



CRISP

CONSISTENT RICE INFORMATION FOR SUSTAINABLE POLICY

Enhancing Sustainable Agriculture
through Earth Observation



Overview

CRISP (*Consistent Rice Information for Sustainable Policy*) is an ESA-funded initiative designed to support the monitoring of sustainable agriculture and contribute directly to the **Sustainable Development Goal (SDG) 2.4.1**, which measures the proportion of agricultural land under productive and sustainable agriculture.

The project builds upon the experience of the RIICE initiative, integrating multi-mission Earth Observation (EO) data and crop modelling to provide consistent, scalable information on rice area, growth, and yield. CRISP is implemented by a consortium led by **sarmap SA**, in collaboration with **IRRI (International Rice Research Institute)** and **CGI**, and with the active engagement of Early Adopters such as FAO, WFP, IFAD, GEOGLAM, GIZ, and the Syngenta Foundation.

Objectives and Approach

CRISP aims to operationalize EO-based methods to support agricultural monitoring and policy decision-making by:

- Addressing **SDG Indicator 2.4.1**, which monitors the proportion of agricultural land under productive and sustainable management.
- Scaling up cost-effective EO workflows for mapping and monitoring rice cultivation.
- Leveraging multi-mission data from **Sentinel-1** (SAR) and **Sentinel-2** (optical) missions.
- Integrating EO-derived biophysical parameters into **ORYZA**, the rice growth model developed by IRRI, to estimate yield and production.
- Deploying the entire processing chain on **INSULA**, CGI's innovative EO Platform-as-a-Service, ensuring automation, scalability, and accessibility.

Contribution to the Sustainable Development Goals

CRISP contributes to the SDG framework by enabling evidence-based agricultural monitoring and supporting policy actions that foster sustainable food systems. Specifically, it supports:

- **SDG 2 – Zero Hunger:** providing reliable, spatially consistent data on rice productivity and sustainability in line with Indicator 2.4.1.
- **SDG 13 – Climate Action:** offering EO-based information to assess and mitigate the impacts of climate-related hazards such as droughts and floods.
- **SDG 15 – Life on Land:** promoting sustainable land management and monitoring changes in agricultural landscapes

By delivering harmonized, data-driven indicators, CRISP strengthens evidence-based policymaking for sustainable agriculture and food security.

CRISP and the Sustainable Development Goals



SDG 2 – Zero Hunger

Supports Indicator 2.4.1 by providing EO-based information on rice area, yield, and sustainability.



SDG 13 – Climate Action

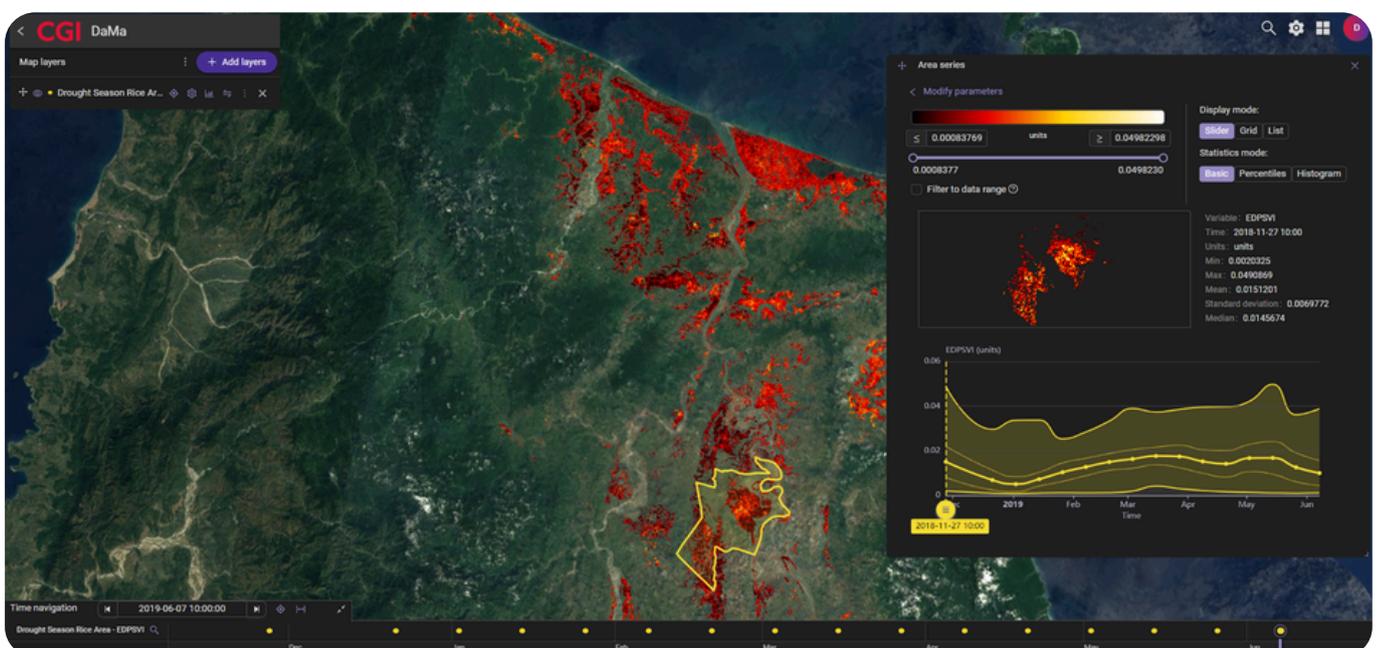
Uses EO data to assess drought and flood impacts, enhancing resilience and adaptation planning.



