



# ENORASIS

[www.enorasis.eu](http://www.enorasis.eu)

## NEWSLETTER 2

### Aug2012-Feb2013

### Welcome

Welcome to the pages of the second newsletter of **ENORASIS FP7 project**, that in January entered its second year of duration. During the first year of the project, the technical, operational and business background for the ENORASIS solution was in detail assessed and analyzed and we are now in the peak of the main development phase of ENORASIS platform and sustainable agricultural components. All partners efforts are maximized focusing on: to **deliver** an intelligent and easy-to-use irrigation management tool and to **validate** it by organizing successfully the project **pilot schemes** that will cover two cultivation periods, three different climate regimes and several crop types.

Supporting our project team efforts, we hope that you will enjoy reading this issue and we look forward to receiving your comments and feedback.



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ENORASIS is supported by the European Commission under the 7<sup>th</sup> Framework Programme for Research in Environment

## 1. A few words about ENORASIS

The basic parameters and enabling technologies of the ENORASIS concept are:

- **Decision Support System** based on **GIS technologies**, acting as the main information backbone of the platform

- **Irrigation Management System**, performing the assessment of irrigation water needs and controlling irrigation management rules

- **Meteorological Analysis Tool**, assimilating advanced weather forecast models and satellite data

- **Field hardware** (wireless sensors networks etc.) to be deployed in farmers fields for measurements and reporting purposes

- **Information exchange system**, to be used by farmers/water management companies and ENORASIS Service Platform for exchange of information.

After the development of the ENORASIS platform, pilot implementations are foreseen, with adequate dispersion as regards to geographical/ climate criteria, operational approaches and crops differentiation.

For more information, please visit [www.enorasis.eu](http://www.enorasis.eu).

### ENORASIS at a glance

**Contract number**

GA No 282949

**Project coordinator**

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**Project website**

www.enorasis.eu

**Community contribution**

2.085.965, 00 €

**Duration**

January 2012- December 2014

Partner	Country
DRAXIS Environmental Technologies S.A.	Greece
Rhenish Institute for Environmental Research, University of Cologne (RIU)	Germany
Institute of Soil Science and Plant Cultivation- State Research Institute (IUNG-PIB)	Poland
Noveltis SAS	France
Faculty of Technical Sciences, University of Novi Sad, Biosense Centre	Serbia
Imaxdi Real Innovation S.L.,	Spain
The Cyprus Institute	Cyprus
University of Patras	Greece
Institute of Earth Sciences (SUPSI)	Switzerland
Teknoset Ltd	Turkey
Unisoft Romania S.A.	Romania
Q-PLAN North Greece Ltd.	Greece
Public Water Management Company "Vode Vojvodine"	Serbia

## 2. ENORASIS pilots ready to begin

With the aim of validating ENORASIS prototype and assessing in general the ENORASIS solution capability to successfully meet the needs of its main users groups (farmers, water management organizations), **four pilot ENORASIS implementations** were carefully designed and will soon begin their operation.



ENORASIS pilots will involve **six crop types** (potato, maize, apple, sweet cherry, cotton and grapefruit) in **four different climate regimes** (North Central Europe- Poland, South Central Europe- Serbia, continental Mediterranean- Turkey and island Mediterranean- Cyprus) and **three operational approaches** (research farm, production farm, water management organization) in an attempt to cover an adequate spectrum of different real-life cases.

The following farms will host ENORASIS pilot schemes:

- a) **IUNG-PIB Grabow ES** research farm, Poland (<http://www.iung-pulawy.pl>)
- b) **Farm Frites Poland Dwa** production farm, Poland (<http://www.farm-frites-dwa.pl>)
- c) **Delta Agrar** production farm, Serbia (<http://www.deltaagrar.rs>)
- d) **Adnan Menderez University** (Department of Farm Structure and Irrigation) research farm, Turkey (<http://www.adu.edu.tr/en/>)
- e) **The Cyprus Fassouri Plantations Co., Public Ltd** production farm, Cyprus (<http://www.redseal-quality.com/>)

Apart from the validation and demonstration of ENORASIS prototype, the pilot schemes are expected to provide valuable quantitative as well as qualitative proofs on the concept, business models and operational capabilities of the whole solution, possibly revealing additional enhancements and optimizations required for ENORASIS to be transformed from a system prototype to a commercialized final product.



