

NAVARINO ENVIRONMENTAL OBSERVATORY

NEO Management

Wednesday, 09 November 2016

NEO NEA #22 (July - September, 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

Yet another warm summer at NEO has passed, with 45 °C already in the beginning of June and heavy rains in September, and NEO's ongoing climate change research felt, as always, both urgent and relevant. NEO research on future climate scenarios for Messinia, was presented in a Climate Change Conference in Athens. Despite a hot summer the station has been busy with both research and courses. Paul Krusic and colleagues found Europe's oldest inhabitant-a Bosnian pine (*Pinus heldreichii*), growing in the highlands of northern Greece. New NEO T-shirts were delivered to the station in June, and we are grateful to all that helped with their design and production.

Happy Reading!



Figure : The view to Methoni castle from the old Lighthouse (photo: Elena Xoplaki, Giessen University)

Activities

Research

- *Adonis, the oldest living tree in Europe*
Pindos Mt, July 2016

Europe's oldest known living inhabitant, a Bosnian pine, was discovered during a research expedition conducted by the Navarino Environmental Observatory (NEO) in Northern Greece, under the leadership of Paul J. Krusic. A Bosnian pine (*Pinus heldreichii*) growing in the highlands of northern Greece has been dendrochronologically dated to be more than 1075 years old, by scientists from Stockholm University (Sweden), the University of Mainz (Germany) and the University of Arizona (USA). This makes it currently the oldest known living tree in Europe. Considering where the tree was found, and its venerable age, the scientists have named this individual "Adonis" after the Greek god of beauty and desire.



Figure 1. *Adonis, the oldest living tree in Europe.* (photo: Dr. Oliver Konter, Mainz University)

The scientists hope the annual variations of the tree rings from trees like this and those fallen in centuries past, yet still preserved on the ground, will provide an informative history of climatic and environmental conditions, going back thousands of years.

- ***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 O₃ and CO analyzers, works and preparation for remote control of the instruments and real time projections of data, and maintenance of the actinometric platform.

- ***Scientific Publications***

Mazi K, Koussis AD, Destouni G, (2016). Quantifying a sustainable management space for human use of coastal groundwater under multiple change pressures, *Water Resources Management*, 30, 4063–4080, DOI 10.1007/s11269-016-1363-1, (Erratum, pp 4081–4081).

This study synthesises and extends previous water research work of NEO on saltwater intrusion into coastal groundwater and the exacerbation of this problem by climate change combined with human-driven change pressures directly in the landscape. The study quantifies some key limits constraining a coastal aquifer's sustainable management space in order to avoid critical loss of the coastal groundwater resource by seawater intrusion, and does so by generalising results for natural and human-driven conditions that may prevail anywhere in the world.

Katrantsiotis C., Risberg J., Norström E. & Holmgren K., (2016): Morphological study of *Cyclotella distinguenda* with a description of a new fossil species *Cyclotella paradistinguenda* sp. nov. from the Agios Floros fen, SW Peloponnese, Greece in relation to other *Cyclotella* species. *Diatom Research*, 31(3) 243-267. DOI: 10.1080/0269249X.2016.1211178

This publication is the continuation of a recent paleoenvironmental study based on high-resolution diatom record in a 7.5 m long core from the Agios Floros fen, SW Peloponnese, Greece (Katrantsiotis et al. 2016). In particular, this new paper concerns the morphological study of the planktonic diatom species *Cyclotella distinguenda* and the description of a new fossil species *Cyclotella paradistinguenda* sp. nov. found in the core from the Agios Floros fen. The morphology of this new species is also compared with other morphologically similar taxa and its ecology is further discussed. In the same paper a new morphological group within the complex genus *Cyclotella* is also suggested. High taxonomic resolution, correct identification and ecological separation of closely related species are essential to improve environmental monitoring and produce more accurate paleolimnological reconstructions.

Kleman J., Borgström I., Skelton A., Hall A., (2016). Landscape evolution and landform inheritance in tectonically active regions: The case of the Southwestern Peloponnese, Greece. *Zeitschrift für Geomorphologie*, Vol. 60/2 (2016), 171–193.

