PRISMA 4 AFRICA

Validation data collection

Webinar day#1

18.11.2024

→ THE EUROPEAN SPACE AGENCY

PRISMA 4 Africa
Objectives

FutureEO-1 Programme (2020-2022)

EO Science for Society

Development of **innovative EO solutions** that transform satellite measurements into **information products** for improved scientific knowledge and evidence-based decisions, **maximising the impact and benefits for society**

EO AFRICA EXPLORERS
(Earth Observation – African Framework for Research Innovation, Communities and Applications)

R&D Project activities to facilitate the sustainable **adoption of EO and related space technology in Africa**. The initiative will be driven by **African research challenges and user needs.**

PRISMA 4 AFRICA

- Identification and characterization of **products** related to **food security** suitable to **African Users needs**

- Development and validation of **analysis techniques** (*developed on open source codes*) exploiting satellite data as **hyperspectral PRISMA** and/or **TIR ECOSTRESS data** to support above mentioned products

- Demonstration, assessment and outreach among *in primis* the involved **African User communities** of the results of the project to improve their **awareness of the use of satellite data in operational contexts**

Goal

Development and validation of analysis techniques (developed as open-source) exploiting satellite data as **hyperspectral** and **thermal** data for **food security**.

desis
ecostress zimbabwe
maize vegetation
water food-security
health africa enmap
gabon thermal
mozambique sugarcane
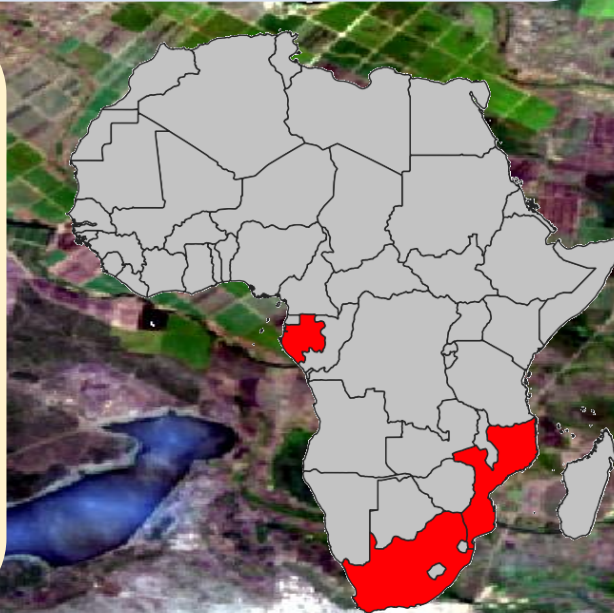hyperspectral
crops user-needs
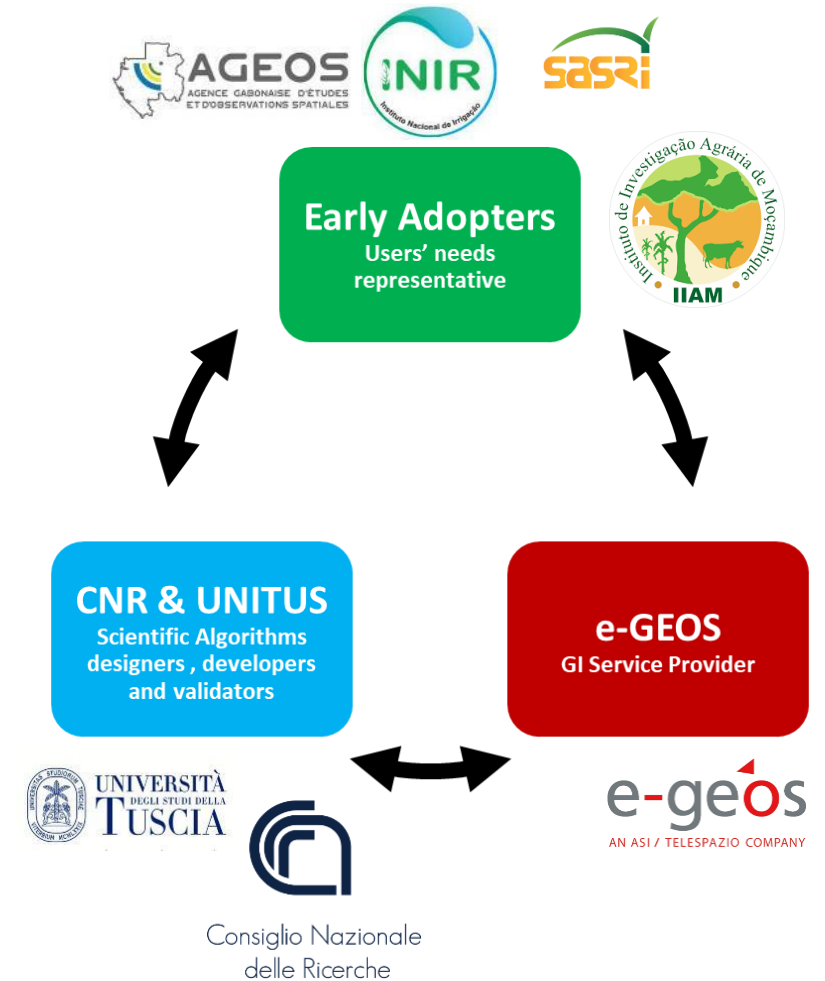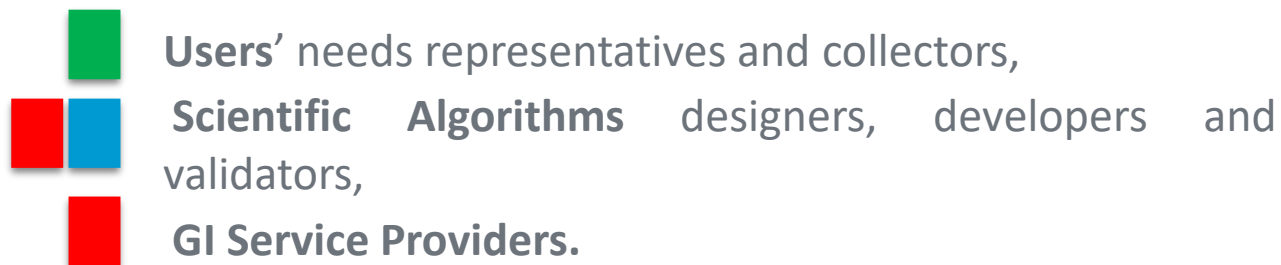prisma