SDG 15 – Life on Land

Monitors land-use dynamics to promote sustainable agricultural and environmental practices.

Analytics example - INSULA platform



Geographic Coverage and Demonstration Sites

CRISP has been validated across five test sites, representing diverse agro-climatic and institutional contexts

Country	Region	Focus	Key Output
Philippines	Luzon	Drought impact assessment	Yield loss and recovery mapping
Senegal	Senegal River Valley	Irrigated rice monitoring	Yield and Start-of-Season (SoS) maps
India	Andhra Pradesh	Flood event analysis	Flood-affected yield estimation
Kenya	Mwea	Irrigated system assessment	Rice area and SoS mapping
Nigeria	Kano	Rainfed system monitoring	Yield estimation and seasonal patterns

Key Achievements

- Demonstrated a robust, cloud-based EO workflow for operational rice monitoring.
- Produced consistent rice area, SoS, and yield maps across different regions and production systems.
- Enhanced collaboration between EO experts, agricultural scientists, and policy stakeholders.
- Supported Early Adopters in integrating EO-based indicators into decision-making.

Relevance for the SDG Community

CRISP provides a scalable and transferable framework for the operational monitoring of crop systems, demonstrating how satellite-based information can directly inform policies, investment planning, and early warning systems. Its user-oriented approach ensures that the solutions developed are not only technically sound but also aligned with institutional needs and real-world decision processes.

Operational Success, Global Recognition & Market Reach

The core technology validated within CRISP has already demonstrated significant operational maturity in real-world scenarios:

WFP Rapid Response in Sri Lanka:

The CRISP framework successfully supported the World Food Programme (WFP) with a dedicated use case assessing severe flooding impacts on rice crops in Sri Lanka. This application provided crucial insights for humanitarian response and validated the system's operational readiness.

FAO Global Technical Recognition (PRiSM):

Utilizing the exact same SAR-based technological backbone validated in CRISP, the Philippine Rice Information System (PRiSM) has operationalized rice monitoring at a national scale. This achievement was recently honored at the FAO Global Technical Recognition Ceremony during the World Food Forum, where PRiSM was selected out of nearly 300 global nominations for its outstanding contribution to "Sustainable plant production and protection".

Growing Commercial Interest in South America:

The global visibility of the CRISP project has recently sparked unsolicited interest from the private sector in South America. Agricultural experts and stakeholders monitoring rice production and trade across major markets (Brazil, Argentina, and Uruguay) are exploring the integration of CRISP-derived analytics to support international rice brokering and market intelligence. This highlights the commercial viability and global scalability of the CRISP solution beyond institutional use.

Next Steps

Following the successful conclusion of the technical validation phase, the project is moving towards full operational deployment and expansion:

Operationalization via ESA NoR:

Transitioning the CRISP Rice Monitoring Suite onto the ESA Network of Resources (NoR) as a Data Processing as a Service (DPaaS), making the analytics readily accessible to global stakeholders.

Future Synergies & Tech Evolution:

Evaluating further integration roadmaps with existing platforms (e.g., ESA APEX, World Cereal) and integrating cutting-edge AI/ML techniques and new satellite sensors.

Sustained Institutional Uptake:

Expanding long-term collaborations with institutional partners for sustained operational uptake.

Geographical & Commercial Expansion:

Capitalizing on recent unsolicited interest from the private sector in South America, the project aims to explore the commercial viability of CRISP-derived analytics to support international rice brokering and market intelligence.

Acknowledgments

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