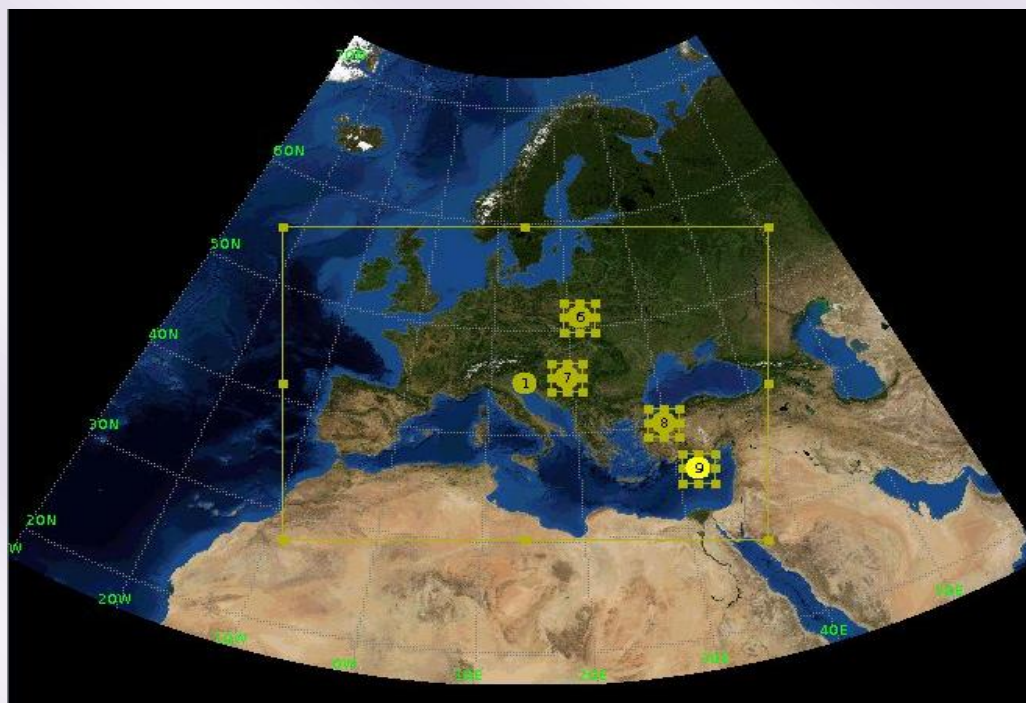
### 3. ENORASIS Meteorological Analysis Tool- How meteorology contributes to the environmental optimization of irrigation management

by Dr. Andreas Kazantzidis, akaza@upatras.gr



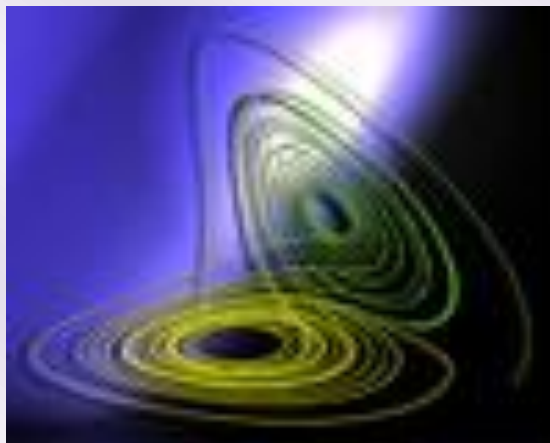
Irrigation scheduling pertains to the timing and amount of irrigation applied to regions with insufficient rainfall for adequate crop growth. The scheduling problem can be challenging, as farmers try to minimize irrigation costs while maintaining adequate moisture in the soil to avoid crop yield reduction. This is further complicated with the use of uncertain weather forecasts and climate predictions to guide farmers with decision making.

To address the need for uncertainty – quantified rainfall forecasts for water management purposes within the ENORASIS project, high-resolution rainfall forecasts are adopted in a probabilistic manner using the state-of-the-art **Numerical Weather Prediction (NWP) model WRF**. The **Weather Research and Forecasting (WRF) Model** is a next-generation mesoscale forecast model and data-assimilation system designed to serve both operational forecasting and atmospheric research needs.



The European grid and the nests (grids over the pilot sites), used for the WRF model runs for the cultivation period of 2013.

