

# NAVARINO ENVIRONMENTAL OBSERVATORY

NEO Management

Wednesday, 22 February 2017

## **NEO NEA #23 (October - December 2016)**

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

### **Foreword**

November in Stockholm was brightened up by a visit by the NEO steering Committee and a dinner hosted by SU's Vice-Chancellor Astrid Söderbergh Widding at Spökslottet. This was followed by a NEO workshop on "Achievements and future perspectives", which was filled with good presentations and discussions. We are grateful to all participants for their active participation and contributions. There is now a solid base of good research that provides opportunities for new research initiatives. You find information about the workshop and highlights about ongoing activities further below. A number of processes have also been initiated to plan for future research, and it is great that so many people have joined the efforts to move NEO into a next phase.

Happy Reading!



*Figure : A small bay close to NEO (photo: Paul Strehlenert)*

## Activities

### Research

- *Paleoclimatology*

#### Fieldwork, Peloponnese, November 27 – December 4

A group of paleo-climate researchers from Stockholm University visited Peloponnese for fieldwork. Martina Hättestrand (NG), Elin Norström (IGV) and Christos Katrantsiotis (NG) visited two sites for sediment coring and water sampling, together with the master students Erika Modig and Helene Sunmark. At ancient lake Lerna, Argive plain, five meters of sediment was retrieved from two parallel boreholes, sampled using both hand-manuevered Russian corer device and an engine-driven Vibra corer. The sediments from Lerna are expected to cover the ca last 8000 years and will be analyzed in terms of microfossils and geochemistry for paleoclimate and vegetation reconstructions.



*Figure 1. Fieldwork – retrieving sediments from wetlands in Peloponnese. (photo: Erika Modig)*

At Agios Floros fen in the Messinian plain, samples were taken from the uppermost 3 meters using the Russian corer. This material will complement and improve the resolution of paleo-environmental reconstructions covering the last ca 3000 years from the Messinian plain. This research is performed in close collaboration with DoLP (Domesticated Landscapes of the Peloponnese) group in Uppsala, Department of Archaeology and Ancient History, who partly supported the field work, together with BBCC RA5 and DeGeer stipend funds.

- *Atmospheric composition*

#### Maintenance works at NEO's Atmospheric Station in Methoni

Dr. Bill Psiloglou from the National Observatory of Athens visited NEO's Atmospheric Station in Methoni for regular maintenance works that included: online setup and calibration of the O<sub>3</sub> and CO analyzers, works and preparation for remote control of the instruments and real time projections of data, and maintenance of the actinometric platform.