Education

Courses

- *"Climate, Climate Change Impacts: Greece"*
Master students' course, Justus-Liebig University of Giessen (September 21-25)

BSc students from the Department of Geography at the Justus-Liebig University of Giessen (JLU), Germany, visited NEO from 21-25 September 2016. It is the fourth year in a row that the visit is taking place and is now a milestone of the project-course "Climate, Climate Change Impacts: Greece" established in the JLU Geography studies curriculum. The group of geographers visited the many sites including Gialova lagoon, Paleokastro and Methoni under the guidance of Mr. Giorgos Maneas. The project course is aiming at providing interdisciplinary knowledge on the climate of Greece and the Eastern Mediterranean, volcanism and impacts on climate and societies, the Mediterranean Sea circulation, palaeoproxies, climate reconstruction and methodologies, impacts of climate variability and change on ecosystems, hydrology and water resources, atmospheric monitoring, archaeology, plant eco-physiology. The project consists of three interrelated parts, theoretical, methodological and the field excursion. The students prepare a scientific report combining knowledge acquired from the theory and methods and knowledge obtained during the excursion.



Figure 2: A view of Gialova lagoon in September (photo: Dr. Elena Xoplaki, Giessen University)

Dissemination and outreach

- **Conference on Climate Change, Athens, July 13**

On behalf of Navarino Environmental Observatory, Giorgos Maneas participated in a day conference in Athens entitled “Climate Change and new policies: Global community, European Union and Greece” which was organized by the “Constantinos Karamanlis Institute for Democracy”. The day conference was held at the “Eugenides Foundation” and during his 15min presentation, Giorgos presented NEO activities, focusing mainly on the scenarios of future climate change in Messinia (previous NEO work).



Figure 3: NEO Station Manager, Giorgos Maneas giving a presentation about Climate Change in Greece.

- **European Aerosol Conference EAC 2016 (poster presentation), Tours (France), September 4-9**

Gerasopoulos E., Metaxatou A., Maneas G., Kalivitis N., Liakakou E., Krejci R., Tunved P., Hansson H.C., Sciare J., Mihalopoulos N. and Zerefos C.S., 2016. Aerosol monitoring activities at the Navarino Environmental Observatory, a new ACTRIS site in the Eastern Mediterranean. European Aerosol Conference EAC 2016, Tours (France), September 4-9, 2016.

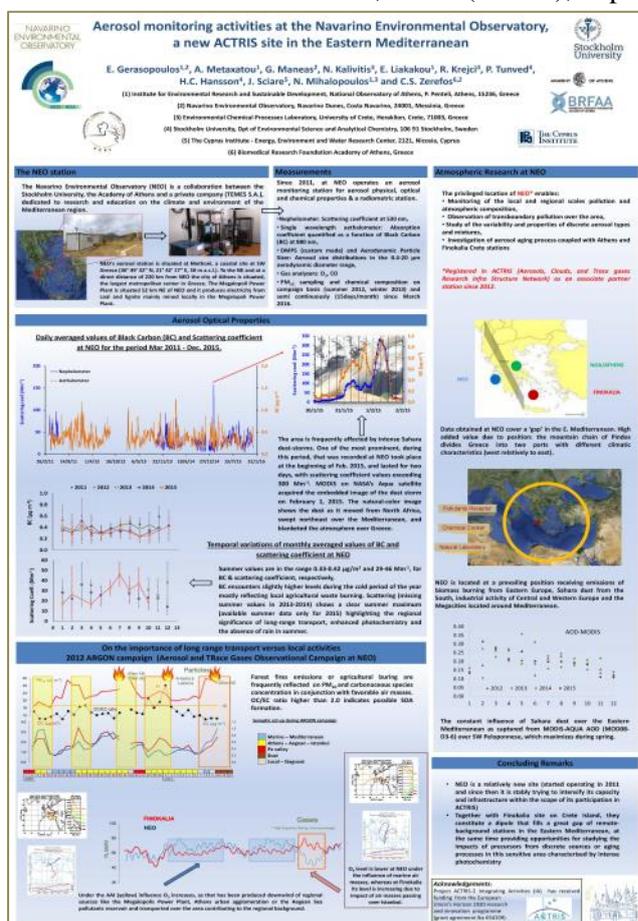


Figure 4: Poster presentation at the European Aerosol Conference EAC 2016, Tours (France).

