Aerosol monitoring activities at the Navarino Environmental Observatory, a new ACTRIS site in the Eastern Mediterranean

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The Navarino Environmental Observatory (NEO) is a collaboration between the Stockholm University, the Academy of Athens and a private company (TEMES S.A.), dedicated to research and education on the climate and environment of the Mediterranean region. NEO's aerosol station is situated at Methoni, a coastal site at SW Greece (36° 49' 32" N, 21° 42' 17" E, 50 m a.s.l.). To the NE and at a direct distance of 220 km from NEO the city of Athens is situated, the largest metropolitan center in Greece. The Megalopoli Power Plant is situated 52 km NE of NEO and it produces electricity from coal and lignite mainly mined locally in the Megalopoli Power Plant. Liakakou et al., (2013) has shown the influence from various sources on the atmospheric composition of the area.

NEO operates an aerosol station for monitoring of the main aerosol physical, optical and chemical properties, as well as a radiometric station, since 2011. It is registered in ACTRIS (Aerosols, Clouds, and Trace gases Research Infra Structure Network) as an associate partner station since 2012. Among the parameters measured are:

- (a) Scattering coefficient at 530 nm monitored by means of a nephelometer (M903, Radiance Research) under a flow of 5 lpm on five minute integration intervals. The instrument is coupled with a silica gel dryer for determination of ambient relative humidity impact to scattering.
- (b) Absorption coefficient quantified as a function of Black Carbon (BC) with a single wavelength aethalometer (model AE-16, Magee Scientific) at 880 nm, sampling at 7.5 lpm in five minutes basis. The aethalometer data are corrected for multiple-scattering and shadowing effects according to Weingartner *et al* (2003).
- (c) Aerosol size distributions in the 0.4-20 μm aerodynamic diameter range monitored by a custom made DMPS (Sweden SU) and an Aerodynamic Particle Sizer (APS-3321, TSI).
- (d) Chemical composition of aerosols ($PM_{2.5}$) on a campaign basis and semi continuously (15days/month) since March 2016.

The role of the site is to maintain long term monitoring of aerosol physical, chemical and optical properties (Figure 1), in an attempt to shed light on the factors that control their levels and variability as well as to discriminate the relevant contribution from long range transport versus local sources, with emphasis on the role of biomass burning (branches burn - oil trees harvest, domestic heating).

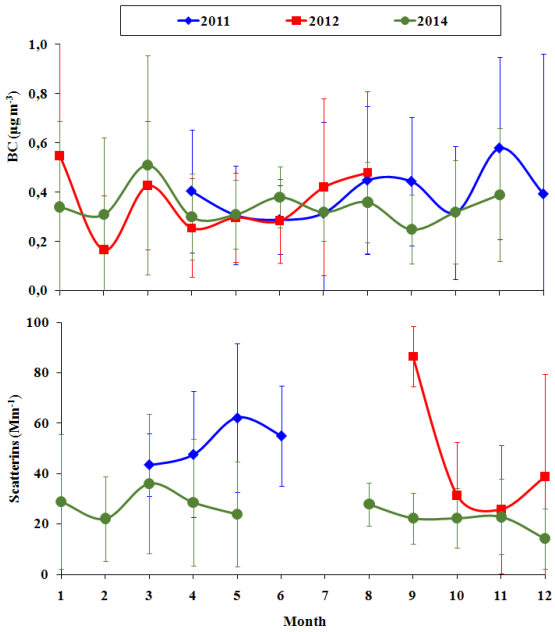

Figure 1. Monthly averaged values of Black Carbon (BC) and the scattering coefficient at NEO (2011-2014).

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