), MetOp-B, Proba-1, GOCE, SMOS, CryoSat, Proba-V, Swarm.
- 2015:** Sentinel-1A, Sentinel-1B, Sentinel-2A, Sentinel-2B, Sentinel-3A, Sentinel-3B, Sentinel-5P, Sentinel-6 Michael Freilich, Sentinel-1C, Sentinel-2C, Sentinel-3C, Sentinel-1D, Sentinel-2D, Sentinel-6B, CHIME-A, CHIME-B, LSTM-A, LSTM-B, CRISTAL-A, CRISTAL-B, CIMR-A, CIMR-B, ROSE-L-A, ROSE-L-B, MTG-I1, MTG-I2, MTG-I3, Sentinel-4A MTG-S1, CO2M-A, CO2M-B, CO2M-C, Aeolus, EarthCARE, Biomass, HydroGNSS, CubeMAP, FLEX, ALTIUS, TRUTHS, FORUM, Harmony*, Earth Explorer-11.
- 2020:** MetOp-C, Sentinel-1E, Sentinel-2E, Sentinel-3E, Sentinel-6E, Sentinel-5I, Sentinel-4B MTG-S2, Sentinel-5B MetOp-SG-A2, MetOp-SG-B1, MetOp-SG-B2.
- 2025:** Arctic Weather Satellite, Sentinel-1F, Sentinel-2F, Sentinel-3F, Sentinel-6F, Sentinel-5J, Sentinel-4C MTG-S3, CO2M-D, CO2M-E, CO2M-F, MTG-I4, MTG-I5, MTG-I6, Sentinel-4D MTG-S4, CO2M-G, CO2M-H, CO2M-I, MTG-I7, MTG-I8, MTG-I9, Sentinel-4E MTG-S5, CO2M-J, CO2M-K, CO2M-L, MTG-I10, MTG-I11, MTG-I12, Sentinel-4F MTG-S6, CO2M-M, CO2M-N, CO2M-O, MTG-I13, MTG-I14, MTG-I15, Sentinel-4G MTG-S7, CO2M-P, CO2M-Q, CO2M-R, MTG-I16, MTG-I17, MTG-I18, Sentinel-4H MTG-S8, CO2M-S, CO2M-T, CO2M-U, MTG-I19, MTG-I20, MTG-I21, Sentinel-4I MTG-S9, CO2M-V, CO2M-W, CO2M-X, MTG-I22, MTG-I23, MTG-I24, Sentinel-4J MTG-S10, CO2M-Y, CO2M-Z, CO2M-AA, MTG-I25, MTG-I26, MTG-I27, Sentinel-4K MTG-S11, CO2M-AB, CO2M-AC, CO2M-AD, MTG-I28, MTG-I29, MTG-I30, Sentinel-4L MTG-S12, CO2M-AE, CO2M-AF, CO2M-AG, MTG-I31, MTG-I32, MTG-I33, Sentinel-4M MTG-S13, CO2M-AH, CO2M-AI, CO2M-AJ, MTG-I34, MTG-I35, MTG-I36, Sentinel-4N MTG-S14, CO2M-AL, CO2M-AM, CO2M-AN, MTG-I37, MTG-I38, MTG-I39, Sentinel-4O MTG-S15, CO2M-AP, CO2M-AQ, CO2M-AR, MTG-I40, MTG-I41, MTG-I42, Sentinel-4P MTG-S16, CO2M-AS, CO2M-AT, CO2M-AU, MTG-I43, MTG-I44, MTG-I45, Sentinel-4Q