



# Newsletter V.1

## November 2013

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### Editorial by the Project Coordinator **Dr Haris KONTOES**, Remote Sensing PhD, Research Director of NOA



#### What is BEYOND?

Established in the framework of the FP7-REGPOT-2012-2013-1 Coordination and Support Actions - Theme Area "4.1 Unlocking and developing the research potential of research entities established in the EU's Convergence regions and Outermost regions", the **BEYOND** project (EC GA No 316210) aims at maintaining and expanding the existing state-of-the-art interdisciplinary research potential,

by **Building a Centre of Excellence for Earth Observation based monitoring of Natural Disasters** in South-Eastern Europe.

BEYOND foresees to increase its access range to the wider Mediterranean region through the integrated cooperation with twining organizations in Europe and USA.

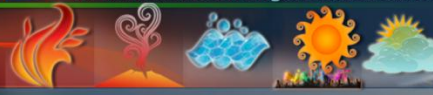
**BEYOND** Center of Excellence is hosted at the National Observatory of Athens (NOA) - Institute of Astronomy, Astrophysics, Space Applications and Remote Sensing (IAASARS). The operations of BEYOND officially started in June 2013, and will last for the next three years. The approved EC budget contribution for BEYOND is 2.305.650 Euros.

#### BEYOND aspires to:

- Incorporate multidisciplinary excellence from diverse sciences, as Remote Sensing, Meteorology, Atmospheric Physics, Hazard Modelling, Geology, Geophysics, Seismology, Volcanology, and Hydrology.
- Exchange know-how with more than 20 International Organisations (e.g. GEO, EC DGs, UNISDR), Universities at Europe and USA, and cooperate with Space Agencies such as ESA, NASA, and DLR.
- Set up innovative integrated observational solutions of the Earth, allowing to a multitude of monitoring networks (space borne and in-situ), owned by NOA and the collaborative Institutions and Space Agencies, to operate in a complementary, unified and coordinated manner.
- Transform the observations to added value products ready for down-streaming to specific societal needs for disaster management.
- The online delivery of observations and higher level products to the involved stakeholders, scientists and institutional users.

#### BEYOND Research Portfolio:

The BEYOND research/product portfolio covers a broad spectrum of natural disaster phenomena such as earthquakes, volcanoes, extreme weather events, floods, fires, fire smoke and toxic gasses dispersion, emission concentrations, dust storms, air quality aspects and their impacts to human health.



## Dr. Iphigenia Keramitsoglou visit @ NASA MSFC



**Dr. Iphigenia Keramitsoglou**, Associate Researcher of NOA IAASARS and member of the Program Management Board of BEYOND, visited the NASA Marshall Space Flight Center (MSFC) to collaborate with Dr. Dale Quattrochi from the Applied Science Team of the Earth Sciences Office, co-leader of the GEO Global Urban Observations Task. Additionally, she gave a seminar at the Center for Urban and Environmental Change at Indiana State University, whose primary mission is to promote interdisciplinary collaborative research on the issues related to urban environmental change. During her visit Dr Iphigenia Keramitsoglou,

elaborated on the topics addressed by BEYOND and laid the foundations for establishing a strategic partnership with NASA within the project. [Read More](#)

## NOA/BEYOND @ GEO 2005-2012



BEYOND is contributing to the GEO 2005-2012 Work Plan [Task D1-01-C1](#) entitled "Disaster Management Systems" in the specific component Task DI-01: Informing Risk Management and Disaster Reduction. The component of this Task targets to meet the needs for disaster risk reduction, preparedness and response in relevant hazard environments, and coordinates the efforts towards a more timely dissemination of EO and ground-based information to decision makers. BEYOND's contribution will be presented in the side workshop event, on the Societal benefit

Area of Disasters (Risk Reduction), which will take place during the GEO Ministerial and Plenary Week <http://www.earthobservations.org/geo10.shtml>, on 12-17 January 2014.