- *MedClivar conference “Learning from the past, perceiving the present, engaging for the future”*
Athens, 26-30 September

Martin Finné and Erika Weiberg, both from the NEO associated department, Dept. of Archaeology and Ancient History at Uppsala University, participated in the 4th MedClivar conference “Learning from the past, perceiving the present, engaging for the future”, in Athens 26-30 September.

The MedClivar conference gathered a large number of mainly climatologist, meteorologist and paleoclimatologists/paleoenvironmentalists but also some archaeologists.



Martin presented a new paleoclimate record based on stable isotopes from a speleothem from the cave Mavri Trypa in SW Peloponnese. Erika gave a presentation that focused on the archaeological impact of the climate especially during the Bronze Age with the new record from Mavri Trypa as a starting point. In combination, the two papers aimed to give a more nuanced picture of the whole Bronze Age rather than just focusing on specific events that is usually the case. In this way, focus were put on periods of social decline and prosperity as well as on times of deteriorating climate and improved climate. The work on the Mavri Trypa record is closely related to NEO. Both presentations are also part of the research project “Domesticated Landscapes of the Peloponnese”, which will run over 4 years and started in 2015.

Figure 5: Happy NEO researchers Erika Weiberg and Martin Finné in front of NEO banner at the MedClivar conference in Athens.

- *Contacts with media*

Following the discovery of the oldest living tree in Europe, NEO has sent a press release to the Greek national media. In particular, Kathimerini made an article special for this discovery in one of its enclosed magazines in which both Giorgos Maneas and Paul Krusic were interviewed. In addition Giorgos has also spoken to the radio (Athens 984).

The word was also spread worldwide:

(WashingtonPost:<https://www.washingtonpost.com/news/speaking-of-science/wp/2016/08/19/this-tree-might-be-the-oldest-living-thing-in-europe/>).

- *NEO t-shirt*

Using a picture from an old tree and one from a stalagmite, NEO management together with Malin Nordlund and Malin Stenberg de Serves have produced two different NEO t-shirts aiming to make NEO and NEO’s research more visible to a broader audience.



Figure 6: NEO t-shirts.

- **Astronomy nights,
Costa Navarino, summer 2016**

"Astronomy nights" is an interactive experience at Costa Navarino organized by the Navarino Environmental Observatory where visitors are introduced to the stars and the constellations of the night sky and they become the astronomers deciding how the night unfolds.

Under the guidance of the National Observatory of Athens and with the excellent support from the Navarino Collections team, we have managed to organize this event on a weekly basis and we are happy to see that it was fully booked! During the summer period 2016 we gave a tour to more than 270 visitors!

NEO management

Giorgos Kosmopoulos was employed by NEO management for the period July – August 2016. Giorgos was entrusted with the tasks of Methoni atmospheric lab monitoring and implementation of Astronomy nights under the guidance of NEO Station Manager.

Upcoming

Research

- Researchers Elin Norstrom, Christos Katrantsiotis, Martina Hättestrand as well as two master students Erika Modig and Helen Sunmark from Stockholm University will be in Greece for fieldwork in Lake Lerna (Peloponnese).
- Master students Agnes Classon and Reyes Martin Gonzalez will be at NEO for a week and together with Giorgos Maneas install extra sensors in the Gialova lagoon area, and check those which are already installed and running.
- A bird-monitoring in the Gialova lagoon area covering the whole year will start in October. 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

- As part of a one semester Natural Science Specialization course a group of students from the upper secondary school, Värmdö Gymnasium, will visit NEO in October.
- The 4th master course, on “*Water management issues from a social science and management perspective*”, will be held at NEO in November 2016.
- The 5th training course in Air Pollution for undergraduate students from the Physics Department of the University of Patras, Greece will take place in December at NEO.

Events

- A workshop with special focus on landscape ecology will take place at NEO in November.
- A NEO workshop will be held at the Department of Physical Geography, Stockholm University on the 24-25 November, 2016. The aim of the workshop is 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. Another important aim is to discuss opportunities and initiate plans for future research, funding and proposals, with a focus on applied research of high relevance to the society.

NEO management

A NEO Steering Committee meeting will be held in Stockholm on the 25th of November in connection to the NEO workshop.