MTG-S17, CO2M-AX, CO2M-AY, CO2M-AZ, MTG-I46, MTG-I47, MTG-I48, Sentinel-4R MTG-S18, CO2M-BA, CO2M-BB, CO2M-BC, MTG-I49, MTG-I50, MTG-I51, Sentinel-4S MTG-S19, CO2M-BD, CO2M-BE, CO2M-BF, MTG-I52, MTG-I53, MTG-I54, Sentinel-4T MTG-S20, CO2M-BG, CO2M-BH, CO2M-BI, MTG-I55, MTG-I56, MTG-I57, Sentinel-4U MTG-S21, CO2M-BJ, CO2M-BK, CO2M-BL, MTG-I58, MTG-I59, MTG-I60, Sentinel-4V MTG-S22, CO2M-BM, CO2M-BN, CO2M-BO, MTG-I61, MTG-I62, MTG-I63, Sentinel-4W MTG-S23, CO2M-BP, CO2M-BQ, CO2M-BR, MTG-I64, MTG-I65, MTG-I66, Sentinel-4X MTG-S24, CO2M-BS, CO2M-BT, CO2M-BU, MTG-I67, MTG-I68, MTG-I69, Sentinel-4Y MTG-S25, CO2M-BV, CO2M-BW, CO2M-BX, MTG-I70, MTG-I71, MTG-I72, Sentinel-4Z MTG-S26, CO2M-BY, CO2M-BZ, CO2M-CA, MTG-I73, MTG-I74, MTG-I75, Sentinel-4AA MTG-S27, CO2M-CC, CO2M-CD, CO2M-CE, MTG-I76, MTG-I77, MTG-I78, Sentinel-4AB MTG-S28, CO2M-CF, CO2M-CG, CO2M-CH, 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MTG-I194, MTG-I195, Sentinel-4BO MTG-S67, CO2M-GR, CO2M-GS, CO2M-GT, MTG-I196, MTG-I197, MTG-I198, Sentinel-4BP MTG-S68, CO2M-GU, CO2M-GV, CO2M-GW, MTG-I199, MTG-I200, MTG-I201, Sentinel-4BQ MTG-S69, CO2M-GX, CO2M-GY, CO2M-GZ, MTG-I202, MTG-I203, MTG-I204, Sentinel-4BR MTG-S70, CO2M-HA, CO2M-HB, CO2M-HC, MTG-I205, MTG-I206, MTG-I207, Sentinel-4BS MTG-S71, CO2M-HD, CO2M-HE, CO2M-HF, MTG-I208, MTG-I209, MTG-I210, Sentinel-4BT MTG-S72, CO2M-HG, CO2M-HH, CO2M-HI, MTG-I211, MTG-I212, MTG-I213, Sentinel-4BU MTG-S73, CO2M-HJ, CO2M-HK, CO2M-HL, MTG-I214, MTG-I215, MTG-I216, Sentinel-4BV MTG-S74, CO2M-HM, CO2M-HN, CO2M-HO, MTG-I217, MTG-I218, MTG-I219, Sentinel-4BW MTG-S75, CO2M-HP, CO2M-HQ, CO2M-HR, MTG-I220, MTG-I221, MTG-I222, Sentinel-4BX MTG-S76, CO2M-HS, CO2M-HT, CO2M-HU, MTG-I223, MTG-I224, MTG-I225, Sentinel-4BY MTG-S77, CO2M-HV, CO2M-HW,