In existing implemented systems, information on weather is delivered by weather stations and weather forecasts are based on **historical data** rather than models using satellite images. This approach lacks in cost effectiveness and geographical coverage as it requires the installation of an adequate number of weather stations in the field in order to produce reliable data. ENORASIS uses the WRF model that for the purpose of the project will be set up with multiple grids of different spatial resolution over selected pilot sites.



On the whole, the high-resolution rainfall data is generated in a **three steps approach**:

**1. Ensemble Pre-Processor:** The Ensemble Pre-Processor generates the short-term ensemble members for our computational grid, based on available forecasts by ECMWF. Further, it collects relevant information for data assimilation such as near surface winds, total precipitable water, water vapour, cloud-drifting winds and water vapour derived winds from various operational satellites and instruments. An analysis of satellite imageries is performed in order to provide the most accurate data to the Ensemble Data-Assimilator.

**2. Ensemble Data-Assimilator:** The Ensemble Data-Assimilator generates optimal initial states for the WRF model to produce improved ensemble rainfall forecasts. It employs a particle filtering algorithm to account for the uncertainty in the initial state of the model.

**3. Ensemble Output:** This process consists of the rainfall modeling for each ensemble member under different configurations (initial conditions perturbations, physics perturbations + data assimilation) and the statistical post treatment of the ensemble output.

## 4. ENORASIS Meetings

The project consortium met for the **3<sup>rd</sup> project meeting** in **Vigo (Spain)**, on **January 30<sup>th</sup>-February 1<sup>st</sup> 2013**.

The discussion focused mainly on several technical issues, problems and mitigations regarding the development of the ENORASIS platform and of sustainable

agricultural components (Meteorological Analysis Tool and Wireless Sensors Network) as well as on the preparation of the pilot implementations foreseen (guidelines, action plan, field installation etc.).



On the first day of the meeting, the project team members also had the opportunity to visit the **Adegas Valminor winery** that has deployed a smart agriculture infrastructure, using both aerial and terrestrial sensors in the vineyards for predicting diseases and monitoring the vineyard state.

## 4. News

### ➤ ENORASIS at STREAM and STEP-WISE final conference

**ENORASIS** project participated in FP7 projects **STEP-WISE** and **STREAM** Final Conference that was held on 3rd and 4th December in Brussels. As indicated by its title, '**Building Bridges-Facilitating Water Information Exchange between Science, Policy and Industry**', the Conference discussed instruments and experiences that facilitate collaboration between science, industry and policy about water issues and had participants from 12 countries representing Policy, Research and Industry and Consultancy sectors, as well as participants from other areas (NGOs, media, communication and education). The Conference was concluded with a session at the European Parliament where a high level discussion was made on the recommendations of the '**Roadmap For Uptake of EU Water Research in Policy and Industry**' that was prepared by the projects **STEP-WISE**, **STREAM** and **WaterDiss2.0**. **ENORASIS** was presented with a poster in a special session where several EU funded water research projects were presented to interested participants.



### ➤ TEKNOSET awarded at the EUREKA Istanbul Venture Forum



**ENORASIS** project partner **TEKNOSET** won a **Best Presentation Award** at the **EUREKA Istanbul Venture Forum (EuVF)**, that took place in Istanbul on 19 October 2012 ([www.e-unlimited.com/euvf](http://www.e-unlimited.com/euvf)). EUREKA Venture Forum is an Investment Forum targeted at showcasing and interconnecting high-tech entrepreneurs from Turkey and globally with international investors and strategic partners.

**TEKNOSET (www.teknoset.com)** develops high-tech solutions since 2002 and specializes in wireless sensors home automation products. The product presented at the EuVF by Mr. Cengiz Bayazit, founder and CEO, was Rainvent, an innovative wireless sensors network based system for smart irrigation. The EuVF award winners participated in the annual European Venture Summit.

➤ **Patras Innovation Quest 2012- ENORASIS presentation**

**Dr. Andreas Kazantzidis**, from University of Patras presented **ENORASIS** project at **Patras Innovation Quest 2012**, a knowledge transfer exhibition that was held on the weekend 8th - 9th of December in Patras.



Patras Innovation Quest 2012 was organized by the University of Patras and its Technology Transfer Office and the Patras Chamber of Commerce and attracted more than 500 visitors. Its main scope was to bring closer the Academia, Research and Technology Organizations with the Regional Authorities and Business Sector in order to boost the cooperation in the fields of Technology Transfer, Research and Development Cooperative Project.,

It worths mentioning that ENORASIS project was the only research project selected to be presented in session Climate- Environment of the exhibition.

