

NEO NEA #1 (April-June, 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

- In the first week of April the NEO office was delivered and NEO atmospheric research station was launched. Please refer to the extended descriptions given in the separate paragraphs for further details.
- On 31 May, Karin Holmgren and Nikos Kalivitis visited Kapsia cave for routine monitoring work.
- On 4 June, Karin Holmgren, on behalf of Navarino Natura Hall, received a donation during a Prize Giving Ceremony & Gala Dinner of the Aegean Airlines Pro-Am golf tournament held at Navarino Dunes. The donation will be used to expand the Natura Hall with a section about environmental-friendly building and the Messinian architecture, well-known for its harmonizing with the natural landscape.
- NEO is presented in the “I Know My Resort” calendar of Costa Navarino for the second week of June.
- On 14 and 15 June it was arranged with the Human Resources department of Costa Navarino NEO Management to offer short seminars for the management teams as well as the front line associates of the hotel, describing NEO and our activities so that they will be able to inform guests about who we are and how to reach us. Nikos Kalivitis presented a short introduction about NEO and showed around the atmospheric research lab. The seminars were quite successful, over 40 associates of Costa Navarino attended the seminars.
- On 21 June Dr. Stelios Kazadzis and Dr. Vassilis Amiridis from the National Observatory of Athens installed at Costa Navarino the first two instruments of the NEO radiometric station. Please refer to the extended description given below for further details.
- During October 20-26 the workshop “Ecohydrology and integrated water resource management” will be held by Gia Destouni at NEO with participants from Stockholm University, Royal Institute of Technology, Purdue University, University of Florida, University of Iowa and National Observatory of Athens.
- During November 8-10 a Stockholm University Senior Lecturers meeting will take place for planning of educational activities at Messinia, held by Karin Holmgren and Ingmar Borgström.

Visits to and from NEO

- Håkan Grudd and Paul Krusic visited NEO on 18 April and they visited the facilities. Paul will be in Messinia in June to conduct field work.
- During the last week of June and the first week of July two production teams from Travel Channel, England and TF1, France are invited at Costa Navarino. They expressed interest to learn more about NEO, to be shown around at NEO facilities, Natura Hall and to interview NEO Management.
- From 30 June to 2 July Vasilis Karakousis, Karin Holmgren and Karin Ulfsdotter-Crepin will attend the Tällberg Forum in Sigtuna, Sweden.
- Karin Holmgren will be at NEO from 2 until 15 of July.
- In July, Liz Else, Associate Editor for New Scientist is expected to arrive in Messinia as well and interview NEO associates.
- From 27 August to 2 September Nikos Kalivitis will visit Stockholm to be introduced to SU and have meetings with all the associates of NEO and others interested.

Natura Hall

Natura Hall since 22 June has opened its doors, hosting interactive exhibitions about Messinia environment and culture and about environmental issues of more general interest. The NEO stand is being prepared with the help from the NEO management team, and contains information about the birth of NEO and our activities.

Four volunteers have been recruited to assist visitors to the Natura Hall. They are students from Stockholm University: Linn Borg and Therese Eriksson will work from 6 June to 31 July and Hanna Andrén and Josefin Klein will be here from 1 August to 15 October. Part of their volunteerships will be carried out within the frame of a INK traineeship course and the Station Manager will act as their local supervisor.

Mondo and internal information

The annual report for 2010 has been compiled and is uploaded to Mondo

The web-site is being prepared with the help of Inez Jakobsson and will hopefully be up and running soon.

NEO office

The office of NEO in the Westin, Costa Navarino is now delivered. The temporary home of NEO is fully equipped, hosting the office of NEO management, the meeting room with an additional office, the seminar room and the kitchen.

NEO radiometric station

On 21 June Stelios Kazadzis and Vassilis Amiridis from the National Observatory of Athens, associates of the Academy of Athens, installed at Costa Navarino the first two instruments of the NEO radiometric station. The platform hosting the instruments is built on a roof top at the Romanos Luxury Collection hotel.

