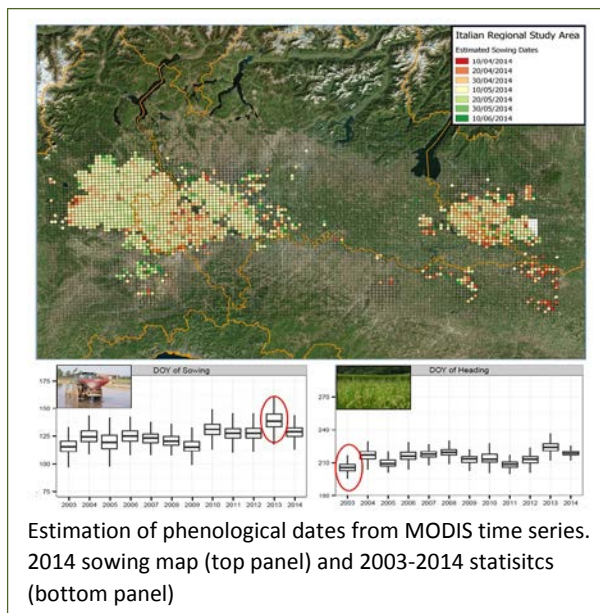


### EARTH OBSERVATION TECHNOLOGIES FOR RICE CROP MONITORING (ERMES)

*ERMES (An Earth Observation Model Based Rice Information Service) is funded by EU FP7 (2007-2013) under grant agreement n° 606983".*

#### The challenge

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 create added-value information for the rice agro-sector by integrating in crop models operational Copernicus core products, maps derived from SAR and optical satellite data processing and in situ observations. Two services will be created for regional authorities and local agro-business.



Estimation of phenological dates from MODIS time series. 2014 sowing map (top panel) and 2003-2014 statistics (bottom panel)

#### Space Technology Solution

ERMES proposes innovative approach for the integration of optical and SAR data in view of fully exploitation of Sentinel missions. Quasi-daily moderate resolution satellite data are used to monitor regional agro-practises, while high resolution Sentinel 1 and Landsat OLI (foreseen Sentinel 2) images are used to detect rice cultivated areas and estimate Leaf Area index. Smart technologies (mobile app and geoportal) are the basis for in- situ data collection and return of added value information to the users. These added value geo-information are assimilated in the WARM crop model to estimate daily biotic and abiotic risk and final crop yield.

#### Implications

The agricultural sector in Europe is facing the challenge to maintain and improve its competitiveness by reducing production costs and minimizing environmental impact of agricultural practices. 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 service are developed in Europe with the longterm goal of extending it to Asian and African markets, in order to boost European competitiveness and contribute to sustainable development.