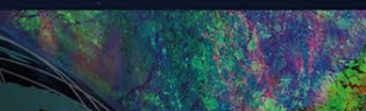
Earth Explorers



Copernicus Sentinels (First Generation)

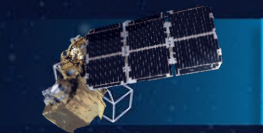


300 TB
of EO data
disseminated
daily to
society



sentinel-1

→ RADAR VISION



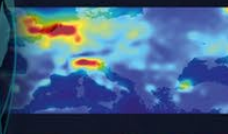
sentinel-2

→ COLOUR VISION



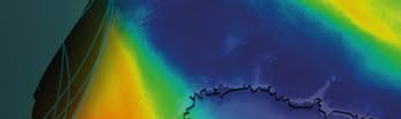
sentinel-3

→ A BIGGER PICTURE



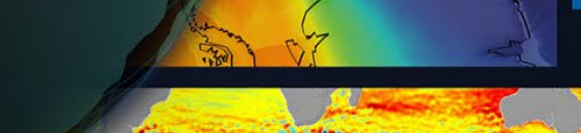
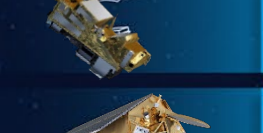
sentinel-4

→ EUROPEAN AIR MONITORING



sentinel-5p | sentinel-5

→ GLOBAL AIR MONITORING



sentinel-6

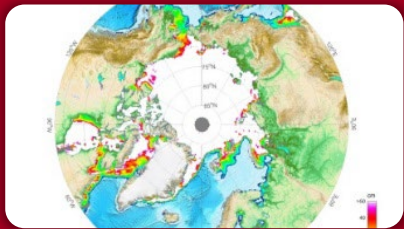
→ CHARTING SEA LEVEL



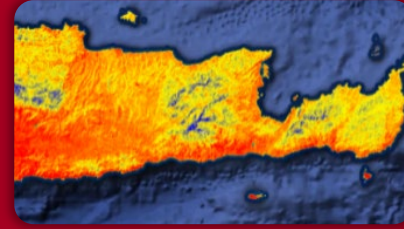
CRISTAL – Polar Ice & Snow Topography



CIMR – Passive Microwave Radiometer



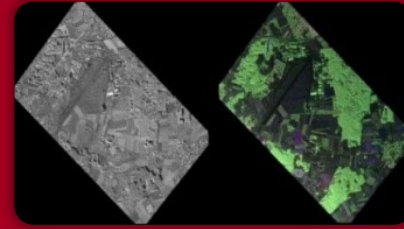
LST – Land Surface Temperature Mission



CHIME – Hyperspectral Imaging Mission



ROSE-L – L-band SAR Mission



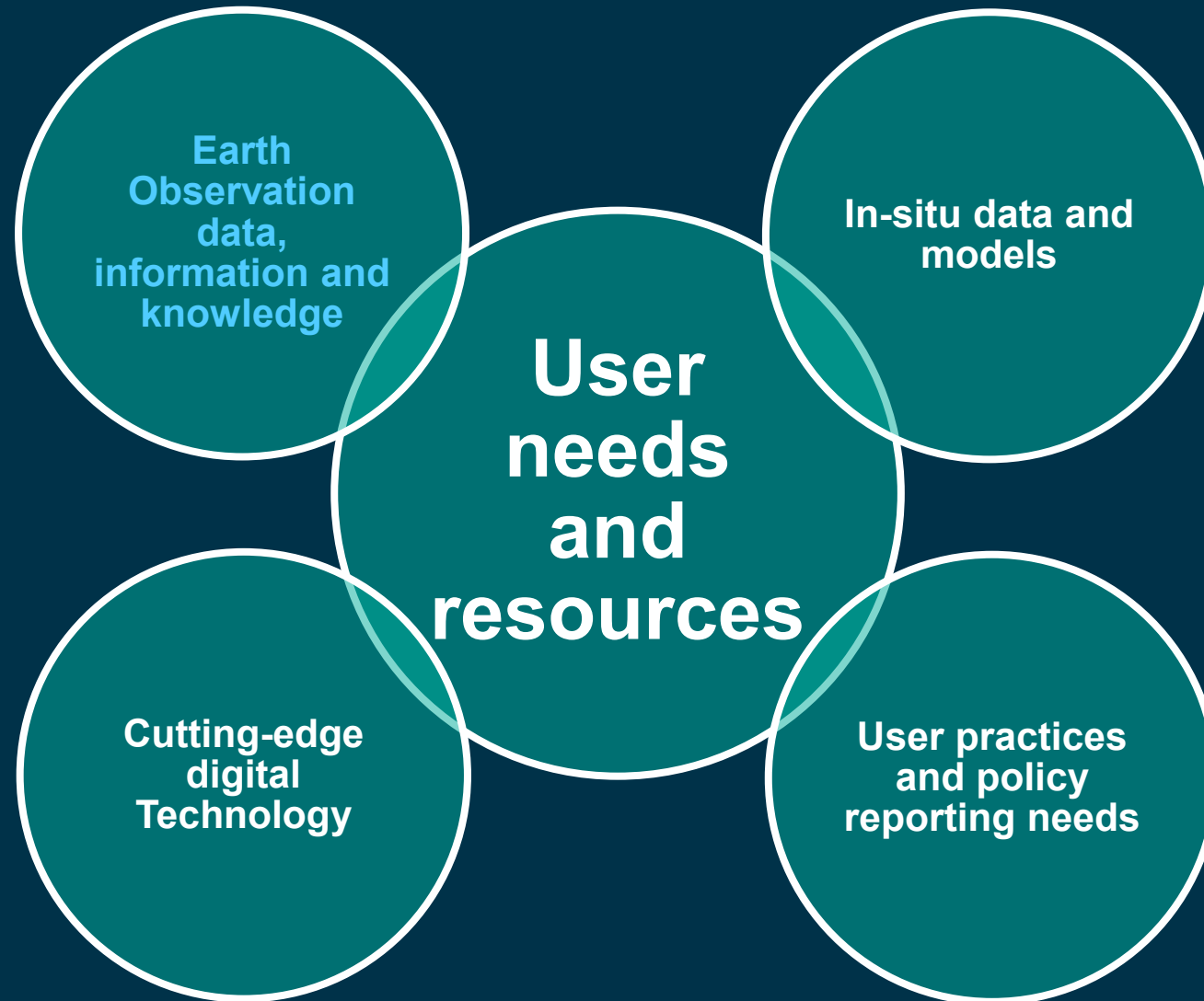
Vegetation & Ground Motion & Moisture

**Pioneer innovative & reliable
Earth Observation solutions
for the public benefit,
in support to international policies
on the environment and
sustainable development**

The active involvement of stakeholders and end-users

throughout the co-design, development and
validation phases,
to facilitate the integration of the developed
innovative solutions into their operational systems
and practices.

An EO-integrated approach



Project characterization