The two instruments installed in the NEO radiometric station perform measurements of solarUV irradiance and measurements of diffuse and total visible solar irradiance and aerosol optical depth retrieval. For the UV measurements a two channel Kipp and Zonen UV irradiance instrument has been installed, the first channel is a UVS-A-T Radiometer with a broad spectral response optimized for precise measurements of atmospheric UVA irradiance and the second channel is a UVS-E-T Radiometer with a spectral response function that simulates the Erythemal (sunburn) action spectrum of the human skin. A Multi-Filter Rotating Shadowband Radiometer (MFR-7 Yankee Env. System Inc., Turner Falls, MA), has been installed in order to calculate the direct component of the solar irradiance through measurements of the total and the diffuse irradiance components.



Figure 1: a) UV instrument for measurements of the Erythemal and the UVA irradiance levels, b) MFR Radiometer for measurements of diffuse and total visible solar irradiance and aerosol Optical Depth retrieval



Figure 2: The platform hosting the radiometric measurements instruments on a roof top at the Romanos Luxury Collection hotel

NEO atmospheric research station

The NEO atmospheric composition research laboratory was established in two phases. On March 15, NEO station manager, Nikos Kalivitis, along with Evangelos Gerasopoulos and Michalis Vrekoussis, researchers of the Academy of Athens, arrived at Costa Navarino in order to install the sampling inlets at the Library tower (Fig. 3, b). Two 18 m stainless tubing lines were installed, connecting the sampling heads at the roof of the tower with the laboratory room at the first floor of the tower. Additionally, three Teflon lines were installed to be used for atmospheric gas species measurements. During the first week of April, HC Hansson and Tabea Hennig from ITM, Stockholm University and Evangelos Gerasopoulos from the Academy of Athens came to Messinia. The main purpose of their visit was the installation of measuring instruments in the laboratory of the tower, mainly focusing on the properties of atmospheric aerosols (Fig. 3, a). Aerosol measurements were initiated directly, regarding number size distributions and optical properties. Additionally, a tropospheric ozone monitor is now installed, being a tracer for photochemical pollution.

Since 5 April, the atmospheric research station is up and running. Preliminary results of the atmospheric research station are presented in Fig. 4 and 5. In Fig. 4 the measurements for the optical properties of atmospheric aerosols during the period 07/04 – 17/05/2011 are presented. The blue line corresponds to the scattering of light by the particles while the red to the absorption. Please note the different scale in the two axes. What is worth noticing is an event which took place on 1 May. During that day, a so called “Sahara dust event” resulted to the transport of great amounts of dust particles from the arid areas of the Sahara desert towards Eastern Mediterranean. That was obvious in the data for light scattering, a spike in the nephelometer data for that day. Calculating air mass back trajectories (using HYSPLIT model of NOAA) for that particular day, meaning calculating the origin of the measured air masses, it was obvious that the air arriving at Costa Navarino came from Sahara desert (upper panel of Fig. 4). This event is evident rather in the data for scattering than that for absorption, since at visible wavelengths, desert dust aerosols tend more to scatter the light than to absorb it.

In Fig. 5 the size distributions of atmospheric aerosols for two different days are presented. Fig. 5a shows the daily variation of the size distributions on 14/04/2011 while Fig. 5b on 15/05/2011. These two contour plots present the daily evolution of the size distributions, axis X represents the time of the day, axis Y the particle diameter (ranging from 10 -924 nm) and the colour scale denotes the aerosol concentration in particles/cm³, as explained in the scale on the right. In Fig.5a can be observed a rather bimodal distribution, representing maritime background aerosols, and after midday small particles are present in the atmosphere, reflecting some event of local particle production. On the other hand, Fig.5b shows a rather unimodal distribution, of aged particles dominating the atmosphere which have probably been transported via long range transport processes.

