

NAVARINO ENVIRONMENTAL OBSERVATORY

NEO Management

Thursday, 8 February 2018

NEO NEA #27 (October - December 2017)

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

During the last 3 months of 2017, we were happy to see new courses (a school from Sweden) and new research related to Environmental monitoring of Gialova Lagoon area running in parallel with our regular activities at NEO. Moreover, the NEO related EU-application COASTAL - COllaborative lAnd-Sea inTegrAtion pLatform, which was submitted to EU, Research and Innovation Action (H2020-RUR-2016-2017), has been approved! An exciting outcome which links NEO research to corresponding research for the Baltic Sea coast and other EU coastal areas. Håkan Berg left his position as the NEO Director in November and a new Director is not yet appointed. We thank Håkan for his valuable contribution to the development of NEO during his time as the NEO Director.



Figure 1: Students from Hersby Gymnasium working at NEO veranda (photo: Herby Gymnasium)

Activities

Research

- *Research proposals*

The EU-application **COASTAL - Collaborative lAnd-Sea inTegrAtion pLatform**, which was submitted to EU, Research and Innovation Action (H2020-RUR-2016-2017) **has been approved!** The project is coordinated by the VITO-Flemish Institute for Technological Research in Belgium - <https://vito.be/en> - and is granted a total of € 5 million, with 29 partners.

The project links NEO research for the South-Western Peloponnese (Messinia) coastal region to corresponding research for the Baltic Sea coast and other EU coastal areas within the project. A NEO-based collaboration between Stockholm University (SU) and the Hellenic Centre of Marine Research (HCMR) will co-coordinate the activities of the project at the Greek case study (SW Messinia). TEMES, Captain Vassilis and Carmen Konstantakopoulos Foundation (CVCKF) and Development Agency of Messinia (DAM) are NEO-related actors in the project. SU is also the lead for the cross-scale Norrström-Baltic Multi-Actor Lab, representing the Baltic Sea region.



COASTAL is a unique collaboration of coastal and rural business entrepreneurs, administrations, stakeholders, and natural and social science experts. Local and scientific knowledge are combined to identify problems and develop practical and robust **business road maps** and strategic **policy guidelines**, aimed at improving land-sea synergy. A multi-actor approach is followed to analyse the social-environmental and economic land-sea interactions in a collaborative **System Dynamics (SD)** framework, taking into consideration the short-, mid- and long-term impacts of decision making and feedback mechanisms on coastal and rural development. The project is organised around interacting **Multi-**

Actor Labs (MALs), combining tools and expertise for six case studies representing the major coastal regions in the EU territory.

The overarching objective of COASTAL is to **improve the rural-coastal synergies in strategic business and policy decision making and collaboration between coastal and rural actors**. This will be achieved by **developing, demonstrating and applying a generic toolset and performance indicators by combining a multi-actor approach with system dynamics modelling**. This allows us to understand the interactions with market, demographic, environmental and climate forecasts, and quantify the positive and negative externalities.

- *Environmental monitoring of Gialova Lagoon*

- **Bird monitoring, Water Quality Monitoring, Remote sensing (October – December)**

A first year of bird-monitoring in Gialova lagoon, covering the period October 2016 – October 2017, was completed in October. In total 146 species belonging to 16 orders and 42 families were recorded highlighting the importance of the area as a birds' habitat. Based on these first results, NEO researchers will continue their research for the coming year aiming to fill in missing gaps of birds' species and gain a better understanding

of their habitats and their behaviour in order to produce a data base which will be used for scientific and popular publications.

The long-term monitoring of basic water parameters (temperature/conductivity/depth) as well as meteorological conditions (temperature, wind speed/direction, relative humidity, precipitation and solar radiation) in the area was continued on a daily basis (data logged at 5-minute resolution).

The spectro-radiometers, installed in summer 2017, continued to measure the amount of radiation reflected from the water surface and upper water column at specific wavelengths aiming to couple fluctuations in water leaving radiance to changes in the water quality of the lagoon, particularly fluctuations in chlorophyll and suspended organic matter.

- Unmanned Aerial Vehicle flights

Calle Österlin, Elin Leander and Andreas Gazis of SKARL AB (a Stockholm University spinoff company), have been mapping the region around Gialova Lagoon in the vicinity of NEO. So far, approximately 3 square kilometres have been mapped aiming to:

- get a baseline of high quality data for comparison in future research.
- evaluate the performance of large scale, fixed wing mapping platforms in the area.
- analyse the dataset in order to establish viable future research themes.



