

# NAVARINO ENVIRONMENTAL OBSERVATORY

NEO Management

Friday, 30 September 2011

## **NEO NEA #2 (July-September, 2011)**

NEO stands for Navarino Environmental Observatory. But NEO in Greek (véo) means news as well and NEA is its plural. So this is our news!

### **Activities**

#### *Past*

- Paul Krusic visited Greece in July and had an extended field trip around continental Greece for site determination and samples collection.
- NEO in collaboration with TEMES organized activities for Starwood round tables. The activity organized was focusing on environmental awareness and tree planting. The participants were shown around in Natura Hall and then planted olive trees at Costa Navarino.

#### *Upcoming*

- NEO workshop on Wetlands and Ecohydrology Wetland will take place at NEO facilities 20-26 October. There will be 24 participants from Stockholm University, Purdue University, University of Western Ontario, Academy of Athens – NOA ((National Observatory of Athens), Royal Institute of Technology, HCMR, University of Florida, University of Iowa and TEMES.
- Stockholm University (SU) teachers' meeting will take place from 7 to 11 November. There will be 13 teachers participating and additionally 2 from Academy of Athens - University of Patras, 1 from Academy of Athens and 1 from University of Peloponnese.
- During the first week of December the class of "Atmospheric pollution", Department of Physics, University of Patras will visit NEO facilities for an onsite lecture. The students will be presented the principles of analytical techniques for atmospheric pollution measurements and then will be shown around the NEO atmospheric research station.

## Visits to and from NEO

- Karin Holmgren was at NEO from 2 to 15 July and will be there from 15 October until 11 November
- Giorgos Balasis, researcher at Academy of Athens - NOA, visited NEO on 10 August and expressed his interest to establish a “Magnetic station” with space weather and geophysical applications in the area as part of NEO research activities.
- From 27 August to 2 September Nikos Kalivitis visited Stockholm to be introduced to SU and have meetings with all the associates of NEO and others interested.
- On 12 September, Liz Else, Associate Editor for New Scientist came to NEO and she was introduced to NEO initiative. Vasilis Karakousis gave her a tour at Natura Hall and Nikos Kalivitis at the atmospheric research lab.
- Dr Amiridis from Academy of Athens - NOA visited NEO on 22 and 23 of September for instrument control and update.
- Nikos Zacharias, Assistant Professor at the Department of History, Archaeology and Cultural Resources Management, University of Peloponnese visited NEO on 30 September. There was a meeting with Nikos Kalivitis and the possibility of organizing a series of public lectures was explored. Please refer to the paragraph below for further details

## Research

- A new instrument has been installed at the atmospheric research station. An Aerodynamic Particle Sizer (APS), provided by Academy of Athens - NOA, will record atmospheric particles' size distributions in the size range 0.4- 20  $\mu\text{m}$ . The conjunction of DMPS and APS data will give size distributions in the range 0.010- 20  $\mu\text{m}$ . First data have already been collected and are being analyzed by postgraduate students of NOA.
- At the Mouzaki meteorological station, of the TEMES meteorological stations network, a new rain sampler is now installed (see Picture 1) provided by ITM (Institutionen för Tillämpad Miljövetenskap), SU. The rain samples collected will be used for wet deposition analysis of atmospheric aerosols and isotopic analysis.
- First activities have been undertaken for a land degradation and coastal erosion study around Costa Navarino by Ingmar Borgström and Josefien Delrue. They started by looking up which GIS-data layers exist for the Messenia peninsula that are essential to understand the geomorphology of the area. Relevant data was amongst others provided by WWF Greece and downloaded from online databases. They derived some general information from these datasets, such as topographic-geological transects cutting through the different geological blocks and intermountain basins. These will serve as a basis to formulate future research questions. The area for the land degradation and coastal erosion study covers the Costa Navarino drainage basin and the Pylos bay. They

want to identify to which extent land cover change has triggered land degradation over the past sixty years and they mapped land cover changes for two transects based on the oldest available aerial photographs (1945) and Google Earth images (2003). Further analyses will follow.