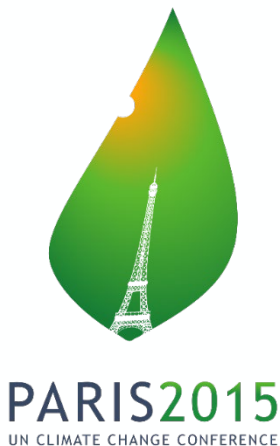
Major international agreements/frameworks



UN SDG for 2030



Paris Agreement on Climate Change



The Sendai Framework for Disaster Risk Reduction 2030

7 GLOBAL TARGETS	Reduce	Increase
	Mortality/ global population 2020-2030 Average << 2005-2015 Average	Countries with national & local DRR strategies 2020 Value >> 2015 Value
	Affected people/ global population 2020-2030 Average << 2005-2015 Average	International cooperation to developing countries 2030 Value >> 2015 Value
	Economic loss/ global GDP 2030 Ratio << 2015 Ratio	Availability and access to multi-hazard early warning systems & disaster risk information and assessments 2030 Values >> 2015 Values
	Damage to critical infrastructure & disruption of basic services 2030 Values << 2015 Values	



the process

Drivers

Environmental Agenda, Sustainable Development, Africa 2063



THE GLOBAL GOALS
For Sustainable Development



Road map & project
definition

Feedback to
policy

Direct Engagement of Stakeholders and End-Users



Users' needs

integration of
developed
solutions

Excellence in EO innovation with Industry and Academia



- Building on Science element
- Multi-mission & inter-disciplinary

Leveraging on cutting-edge ICT
for rapid development &
amplification of users



UN Decade on Ecosystem Restoration

New EU Regulation on Nature Restoration





EN

☰

PREVENTING, HALTING AND REVERSING THE DEGRADATION OF ECOSYSTEMS WORLDWIDE.