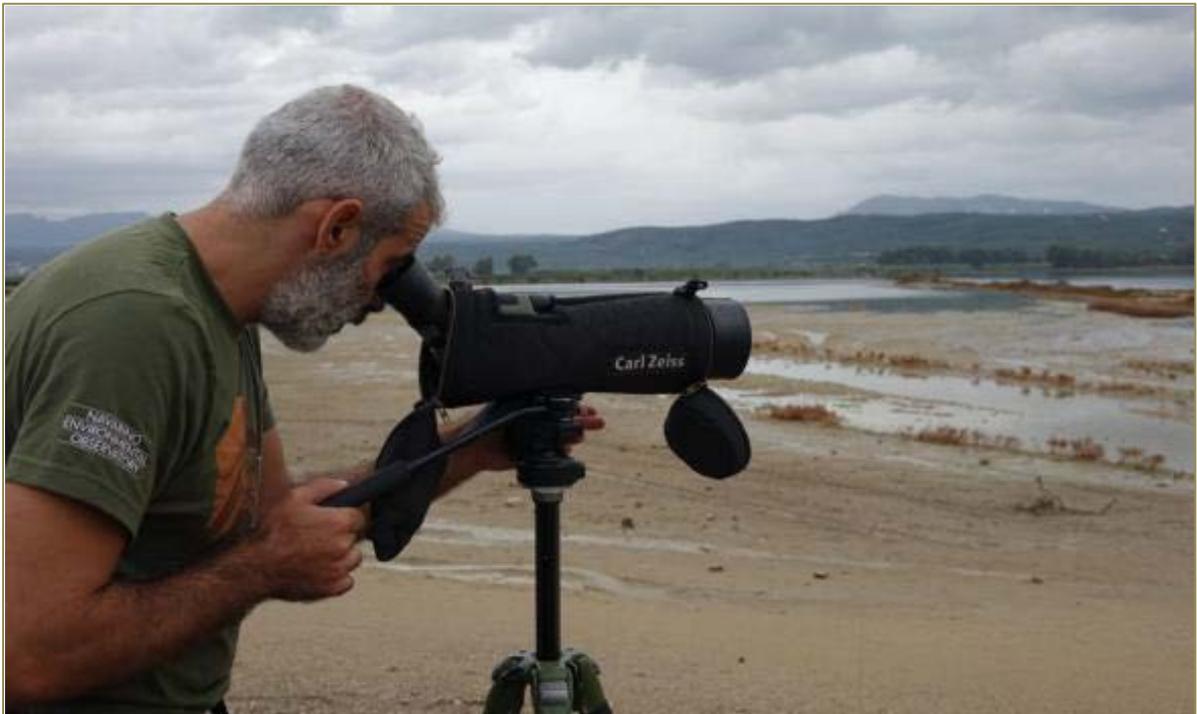


**Figure 2.** A rainbow at NEO atmospheric laboratory at Methoni. (photo: G. Maneas)

- **Environmental management**

- **Bird monitoring, Gialova Lagoon, October-November 2016**

Gialova lagoon is one of the important bird areas in Europe, especially for wintering and migratory species. It is one of the biggest wetlands which are found on the west migratory passage over Greece and the last before their long journey to Africa or the first on their way back after crossing the Mediterranean Sea. It is of great importance for all kinds of migratory species and also for wintering species which will shelter in wetlands found south during heavy winter periods.



**Figure 3.** Bird monitoring in Gialova Lagoon. (photo: Dimitris Bousbouras)

Due to the significance of the area, researchers at NEO have initiated an annual monitoring of bird species (on a monthly basis) which will be the basis for future bird conservation actions as well as to promote bird-watching activities among the local community and tourists.

### **Water Quality Monitoring at Gialova Lagoon**

NEO's network of monitoring stations in the Gialova Lagoon has been expanded. In November, Agnes Classon, Reyes Martin Gonzales and Giorgos Maneas installed two more stations at the east side of the lagoon, one covering the open water bodies found at the SE side and one covering the

channels to the NE side. During the new installations, Agnes and Giorgos also conducted maintenance at the other stations.



**Figure 4.** *Gialova lagoon – Monitoring station. (photo: Agnes Classon)*

## Education

### *Field Courses*

- **"Värmdö Gymnasium"**

#### **Students' course, Värmdö Gymnasium, Stockholm (October 15-22)**

Students from the Värmdö Gymnasium visited NEO for a fourth year in a row. The trip was a highly appreciated learning experience, with a strong connection to the areas surrounding NEO.

As every year, the focus was the Natura 2000 protected, Gialova Lagoon. The area brings amazing potential for understanding nature preservation from a national and European perspective. Parallels are drawn to similar Natura 2000-protected areas in Sweden, so that the students better understand the rules and regulations surrounding nature conservation. The perspective of the local population was also considered.



*Figure 5. Students from Värmdö Gymnasium walking on Paleokastro (photo: Paul Strehlenert)*

This year the product of the students' efforts was a film about the Gialova Lagoon area. The objectives of the film were to spread knowledge about the Natura 2000 network to the general public and to describe the areas around the lagoon. The films described 4-6 habitats and some species that are mentioned in the Natura 2000 data form, available on the EU-commission website. Also the ecosystem services which benefit peoples' lives were mentioned.

Other than film making, geography, religion and history were included in the excursions. A visit to ancient Olympia was a new and appreciated addition to the programme. The trip included a stop at a honey farm to create further understanding of ecosystem services.



Figure 6: Lecture at Pylos square (photo: Paul Strehlenert)

- *"Water – resource management in time and space, focus Greece"*

Master course, Stockholm and Linköping Universities and the Swedish Institute in Athens (November 13-18)

In mid-November, a group of four lectures and 10 master students visited NEO for a week. This was a part of the master course *Water – resource management in time and space, focus Greece* – a collaboration between Stockholm and Linköping Universities and the Swedish Institute in Athens. It is an interdisciplinary course with students from all over the world. The course includes different aspects of water related issues for settlements and water management, where the week in Greece is to from various scientific perspectives carry out a field study on water problems and the role of water in society. The students interviewed farmers, management at DEYA and Costa Navarino resort, as well as citizens and tourists. It was an interesting week discussing water use and management from different perspectives.



Figure 7. Lectures and students at the master course (photo: Åsa Danielsson)

- *"Physics Department"*

**Bachelor's course in meteorology, University of Patras, Greece (December 13-14)**

Twenty-two undergraduates from the University of Patras, Greece studying at different Departments (Physics, Mathematics and Geology) of the Faculty of Science participated in the course. They had the chance to follow lectures and train on experimental and computational topics.