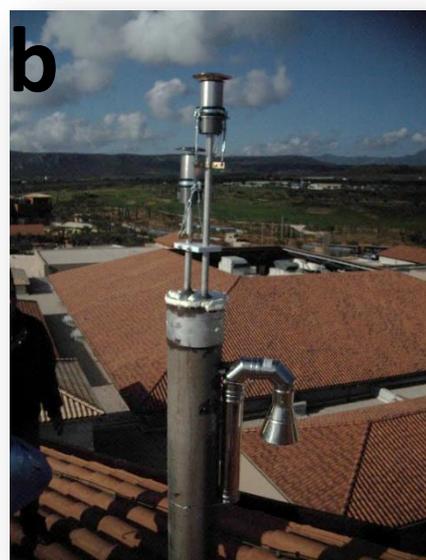
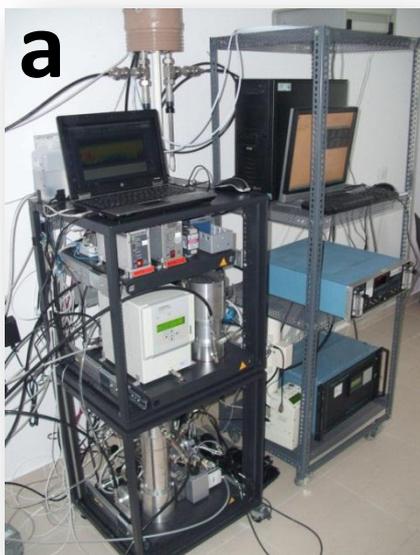
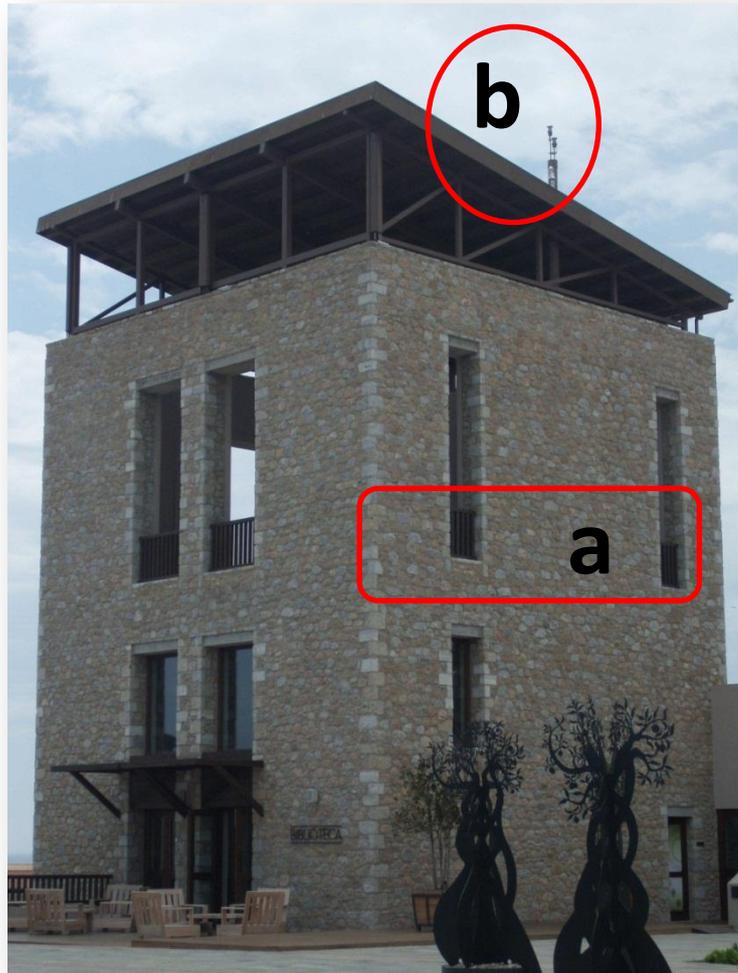


Figure 3: The atmospheric research station at the Library tower. a) The laboratory room b) Sampling heads