Our Team and African Early Adopters
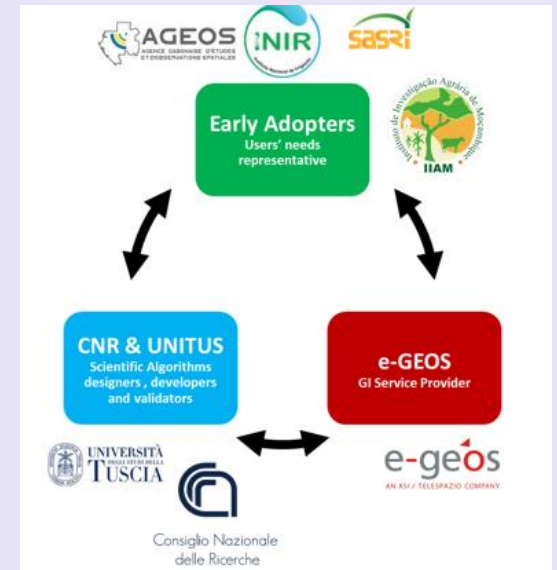
Hyperspectral data

Thermal data
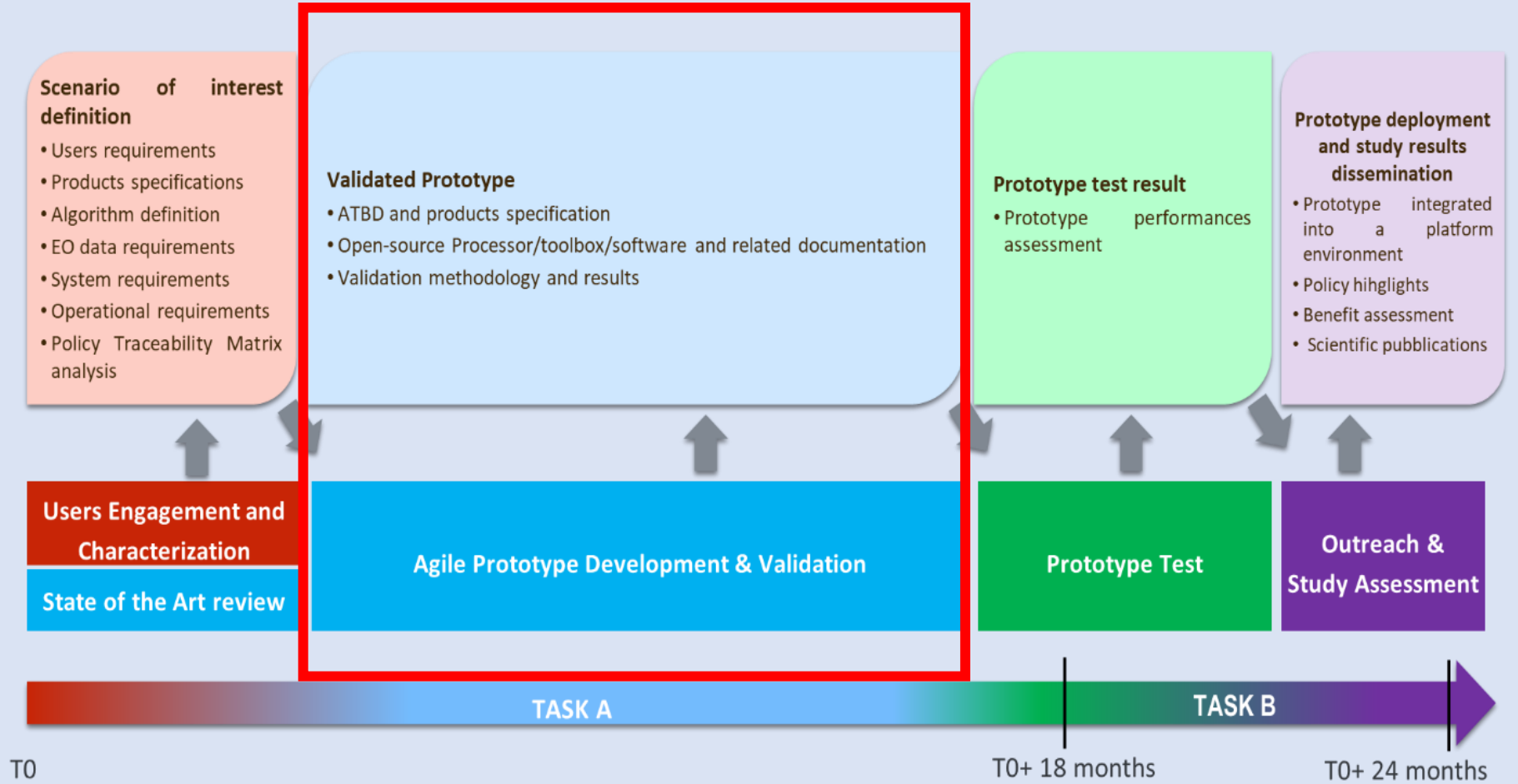
Presentation of the Consortium

- Need to cover all the activities identified within the Statement of Work with teams that have **proven expertise** and **background experience** in the exploitation of hyperspectral data (especially PRISMA data) for vegetation monitoring and prototypes development;

- Need to cover the prototype validation with teams that have already performed such activities and that can take advantage of validation datasets and ground-truths data;

- Need to cover, within the team, actors capable and willing to support the ESA FutureEO-1 Programme through the development of **innovative EO solutions** that transform satellite measurements into information products.

- **Users'** needs representatives and collectors,
- **Scientific Algorithms** designers, developers and validators,
- **GI Service Providers.**

PRISMA 4 AFRICA - Status

- **Interactions with African Early Adopters:** workshops, online meetings, questionnaire, online training

- **Algorithm Design and Software Development:** hybrid approach for PROSAIL inversion, vegetation indices, PWR, ET retrieved from PRISMA when needed