Figure 2: A screenshot showing the area around Gialova Lagoon which has been mapped with UAV technology so far. (photo: Andreas Gazis)

In addition, UAV flights have been carried out for measuring dust concentration. So far, 5 flights have been performed and data is in the process of being analysed with the aim to:

- evaluate the performance of the OPC-N2 sensor as an airborne payload.
- evaluate the performance of the multicopter platform used to sample atmospheric vertical profiles when carrying this sensor.

Research publications

Finné M, Holmgren K, Shen C-C, Hu H-M, **Boyd M**, Stocker S (2017) Late Bronze Age climate change and the destruction of the Mycenaean Palace of Nestor at Pylos. PLoS ONE 12(12): e0189447. <https://doi.org/10.1371/journal.pone.0189447> .

Klingborg, P. & **Finné, M**. Modelling the freshwater supply of cisterns in ancient Greece Water Hist (2018). <https://doi.org/10.1007/s12685-017-0209-y>

Thorslund J, Jarsjö J, Jaramillo F, Jawitz JW, **Manzoni S**, Basu NB, Chalov SR, Cohen MJ, Creed IF, Goldenberg R, Hysin A, Kalantari Z, **Koussis AD**, **Lyon SW**, **Mazi K**, Mård J, Persson K, Pietroń J, Prieto C, Quin A, Van Meter K, **Destouni G**, Wetlands as large-scale nature-based solutions: Status and challenges for research, engineering and management. Ecological Engineering, 108 Part B, 489-497, 2017. doi:10.1016/j.ecoleng.2017.07.012.

Education

Field Courses @ NEO

- **“Hersby Gymnasium”**

Students’ course, Hersby Gymnasium, Stockholm (October 21-25)

A group of 22 students and 4 teachers from Hersby gymnasium visited NEO in October. The purpose of the visit was to make the students implement field studies for their diploma project. Yet another aim was to experience the Greek culture. ☺

The students worked for three days on their projects at NEO. The subjects were:

1. Bird inventory at the Gialova lagoon.
2. Plant adaptations in the Mediterranean region, for example problems with dehydration and protection against herbivory.
3. Fresh water cleaning methods in Greece and the chlorine content. Comparison between Athens and Messinia.
4. Garbage inventory on the beaches around Gialova.
5. Nitrogen and phosphorus compounds in the Gialova lagoon compared to the sea and small rivers. Wetland effects. (2 groups)
6. Eco-tourism at Costa Navarino resort. A comparison to a similar resort in Sweden.
7. Olive harvesting. A study on olive trees age and amount of olives.



Figure 3: Students and teachers from Herby Gymnasium (photo: Herby Gymnasium)

An overall question for all projects was to figure out how their studies could be linked together to ecosystem services. All projects are supposed to end up in a scientific report. The report is a requirement for their upper secondary school diploma (gymnasieexamen in Swedish) in June 2018.

Outreach

Events

- **Cafe-NEO**

'Climate change and societies: interactions during the past centuries'

Kalamata, October 2

In relation to the course “*Climate, climate change impacts, Greece*”, which took place at NEO, a cafe-NEO meeting took place at Baba Yaga café bar in Kalamata.

The participants had the opportunity to discuss with Dr. Elena Xoplaki, Researcher at the Justus-Liebig University of Giessen, Germany, the impact of climate change to past societies and examples of successful or unsuccessful societal adaptations.



Figure 4: The café-NEO meeting with invited speaker Dr. Elena Xoplaki.

NEO management

NEO Steering Committee meeting was held via a video call on December 5.

Giorgos Maneas, was in Stockholm for the period October 15 – December 18 in order to follow courses for his PhD and meet with colleagues from SU who are implementing research and educational courses at NEO.

Upcoming

Research

- Carl Osterlin and Andreas Gazis will be at NEO for several weeks working on data collection from drone flights.
- A second year of Bird-monitoring in the Gialova lagoon area, will start in January 2018. This is part of Giorgos Maneas PhD research and 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.
- As part of his PhD research, Giorgos Maneas in collaboration with HCMR will initiate a nutrients' monitoring in Gialova Lagoon as well as in streams and small rivers around the area on a monthly basis.

Education

- David Myers, a master student following the course Landscape Ecology at SU, will visit NEO for a month in order to work on his thesis which is focusing on soundscape diversity in different habitats.
- The MSc course “Cultural Heritage Materials and Technology” will visit NEO in March.
- A group of students from The American College of Greece (DEREE) will visit NEO in March.

Events

- Karin Holmgren is invited speaker at an event organized by The Hellenic Foundation of the Nordic Countries and Stockholm of Commerce entitled “*Never let a crisis go to waste*” and the event will be held in Stockholm on February 12 with Mr. Achilles Constantakopoulos as a Special Guest. Karin will speak under the title “Science and Business for a Sustainable Life.”
- Several café-NEO events will take place in Kalamata and Patra.