## NOA/BEYOND @ GFMC/UNISDR

BEYOND fire services have been integrated as links to the web system of the Global Fire Monitoring Center which belongs to the International Strategy of UN for Disaster Reduction ([UNISDR](#))

### BEYOND & Greek Public Power Corporation Cooperation



Public Power Corporation S.A.-Hellas  
Energy for everyone



On 23, October 2013, NOA and the Public Power Corporation S.A. (PPC S.A.), agreed to cooperate in the context of BEYOND. On the one hand, Dr. Haris Kontoes, the Coordinator of BEYOND, and on the other hand Dr Ioannis Argirakis, Director of the Directorate of Hydroelectric Generation (DHEG) at PPC S.A., agreed that there is mutual interest for cooperation in the field of flood monitoring and management, in the geographic context of the Hydroelectric dams. In this framework the PPC S.A. will define the requirements and will provide data acquired by the operated hydrometeorological networks. The mutual transfer of know-how in this area will allow BEYOND to provide improved adjustments and calibrations of the operational flood models, towards the provision of reliable observations to PPC S.A. The signature of a MOU describing the cooperation principles is underway. [Read More](#)

### Kick-Off (KO) Meeting

KO Meeting: The KO Meeting of the project BEYOND was held at NOA premises on July, 18, 2013. KO Meeting's agenda, presentations, minutes and photo album are available online. [Read More](#)



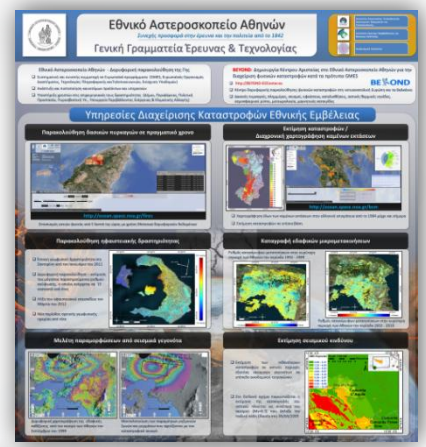
*BEYOND partners at NOA premises (NEWALL Telescope)*

The Project Officer of BEYOND, **Ms Atanasova Ralitsa**, provided the guidelines and the EC requirements for the successful realization of the Project, following the relevant EC funding framework.



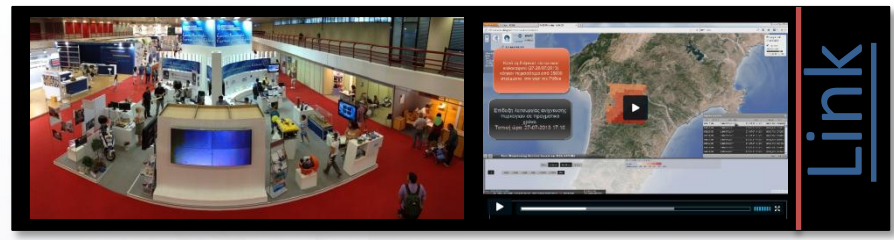
## Researchers' Night 2013

NOA participated in the "Researchers' Night 2013" mega event, 27 September 2013, Democritos NCSR, Athens, Greece. The Researcher's Night, the largest pan-European celebration of science and research, was held, on Friday 27/09/2013, at the National Centre for Scientific Research "Demokritos" (NCSR "Demokritos") at 18:00 to midnight, along with other academic centers in about 300 cities in Europe. The presentation of NOA focused on the undertaken efforts and services to setup innovative observational solutions in order to build a Center of Excellence for Earth Observation-based monitoring of Natural Disasters, under the FP7 project BEYOND (<http://beyond-eocenter.eu/>).