The UN Decade on Ecosystem Restoration is a global rallying cry to heal our planet. What will you restore?

LEARN TO RESTORE

NINE MORE YEARS TO RESTORE THE PLANET

There has never been a more urgent need to revive damaged ecosystems than now.

Ecosystems support all life on Earth. The healthier our ecosystems are, the healthier the planet - and its people. The UN Decade on Ecosystem Restoration aims to prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean. It can help to end poverty, combat climate change and prevent a mass extinction. It will only succeed if everyone plays a part.



EN English

Search

Environment

Home > All Environment Publications > Nature restoration law

PROPOSAL FOR A REGULATION

Proposal for a Nature Restoration Law

Details


Publication date

22 June 2022


Author

Directorate-General for Environment

Files

 Proposal for a Regulation on nature restoration
English (1.33 MB - PDF)

Download

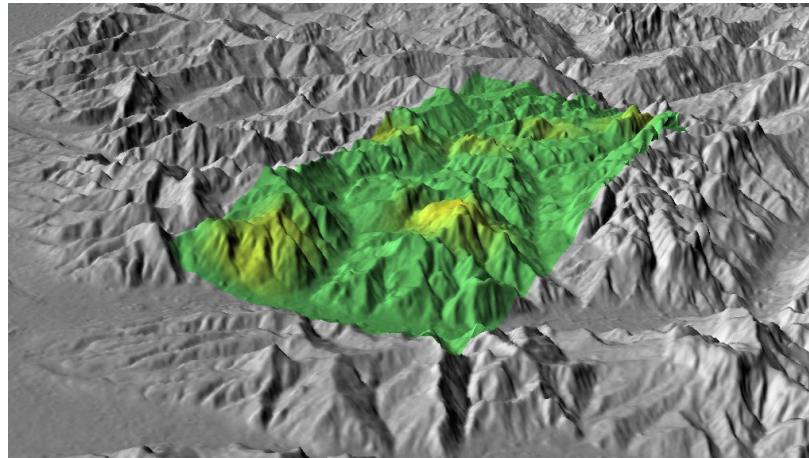
 Annexes to the proposal for a Regulation on nature restoration
English (974.42 KB - PDF)