- **Validation:** currently performed on backup test sites (e.g., Iran) but planned to be performed on African sites after training for data collection
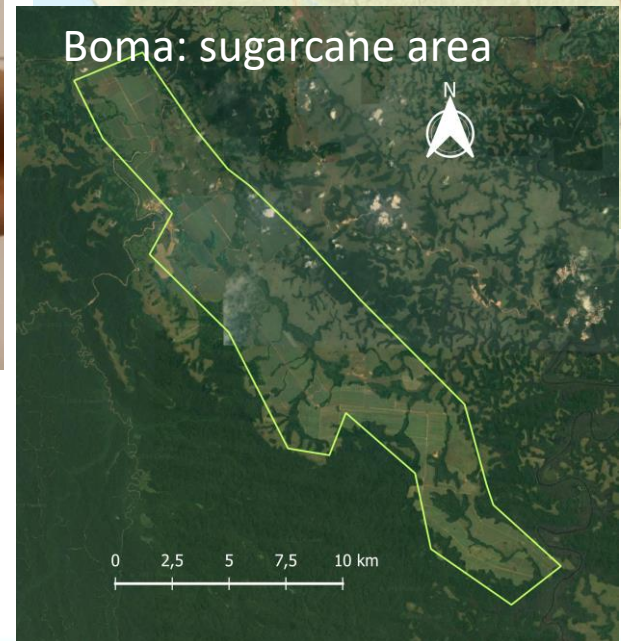
Scenario of interest definition
- Users requirements
- Products specifications
- Algorithm definition
- EO data requirements
- System requirements
- Operational requirements
- Policy Traceability Matrix analysis

Validated Prototype
- ATBD and products specification
- Open-source Processor/toolbox/software and related documentation
- Validation methodology and results

Prototype test result
- Prototype performances assessment

Prototype deployment and study results dissemination
- Prototype integrated into a platform environment
- Policy hihglights
- Benefit assessment
- Scientific pubblications

Users Engagement and Characterization

State of the Art review

Agile Prototype Development & Validation

Prototype Test

Outreach & Study Assessment

TASK A   TASK B

T0   T0+ 18 months   T0+ 24 months

Need for Early Adopters support for Validation that should be carried out in large and possibly homogenous fields, in the study areas proposed

Mozambique

It is expected to adopt moslty smatphone-based apps for data validation

Gabon

Xinavane: sugarcane area

Boma: sugarcane area

Pocket LAI

PocketLAI

Webinar agenda
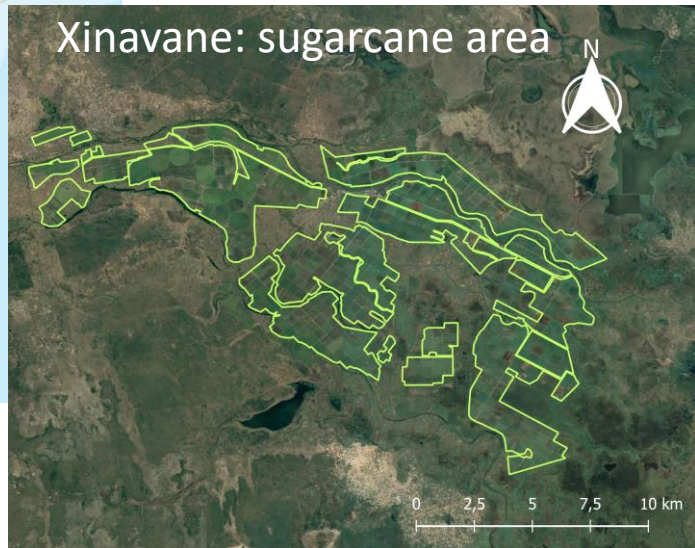
Webinar DAY 1 (18.11.2024).

- Introduction of the remote sensing crop monitoring activities in the project PRISMA4Africa.
- Illustration of the variables object of the validation activities. Theory and practice of the measurement methodologies.
- PocketLAI: theory and practice. Installation on participants' smartphones (only Android OS).
- Discussion Q&A.

Webinar DAY 2 (20.11.2024).

- Digital Hemispherical Photography (DHP) with fisheye lenses on smartphones. Theory and practice. Lens fitting, photo collection and download. Pixel check with image processing software (e.g. Paint)
- Installation of Can-Eye software and calibration of smartphone lenses.
- Theory and practice of chlorophyll measurements in plant leaves.
- Discussion Q&A.

Webinar DAY 3 (04.12.2024).

- ESU set-up campaign planning and uploading to smartphone.
- Correct image for lens distortion using checkerboard calibration images and MATLAB code. Can-eye software processing of data acquired.
- Analysis and discussion of the data collected by the participants.

Contacts

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