



## Observations of alkylamines at a costal site in the East Mediterranean

Evaggelia Tzitzikalaki (1), Antti-Jussi Kieloaho (2), Heidi Hellén (3), Hannele Hakola (3), Nikolaos Kalivitis (1), Giorgos Kouvarakis (1), Veli-Matti Kerminen (3), Nikolaos Mihalopoulos (1,4), and Maria Kanakidou (1)

(1) University of Crete, Environmental Chemical Processes Laboratory, Department of Chemistry, P.O.Box 2208, 70013 Heraklion, Greece (evaggeliatzitzi@uoc.gr; mariak@uoc.gr), (2) Department of Physics, University of Helsinki, P.O. Box 64, Helsinki, Finland, (3) Finnish Meteorological Institute, P.O. Box 503, Helsinki, Finland, (4) Institute for Environmental Research and Sustainable Development, National Observatory of Athens, Athens, Greece

Amines are reactive volatile base in the atmosphere and play a key role in new particle formation. Due to their height reactivity, concentration measurements are scarce and mostly concentrated within short period of time. The present study provided the first long-term measurements of alkylamines in the Eastern Mediterranean. Measurements took place at a remote coastal site on the north east side of the island of Crete at the Finokalia monitoring station of the University of Crete (finokalia.chemistry.uoc.gr; 35°20'N, 25°40'E, 250m a.s.l.) from January 2013 to December 2015.

The samples were collected in glass fiber filters impregnated with phosphoric acid that trap gas-phase amines as salt. Samples were subsequently transported to the lab where they were stored in refrigeration until the analysis that took place in a Liquid Chromatography Triple Quadrupole Mass Spectrometer (TSQ Quantum, Thermo Finnigan). The alkylamines that were detected were ethylamine (EA), dimethylamine (DMA), trimethylamine (TMA), propylamine (PA), diethylamine (DEA) and triethylamine (TEA). DMA & EA and TMA & PA were handled as pairs as they couldn't be separated.

The most abundant amines were found to be DMA & EA, whereas BA and TMA were under the detection limits. The highest concentrations for DMA & EA and DEA were observed during summer, while for TMA & PA no clear annual cycle was found. The results are analyzed together with observations of new particle formation at the Finokalia station to estimate possible links of alkylamines to the formation of atmospheric particles in the area.

This work has been partially supported by the European FP7 collaborative project BACCHUS (Impact of Biogenic versus Anthropogenic emissions on Clouds and Climate: towards a Holistic UnderStanding).