➤ **2nd Navarino Environmental Observatory (NEO) Research Workshop- ENORASIS presentation**



The concept and the objectives of project **ENORASIS** has been presented in the **2nd Research Workshop of the Navarino Environmental Observatory (NEO)**, entitled "**Climate and Environmental Change in the Mediterranean Region**". The workshop was held on October 26th- 27th at new NEO Research Facility at Costa



Navarino, Messinia, Greece and the ENORASIS presentation was made by Dr. Andreas Kazantzidis (University of Patras). During the workshop it was thoroughly discussed the possibility to establish an ENORASIS system for the greater NEO area.

**Navarino Environmental Observatory (NEO)** (<http://www.navarinoneo.com>), which is the outcome of cooperation between Stockholm University, the Academy of Athens and TEMES S.A., the developer of Costa Navarino, is dedicated to the study of climate change and its impacts on the natural environment and human activities in the Mediterranean.

➤ **United Nations International Year of Water Cooperation: WORLD WATER DAY 2013**



In December 2010, the United Nations General Assembly declared 2013 as the **United Nations International Year of Water Cooperation**, in an attempt to raise awareness and promote cooperation on the challenges facing water management that appear due to the increase in demand for water access, allocation and services. In this context, **March 22<sup>nd</sup> 2013** is declared

as **World Water Day** and will be dedicated to water cooperation.

For more information, visit the UN Water website <http://www.unwater.org/watercooperation2013.html>.

➤ **Water & Environment 2013: CIWEM'S ANNUAL CONFERENCE, 10-11 April 2013, Royal Geographic Society, London**

The conference constitutes a major event for water and environment professionals covering topics such as: weather and climate, flood risk management, WFD, river restoration etc. For more information please visit:

<http://www.ciwem.org/events/annualconference.aspx>

- **International Interdisciplinary Conference on Land Use and Water Quality 2013: Reducing Effects of Agriculture, 10-13 June 2013, The Hague, Netherlands**



**LuWQ2013** is an international conference on science, management and policy to minimize the effects of agriculture and

land use changes on the quality of groundwater and surface waters. For more details, please visit <http://www.luwq2013.nl/>

- **Water and Society 2013**

**Wessex Institute of Technology** organizes in New Forest on September 4<sup>th</sup>-6<sup>th</sup> 2013 the **2<sup>nd</sup> International Conference on Water and Society** with various topics including future water demands and adaptation strategies, water resources contamination, water resources management, irrigation and desertification and others.

For more information, please visit <http://www.wessex.ac.uk/13-conferences/water-and-society-2013.html>



- **1st CIGR Inter-Regional Conference on Land and Water Challenges – Bari (Italy), 10-14 September, 2013**

The International Commission of Agricultural and Biosystems Engineering and the Mediterranean Agronomic Institute of Bari organize the **1<sup>st</sup> CIGR Inter-Regional Conference on Land and Water Challenges** with themes: *Water use performance and water productivity, conservation agriculture and water saving, sustainability of groundwater exploitation for agriculture, decision support systems and modelling tools, innovative data-acquisition and information and communication technologies, irrigation technologies and management practices for environmental upgrading, use of treated and low quality water in agriculture, climate change.* For more information, please visit <http://conference2013bari.wordpress.com/>.

## 5. Learn more about ENORASIS

Visit the **ENORASIS knowledge web portal** [www.enorasis.eu](http://www.enorasis.eu) for information about the project and project activities, and the **ENORASIS portal knowledge base** to get access to useful material about technological aspects (wireless sensor networks, remote sensing data, GIS applications), modelling aspects, Water Governance Legal and other issues, and irrigation management.

All project deliverables of public dissemination level as well as project dissemination material (leaflets, posters etc.) are available in [www.enorasis.eu/download](http://www.enorasis.eu/download).

Also join ENORASIS in social media to take part in our web-community of irrigation management interested stakeholders and get informed about all project news and activities.



: ENORASIS FP7 Project (page)



: Enorasis\_FP7



: ENORASIS FP7 PROJECT (Group)

Access to ENORASIS social media is also possible from <http://www.enorasis.eu>