Download



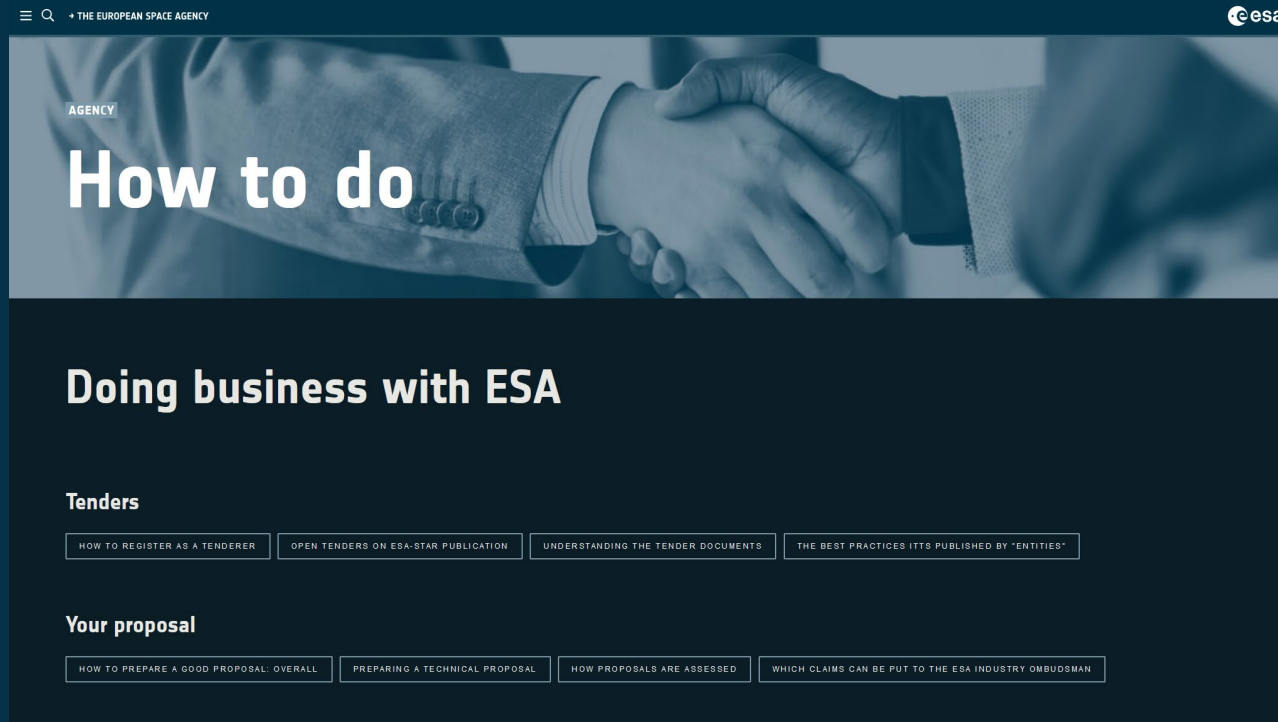
The great value of Earth Observation

- Science-based and traceable
- Quantitative analytics with multi-data integration, to achieve Reproduceable Actionable Information and Knowledge
- Open approach with free data
- Global to local perspective and Across decades to rapid actions
- Multi-ecosystems approach and Multi-stressors/drivers monitoring
- Cross-boundary



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https://www.esa.int/About_Us/Business_with_ESA/esa-star_open_for_business

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You submitting **your ideas**, simplified proposal template.

The Future EO Permanently Open Call for Proposals tender package (ITT 1- 10468) can be downloaded on ESA-Star at the following link:

<https://esastar-publication-ext.sso.esa.int/ESATenderActions/details/6872>

- Open Call announcement :

<https://eo4society.esa.int/2021/12/01/open-call-for-proposals-2020-future-eo-1-programme/>

- Guidance to Open Call :

<https://eo4society.esa.int/open-call-innovation/>
(Explore Tab)

- Examples of projects already funded under the programme: <https://eo4society.esa.int/category/special-initiatives/permanently-open-call/>

Next submission deadline will be 28th of October.

Title of the proposal followed by (Activity Line X : 'Title') - identify which of the 6 categories listed in point 6 of the Cover letter above.

PART 1 TECHNICAL PROPOSAL

1.1 PROPOSED DEVELOPMENT

[Provide a summary description of what is to be developed]

1.2 SCIENTIFIC OR TECHNICAL OBJECTIVES:

[Outline the main objective(s) to be achieved and the end goal(s) being targeted. Indicate how the achievement of those objectives will be demonstrated.]

1.3 REQUIREMENTS TO BE ADDRESSED BY THE PROPOSED DEVELOPMENT:

[Identify and discuss the technical requirements to be addressed in order to achieve the specific Scientific/Technical Objectives as outlined in section 1.2 above. Where relevant this should also describe target performance levels to be achieved (eg update frequency, latency, processing times etc). When appropriate the requirements shall be associated to a quantitative value. These quantitative values shall be labelled as committing ones or as being to be considered as a goal. The verification approach for each requirement shall be identified. Provide a justification/ reasoning for such requirements]

1.4 INNOVATIVE ELEMENTS WITHIN THE PROPOSED DEVELOPMENT:

[Identify what is the nature of the innovative content of the proposal and explain how this represents an improvement on the current state of the art in the domain being targeted.]

