The ERATOSTHENES Remote Sensing Supersite: Understanding the atmospheric system in the EMMENA region

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The Mediterranean Basin is well recognized by IPCC as a hot spot for climate change. Severe consequences are expected for the future in the Eastern Mediterranean, the Middle East and North Africa (EMMENA) region.

The increased urbanization, high pollution, dust storms and decreasing precipitation in the region dramatically affect climate change. Current prediction models for weather, climate, and environment are based on sophisticated modeling in close connection with state-of-the-art observations.

A modern observational super-site in Cyprus is of fundamental importance to understanding the atmospheric system in the EMMENA region. The presence of such a super site will be able to effectively monitor atmospheric conditions and provide relevant data for atmospheric prediction modeling.

This contribution reports on the recent progress regarding the buildup of a permanent, state-of-the-art atmospheric remote sensing station in Limassol, Cyprus. Through the EU H2020 Teaming project EXCELSIOR, the ERATOSTHENES Centre of Excellence (ECoE) will be established as a Centre of Excellence for Earth Surveillance and Space-Based Monitoring of the Environment.

The ECoE modern in-situ observational super site will be established in Cyprus for long-term profiling of the atmosphere, including wind, humidity, aerosol and cloud properties and precipitation fields. The ECoE will be fully in line with ESFRI networks, such as ACTRIS, as it will utilize state-of-the-art infrastructure and techniques to provide cutting-edge data regarding atmospheric processes.

As a demonstration initiative, an 18-month field campaign (Cy-CARE (Cyprus Cloud Aerosol and pRecipitation Experiment)) has been designed by the Leibniz Institute for Tropospheric Research (TROPOS) and was implemented by the ERATOSTHENES group at Cyprus University of Technology (CUT) between October 2016 and March 2018, with the main focus on lidar/radar-based studies of aerosol-cloud-precipitation relationships. Case studies of the Cy-CARE campaign will be presented to demonstrate the importance of the ground based atmospheric remote sensing observations in
the region.

Acknowledgements

The authors acknowledge the EXCELSIOR project that received funding from the European Union [H2020-WIDESPREAD-04-2017:Teaming Phase2] project under grant agreement no. 857510, and from the Republic of Cyprus. CUT team acknowledge ACTRIS-2 project (H2020-INFRAIA-2014-2015, GA no. 654109) and the Research and Innovation Foundation of Cyprus for the financial support through the SIROCCO (EXCELLENCE/1216/0217) and AQ-SERVE (INTERGRATED/0916/0016) projects.