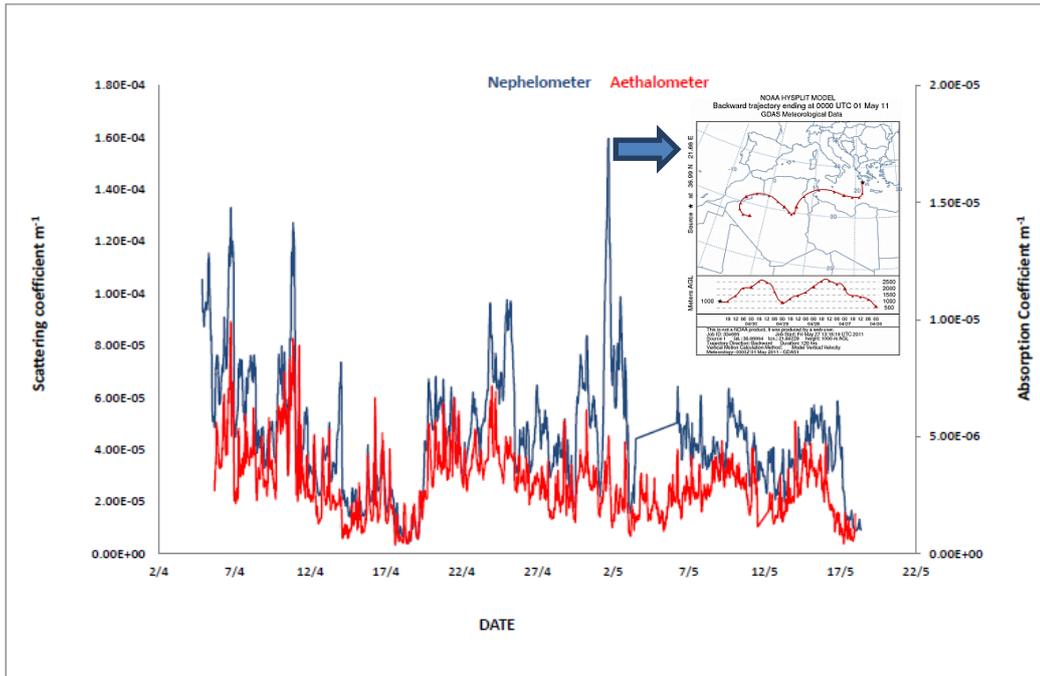


Figure 4: Optical properties of atmospheric aerosols at NEO for the period 07/04 – 17/05/2011. Upper panel: air mass back trajectory for May 1