Describe the expected impact and benefit arising from the proposed development due to the innovative content]

1.5 SCIENTIFIC OR ENGINEERING DEVELOPMENT APPROACH

1.5.1 Scientific/Technical Steps

[Present and discuss in detail the scientific/technical steps to achieve the objectives and the committing requirements outlined under sections 1.1 to 1.4. This shall include an identification of the main deliverable items to be generated. Note: the steps shall be consistent with those reflected in the Work Logic Diagram in section 1.7.1]

1.5.2 Implementation aspects

[Present a first iteration of the concept and the baseline design/approach. The baseline design covers for instance the system architecture and a functional decomposition presented in block diagrams, providing also internal and external interfaces. Discuss the current state of the art and the trade-offs that need to be taken into account and show the overall logic of the work being proposed including any key review and decision points. Discuss how the work performed will be validated (e.g. test plan and test approach) and how achievement of the objectives will be proven/ demonstrated]

1.6 SCIENTIFIC/TECHNICAL FEASIBILITY, PROBLEM AREAS AND DEVELOPMENT RISK:

[Provide evidence as to the feasibility of meeting the objectives and requirements identified in sections 1.2 to 1.4. Identify, present and discuss the main technical problem areas and key development risks that may be expected during the execution of the activity in order to address the requirements and target performance]



📅 28 NOVEMBER - 01 DECEMBER 2022 📍 VIRTUAL ONLINE EVENT

2022 WORKSHOP ON EARTH OBSERVATION FOR ECOSYSTEM ACCOUNTING (E04EA 2022)

The deadline for submission of abstracts has been extended to 14th October 2022!

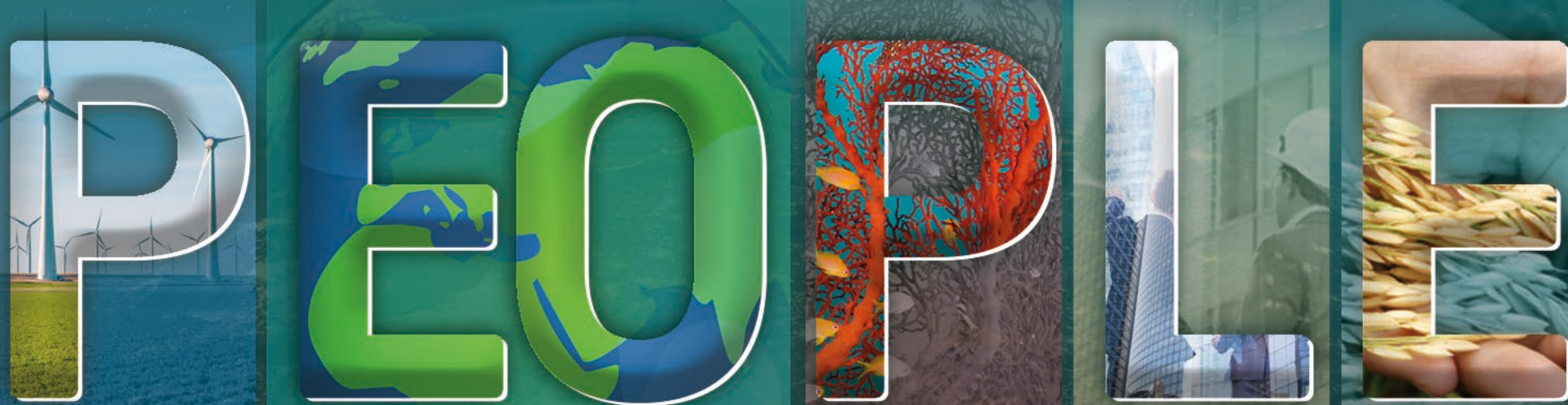
REGISTER

SUBMIT YOUR ABSTRACT



<https://eo4ea-2022.esa.int>

Pioneer EO apPLications for the Environment



Future R&D projects on
Ecosystem Conservation & Restoration

YOUR NEEDS AND RECOMMENDATION

<https://esa-survey.limequery.org/762421>

Your CSO / NGO is kindly invited to
complete the questionnaire by
4th November 2022

MAKE SPACE FOR EVERYONE