- In the period July - September, 2011, Barbara Kleine (PhD student co-financed by NEO and the European network DeltaMIN) has presented results pertaining to carbon fluxes during mountain building in southern Greece at 2 conferences (Goldschmidt in Prague and DeltaMIN on the Canary Islands). These results confirm previous findings from Scotland and the Himalaya that mountain building is a net source for atmospheric CO<sub>2</sub>, not (as previously thought) a net sink because of silicate weathering. The implication of this research is that climate models need to be modified with the respect to the role of mountain building. have a great picture of a CO<sub>2</sub> degassing channel in rocks from southern Greece.
- Silvia Frisia, Senior Lecturer at the University of Newcastle, NSW, Australia, is a central figure in advanced speleothem studies. Her work has focused on the study of terrestrial carbonate micro-structural and micro-morphological analyses as tool to reconstruct changes in their environments of formation, and relate these changes to climate and environmental parameters. Frisia has also worked with the application of synchrotron radiation micro X-Ray fluorescence spectroscopy to speleothem studies, and has used detection of sulphate layers in stalagmites to identify past volcanic eruptions. Frisia visited INK (Institutionen för naturgeografi och kvartärgeologi) during a week in August for running a course as well as for providing expert supervision to PhD student Martin Finné in his speleothem studies from Kapsia Cave, Greece. Thin sections of speleothem samples from Kapsia Cave were studied providing information on possible growth hiatuses indicative of drier conditions and clay layers indicative of past flooding events.
- Preliminary analysis of the first 5 months of data collected with ITM's DMPS, measuring aerosol number size distributions in the size range ranging 0.010-0.924 µm, has revealed that the dominant air masses arriving at NEO can be described with a unimodal number size distribution. This observation suggests that rather aged air masses arrive at NEO dominated by accumulation mode particles (with a diameter around 0.1 µm). Some local influence is evident as well, especially at 05:00 and 18:00 UTC when smaller particles are present in the atmosphere most likely produced by local sources (Picture 2).
- A new paper is now out : Martin Finné, Karin Holmgren, Hanna S. Sundqvist, Erika Weiberg, Michael Lindblom, Climate in the eastern Mediterranean, and adjacent regions, during the past 6000 years – A review, *Journal of Archaeological Science*, 38, pp. 3153-3173, doi:10.1016/j.jas.2011.05.007, 2011.

## Collaborations

There has already been great interest for collaboration with NEO from several institutions of different research areas. Collaboration proposals either for research or for educational activities have so far been made from University of Peloponnese, HCMR, CNRS, University of the Aegean, NOA and Cornell University.

## Natura Hall

Natura Hall has opened its doors since 22 June, hosting interactive exhibitions about Messinia environment and culture and about environmental issues of more general interest. The NEO stand contains information about the birth of NEO and our activities and is installed at the entrance of the exhibition. Until 1 October more than 6000 people have visited the exhibition. There has been great interest from the guests and the visitors of Costa Navarino.

## Outreach

- On 1 July a production team of Travel Channel, England filmed the NEO atmospheric research lab, Natura Hall and took a short interview of Nikos Kalivitis about NEO activities.
- On 5 July a production team of TF1 visiting Costa Navarino filmed NEO activities. Filming was performed in Natura Hall, NEO atmospheric research lab, Gialova lagoon and Kapsia cave. Karin Holmgren and Vassilis Karakousis were interviewed about NEO activities. Sample videos can be found at the following links:

<http://videos.tf1.fr/l-ete-au-vert/18-08-grotte-grece-6596931.html>

<http://videos.tf1.fr/l-ete-au-vert/14-08-lagon-6582576.html>

## NEO information

- The website of NEO ([www.navarinoneo.se](http://www.navarinoneo.se)) has been launched!
- The calendar in Mondo of NEO Cooperation group will be the common diary of all members. All important dates will be highlighted there.

## NEO Public Lectures Series

NEO in collaboration with the University of Peloponnese is organizing a series of public lectures. Distinguished researchers, of various research areas, will have the chance to give a public talk about a wide variety of environmental topics and topics of general interest. The lectures will refer to a mix audience of messinian academics and local stake holders. It is of the intention of NEO management to establish this lectures series so that NEO research activities are communicated to the local community. The venue of the lectures will be the renovated neoclassical building of the University of Peloponnese in Kalamata. The first two lectures have already been arranged:

19 October: Gia Destouni, Professor of Hydrology, Hydrogeology and Water Resources  
Department of Physical Geography and Quaternary Geology

Stockholm University

" Water research challenges and opportunities for the 21st century "

