



Into Space

EU Space Research

*Space Research projects under the
7th Framework Programme for Research
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*Enterprise
and Industry*



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Rice agricultural landscape in Italy: field, multitemporal SAR and multispectral optical satellite views.



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ABSTRACT

ERMES aims to develop a prototype of downstream services based on the assimilation of Earth Observation (EO) and in-situ data within crop model. Two services are foreseen: Regional Rice Service (RRS) customised for providing public authorities with an agro-monitoring system for crop mapping, yield estimating and risk forecast and Local Rice Service (LRS) for the private sector (farmers, agro-services) providing added value information on yield variability, risk alert and crop damage at farm scale.

INNOVATIVE SPACE BASED SERVICES DEDICATED TO RICE SECTOR

The agricultural sector is facing important global challenges due to the pressure of food demand, increased price-competition produced by market globalisation and food price volatility (G20 Agriculture Action Plan) and needs of more environmentally and economically sustainable farming. Earth Observation (EO) systems can significantly contribute to these topics by providing reliable real time information on crop distribution, status and seasonal dynamics.

ERMES aims to assimilate EO and in-situ data in crop modelling for building a prototype of downstream services dedicated to the rice sector.

The tasks of the EO component are: to perform rice mapping and monitoring by exploiting the synergetic use of Synthetic Aperture Radar (SAR) and optical data, to customise existing biophysical EO-products and to derive meteorological variables from geo-stationary satellite data to be used in model simulations of rice growth and development. Smart technologies will be the basis for in-situ data collection and return of added value information to the users.

ERMES services are aiming at supporting regional authorities in the implementation of agro-environmental policies; promoting solutions for sustainable management practices in farming activities and providing independent reliable information to the agro-business sector.

The prototype will be tested in Europe with the long-term goal of extending it to Asian and African markets, in order to boost European competitiveness and contribute to sustainable development.

The maturity of the Copernicus core products and the advent of the Sentinel missions are the proper framework to develop EO-based services, targeted at the agriculture sector, to make regional agro-monitoring feasible and local agro-consulting possible.

QUESTIONS & ANSWERS

What is the project designed to achieve?

ERMES aims to create added-value information for the agrosector by integrating in crop models, operational Copernicus core products, maps derived from SAR and optical data processing and in-situ observations. Two services will be created for regional authorities and local agro-business. Advanced smart technologies will be used to collect in-situ observations and return customised information to end-users.

Why is this project important for Europe and how does it benefit European citizens?

The agricultural sector in Europe is facing the challenge to maintain and improve its competitiveness by reducing production costs and minimising environmental impact of agricultural practices. ERMES will contribute to achieve the objective of sustainable agriculture needs by developing operational methods able to monitor crop status during the season and to capture field spatial variability of the production.

How does the project exceed the current state of knowledge?

ERMES takes advantage of Copernicus Land Services and proposes innovative approaches for the integration of optical and SAR data provided by Sentinel missions. Such high temporal/spatial resolution satellite products and in-situ observations, acquired by smart technologies, are assimilated into crop yield model to provide added value information customised to public and private stakeholders of the agrosector.

LIST OF PARTNERS

- Consiglio Nazionale delle Ricerche, Istituto per il Rilevamento Elettromagnetico dell'Ambiente, Italy
- Università degli Studi di Milano, Italy
- SARMAP SA, Switzerland
- Universitat De Valencia, Spain
- Universitat Jaume I De Castellon, Spain
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PROJECT INFORMATION

An Earth Observation Model Based Rice Information Service (ERMES)

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