## 78th Thessaloniki International Fair

NOA participated in the 78th Thessaloniki International Fair 6-15 September 2013, HELEXPO, Thessaloniki, Greece. NOA's presentation focused on the services delivered through the BEYOND Center of Excellence in the domain of fire disaster management. During the event, the efforts for setting up a multi hazard management approach based on Earth Observation solutions under the FP7 project BEYOND, were highlighted to the open public. [Read More](#)



## Infrastructure Capacity Building

BEYOND foresees the acquisition of new infrastructural components to support the envisaged Center of Excellence. So far the following activities have been launched:



- An international tender for the installation of a satellite Ground Segment with reference to MODIS, NPP, NOAA, FYI, MetOP, future NPOESS satellites, and ESA Sentinels missions.
- Contracted the development of a Light Detection And Ranging (LiDAR) system, especially designed to monitor atmospheric episodes.
- Purchased a new suspended overhauser magnetometer to be integrated with the existing NOA-ENIGMA magnetometer network.
- Commissioned advanced software packages including the Urban Heat Island Patterns extraction SDK, SARscape toolkit for processing Synthetic Aperture Radar imagery, and licenses for the well-established s/w products MATLAB, ArcGIS Desktop/Server, and Envi .
- Procured several workstations, data processing units and associated hardware facilities for the support of the new research staff.

## Call of Interest for BEYOND Experts



To accomplish its goals BEYOND builds upon the development of new research capacities with the recruitment of high level scientists (PhD, post Doc). Specialists, in the fields of Physical Sciences and Natural Hazards, such as Fire experts, Earthquake Scientists, Geophysicists, Atmospheric Physicists, Weather modelers, were invited to submit their expressions of interest through an open international call, on contract basis. The short CV's of the successful candidates (till the online version of this issue), are presented hereafter.

## Successful candidates

Fields	Candidates
Atmosphere	9
Exploitation	5
Fire disasters	10
LIDAR-algorithm development	4
Meteorology	3



### **DR. IOANNIS MITSOPOULOS - Fire disaster management specialist**

Dr. Ioannis Mitsopoulos is a forest fires specialist and received his PhD degree from the Aristotle University of Thessaloniki, Greece in 2005. He has been involved as a post-doctoral researcher in various international and national research projects focused on the development of methods for characterizing forest fuel types from field inventory data and on ... [Read More](#)

### **DR. ALEXANDRA TSEKERI - Lidar researcher specialized in algorithm development**

Dr. Alexandra Tsekeri studied Environmental Engineering at the Environmental Engineering Dept. of the Polytechnic School of the Democretus Univ. of Thrace and received her degree in 2004. Obtained her Ph.D. at the field of Remote Sensing at the Dept. of Earth and Environmental Sciences of the Graduate School and University Center, The City University ... [Read More](#)

### **DR. GEORGIOS XYDIS - Exploitation Manager**

Dr. Georgios (George) Xydis is the BEYOND exploitation manager and holds a PhD in Engineering from NTUA, and a degree in Mechanical Engineering from AUTH. He did work in a variety of technological areas to achieve success in engineering proposal writing and in management of EU competitive programmes. He used to work as a Wind Projects Developer in Rokas ... [Read More](#)

### **DR. STAVROS SOLOMOS - Atmospheric scientist specialized in Atmospheric Dispersion Modelling**

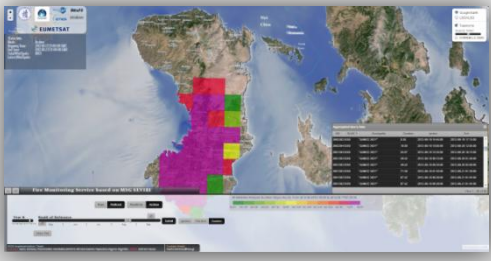
Dr. Stavros Solomos is a research fellow at the National Observatory of Athens and holds a PhD in Meteorology / Atmospheric Modeling. His fields of expertise include climate change and impacts on regional weather, severe atmospheric phenomena (e.g. hurricanes, floods, dust storms), air pollution and renewable energy. As a researcher he has participated in ... [Read More](#)

### **DR. EMMANOUIL FLAOUNAS - Meteorology Specialist**

Emmanouil Flaounas holds a PhD on Atmospheric Physics, obtained from the University Pierre et Marie Curie in France in 2010. For the period 2010-2013 he has worked as a post-doc researcher at the Laboratoire de Meteorologie Dynamique (LMD) at the Ecole Polytechnique and since November 2013 he works in NOA, contributing to the BEYOND project. ... [Read More](#)