*Figure 8: Students from University of Patras*

Among others, the students followed lectures on *"The characteristics of the atmosphere in the greater Pylos area (extreme weather, climatology, local and regional pollution sources)"* by Giorgos Maneas, on *"An exploration of the power consumption characteristics for residential and commercial use in Athens and their correlation with the meteorological conditions"* by Bill Psiloglou (National Observatory of Athens) and on *"Challenges in Numerical Weather Prediction"* by Ioannis Kioutsioukis (University of Patras).

The students visited the NEO Atmospheric laboratory in Methoni, where they were trained on the calibration procedures. Moreover, they acquired hands-on experience on combining measurements and modeling techniques to interpret experimental data with emphasis on source apportionment of chemical compounds and aerosol measurements.

## *Studies*

- *A comparison on water demands of two different managed landscapes: An olive orchard and a golf course - Preliminary results from two eco-hydrological monitoring stations*  
MSc thesis in the Master's Programme in Hydrology, Hydrogeology and Water Resources, Stockholm, December 9

On December 9th Reyes Martin-Gonzales successfully defended her MSc thesis in the Master's Programme in Hydrology, Hydrogeology and Water Resources. Stefano Manzoni was her supervisor.

### Summary

Human activities affect the hydrologic system by changing the land-cover. This change becomes even more important in seasonally dry areas (like the Mediterranean) where water is a limiting resource needed to meet an increasing agriculture demand and a current growth in the tourism sector. Hence, this project seeks to compare the water demands of two typical managed (irrigated) vegetation covers of the Mediterranean region.

For this purpose, two eco-hydrological stations were installed, one in an Olive orchard and one in a Golf course managed by TEMES S.A. The monitoring stations have been running at high temporal frequency since March 10 to October 31, 2016, and will continue to do so for future research.



The analyses of the soil water balance at each site has allowed for water demand comparisons.

Crop evapotranspiration rates of the grass at the golf course have usually varied between 1-5 mm/day for the period of low irrigation, and between 4-10 mm/day for the period of intense irrigation. Instead, the rates for the olive orchard have reached at most 5 mm/day, but our method neglected contributions from deep roots, which would have increase the estimated evapotranspiration during irrigation periods. Irrigation has therefore revealed to be a vital water resource for the growth of both traditional (olives) and new (turf grass) vegetation types.

## Events

- ***NEO workshop - Achievements and future perspectives***  
**Stockholm (24-25 November)**

A workshop on NEO research “Achievements and future perspectives” was held at the Department of Physical Geography Stockholm University on the 24-25 November, 2016.

The workshop was attended by 23 participants representing the different research themes and partners linked to NEO. The aim of the workshop was to highlight results from research conducted under the NEO collaboration, and to explore possible synergies and the potential for joint synthesis papers between the different research themes.



*Figure 9: Participants at NEO workshop in Stockholm*

Another important aim was to discuss opportunities and initiate plans for future research, funding and proposals, with a focus on applied research of high relevance to the society.

It was agreed at the workshop that 3-4 syntheses paper will be written and that the participants would start work on different proposal for future funding of research and education activities related to NEO.

- ***Workshop - Biogeography and Geomatics***  
**Greece (November 27-29)**

The research unit for Biogeography and Geomatics had a three day workshop discussing outreach, science within the group, future activities and master projects. The main theme was to present their research but also to look at the landscapes and discuss possible projects around the field station.



*Figure 10: Relaxed discussions next to Voidokilia bay (photo: Sara Cousins)*

### NEO management

NEO Steering Committee meeting was held in Stockholm, in connection to the NEO workshop

## *Upcoming*

### Research

- Martin Finné will visit Greece for cave-fieldwork in January.
- Master students Amanda Salguero Engström and Viggo Norrby will be at NEO for three weeks fieldwork in March. Hakan Berg and Giorgos Maneas are their supervisors.
- Bird-monitoring in the Gialova lagoon area on a monthly basis. The aim of the monitoring is to record the bird species, their habitats and their behavior and produce a data base which will be used for scientific and popular publications.

### Education

- The Physical Geography course will take place at NEO during March 2017. During the excursion the course will visit a number of different sites mainly in Messinia. Among them, the Gialova/Navarino Bay area, Artemisia, Verga, Loussios River, Kapsia Cave, Mesochori, Methoni and Finikounda.
- Students and teachers from the master course Cultural Heritage Materials and Technology will visit NEO in April for a week as part of their studies. The master course is oriented from the Department of History, Archaeology and Cultural Resources Management, University of the Peloponnese and operates in collaboration with the National Center for Scientific Research Demokritos, the Navarino Environmental Observatory (through the National Observatory of Athens) and key lecturers from other academic institutions in Greece.

### NEO management

A NEO Steering Committee meeting will be held in Athens in April.