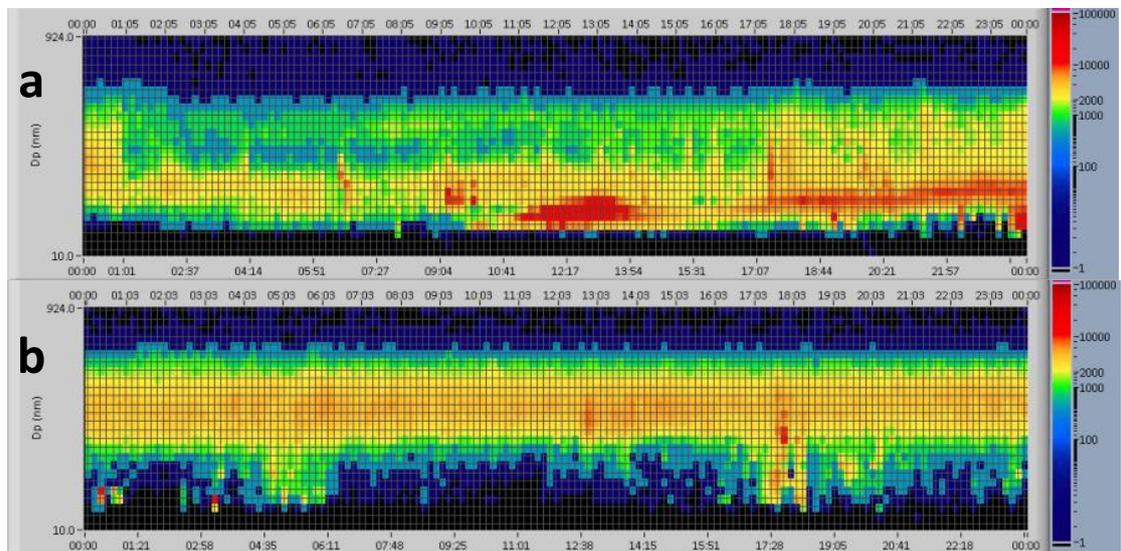
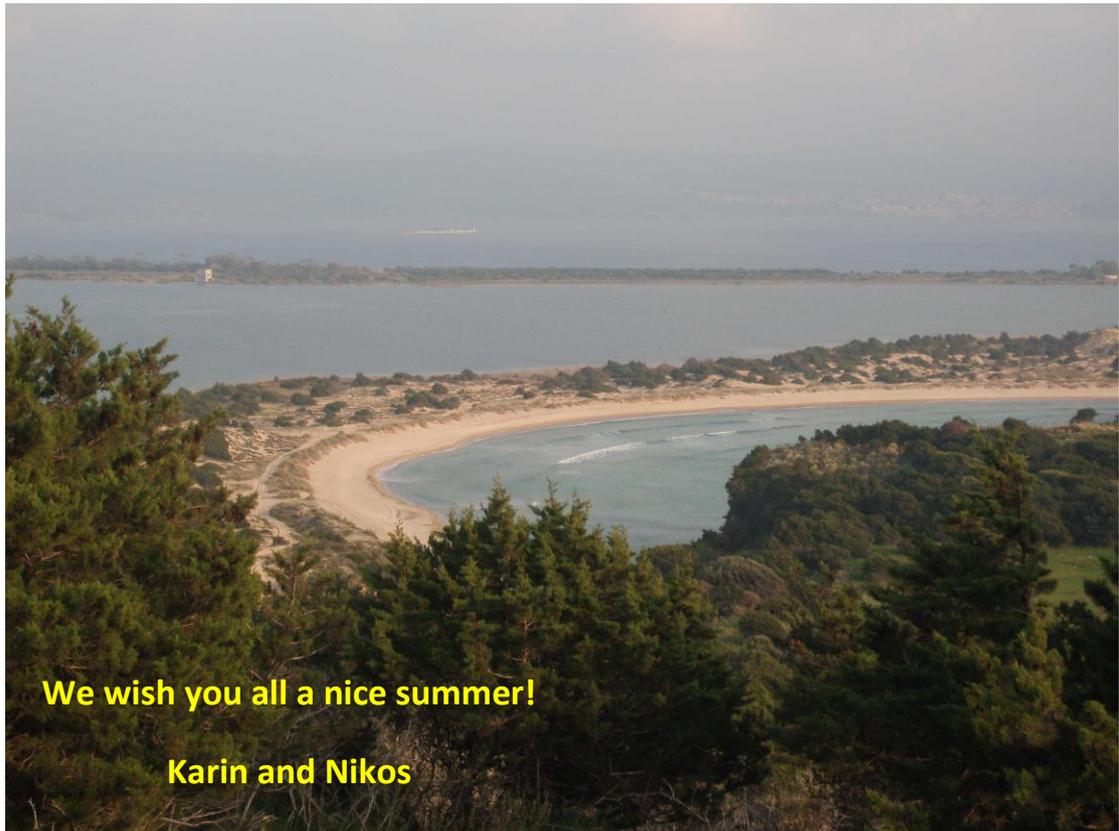


Figure 5: Size distributions of atmospheric aerosols. A) Daily variation of size distribution on 14/04/2011 b) Same as (a) on 15/05/2011.



We wish you all a nice summer!

Karin and Nikos