## Updated list of EO Services available within BEYOND Project

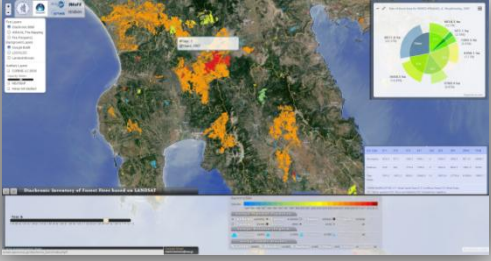
### Real-time Fire Monitoring System



The Real-time fire Monitoring System is continuously fed with new satellite acquisitions every 5 minutes from the MSG SEVIRI (EUMETSAT) satellite. The system incorporates a fully automatic processing chain, integrating efficient algorithms for image processing and classification, and producing maps of active fires. Several enhancement queries are invoked to improve the quality of the initial satellite observations, towards detecting fires with enhanced reliability and estimating its evolution in time.

Moreover, the system accounts for the wind direction, the ground morphology characteristics, the elevation zones, as well as the fuel characteristics of the affected areas, to downscale the initial observation of MSG SEVIRI sensor, from 3.5km spatial resolution to 500 meter resolution. The resulted maps are ingested to the web server, where they are merged with ancillary geo-spatial layers like Google Earth, Corine CLC, toponyms, etc. The system provides real time observations and status of active fires, as well as offers capabilities for retrieving past fire events for re-analysis and study. The system is used by the Fire Brigades Authority of Greece, the Directorate General of Forest Protection of the Min. of Environment, several institutional users and private entities all over Greece, the Local Authorities, the national Forestry services, etc.... [Application Page](#)

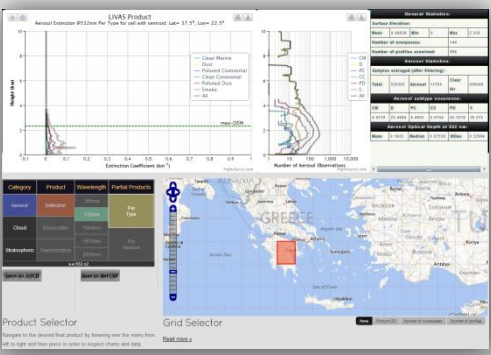
### Diachronic Mapping of Burned Areas over Greece ( 1984-2013 )



In line with the GMES framework for the provision of information products and services, another WebGIS application has been developed that depicts the results of the diachronic mapping of burned areas all over Greece for the past 30 years (1984 to 2012). In this direction, we have developed and implemented a fully automatic processing chain for Burnt Scar Mapping (mapping of burned areas), which is based on the exploitation and

analysis of the full USGS archive of about 600 Landsat TM images, since the first satellite image was ever recorded over Greece (1984). The application is already available and will be improved within the BEYOND project. [Application Page](#)

### LIVAS



**LIVAS** "Lidar climatology of Vertical Aerosol Structure for space-based lidar simulation studies" is an ESA project aiming to provide a global and extensive aerosol and cloud optical database, to be used for current and future space-borne lidar end-to-end simulations of realistic atmospheric scenarios, as well as retrieval algorithm testing activities. LIVAS provides a global 3-dimensional aerosol and cloud optical climatology and a collection of case studies focused on atmospheric episodes related to specific aerosol/cloud types... [Application Page](#)

## BEYOND Public Outreach



### Public Media Articles

- Tuesday 6th August 2013**: Press release entitled “Pilot operation of web services of the Athens Observatory for fire monitoring”
- Kathimerini, **7 August 2013**, [Read More...](#)
- EURO2DAY, **7 August 2013**, [Read More...](#)
- Real News, **7 August 2013**, [Read More...](#)
- E-typos, **7 August 2013**, [Read More...](#)
- Efimerida Syntaktwn, **7 August 2013**, [Read More...](#)
- [First Article](#) in Greek Independent Press, Eleftherotypia, **Sunday 9th June 2013**