2 November: Karin Holmgren, Professor in Physical Geography

Department of Physical Geography and Quaternary Geology

Stockholm University

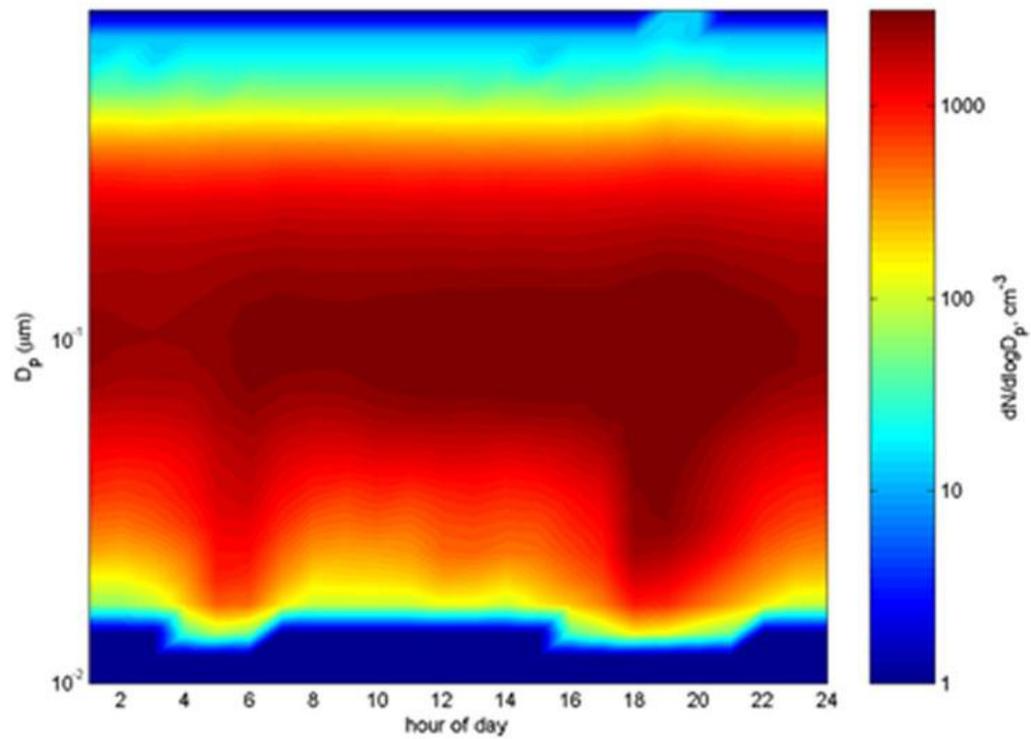
Director of Navarino Environmental Observatory (NEO)

"Secrets from the underground-Caves as climate and environmental recorders"

In Picture 3 you can see the poster announcing the lectures.



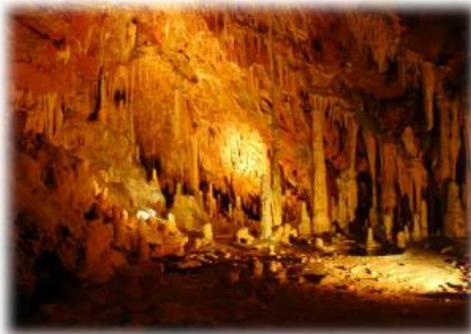
Picture 1: Rain sampler installed at Mouzaki meteorological station



Picture 2: NEO daily median atmospheric aerosol number size distribution for the period April-August 2011. X-axis is the time of the day, Y-axis is particles' diameter in  $\mu\text{m}$  and the color scale denotes aerosol concentration

## NEO Lecture Series 2011

**Prof. Georgia Destouni**  
Department of Physical Geography  
and Quaternary Geology  
Stockholm University  
"Water research challenges and  
opportunities for the 21st century"  
Wednesday, 19 October 2011 - 18:00



**Prof. Karin Holmgren**  
Department of Physical Geography  
and Quaternary Geology  
Stockholm University  
Director of NEO  
"Secrets from the underground - Caves as  
climate and environmental recorders"  
Wednesday, 2 November 2011 - 18:00

The lectures will be given in the Amphitheater of University  
of the Peloponnese at Kalamata  
and are Open to the General Public. Language: English

in coordination with  
Laboratory of Archaeometry  
Department of History, Archaeology and Cultural Resources Management  
University of Peloponnese



www.su.se



www.bioacademy.gr



www.costanavarino.com



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UNIVERSITY OF PELOPONNESE

Picture 3: The announcement of NEO Lecture Series 2011