### Papers/Presentations

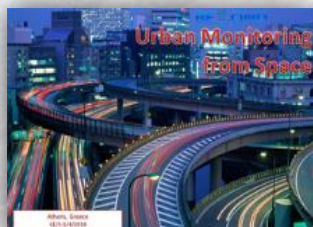
- Amiridis, V., Wandinger, U., Marinou, E., Giannakaki, E., Tsekeri, A., Basart, S., Kazadzis, S., Gkikas, A., Taylor, M., Baldasano, J., and Ansmann, A.: Optimizing Saharan dust CALIPSO retrievals, Atmos. Chem. Phys. Discuss., 13, 14749-14795, doi:10.5194/acpd-13-14749-2013, 2013. [Read More...](#)
- “The Santorini Inflation Episode, Monitored by InSAR and GPS”, ESA Living Planet Symposium, Edinburgh, **9-12 September 2013**. ([Presentation](#), [Poster](#))
- “Wildfire Rapid Detection and Mapping and Post-fire Damage Assessment in Greece”, Earthzine magazine, 2013, Environmental blog dedicated to Earth Observation. [Read More...](#)
- D7.4 “An evaluation of the real-time fire monitoring application and the TELEIOS ICT infrastructure”, TELEIOS FP7 ICT project, August 2013. [Read More...](#)
- Dynamic Monitoring Services for Forest Fire Monitoring using EO Technology according to GMES. Workshop of the project CALCHAS, **Friday 14th June 2013**
- Presentation of the Project to the Greek Fire Service to participate as a user, **Tuesday 9th July 2013**
- Presentation of the Project to the Greek Public Power Cooperation to participate as a user, **Wednesday 10th July 2013**



### Interviews

- Dr. Haris Kontoes, TV Channel 1 Piraeus – 7 August 2013
- Dr. Haris Kontoes, 9.84 FM – 10 August 2013

## Upcoming Event



A targeted **2 day workshop** is scheduled to be held in **Athens** for **31/3-1/4/2013** to investigate the current opportunities to fund specific activities related to **monitoring of the urban environment from Space**. Representatives from European organizations will present the new bidding opportunities (ESA, GEO, EC) and will collaborate with the experts during the workshop's dedicated sessions. The workshop is organized within the framework of BEYOND. **\*\*Participation by Invitation Only\*\*** [Read More...](#)



National Observatory of Athens



Institute for Astronomy, Astrophysics,  
Space Applications & Remote Sensing



FP7-Regpot-2012-23-1



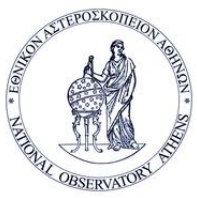
**BEYOND**

Building a Centre of Excellence  
for EO-based monitoring of Natural Disasters

**Newsletter**

# BE OND e-Newsletter

**BEYOND** aims to maintain and expand the existing state-of-the-art interdisciplinary research potential, by Building a Centre of Excellence for Earth Observation based monitoring of Natural Disasters in south-eastern Europe, with a prospect to increase its access range to the wider Mediterranean region through the integrated cooperation with twining organizations .



## National Observatory of Athens

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PO Box 20048 - 11810, Athens

Tel. +30 2103490000, Fax +302103490120  
WWW: <http://www.noa.gr>

**BEYOND** funded under:  
FP7-REGPOT-2012-2013-1

### ACTIVITY: 4.1

Unlocking and developing the research potential of research entities established in the EU's Convergence regions and Outermost regions.

### CALL IDENTIFIER:

Integration of research entities from the EU's Convergence and Outermost regions in the ERA and enhancement of their innovation potential.

**Project GA number: 316210**  
**Total Budget: 2305650 €**  
**Duration: 3 years (2013-2016)**

### Credits:

The BEYOND NOA Team  
mailto: [beyond.eocenter@gmail.com](mailto:beyond.eocenter@gmail.com)

### BEYOND WEB site:

<http://BEYOND-EOCenter.eu>