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The ERATOSTHENES Remote Sensing Supersite: Ground-truth observations over Cyprus

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Cyprus is strategically located in the region of the Eastern Mediterranean, the Middle East and North Africa (EMMENA). As a crossroad between Europe, Asia and Africa, it is representative of meteorological conditions and coastal areas in the EMMENA region.

Incomplete coverage with ground monitoring stations is the main limitation to make fast and significant progress in understanding the complex climate-relevant atmospheric processes around the globe and thus to improve atmospheric models used for climate change projections and extreme weather predictions. Although satellites can continuously monitor the atmosphere on a regional to global scale, they must be ground-calibrated and validated in order to incorporate satellite data into atmospheric models.

Cyprus, and especially Limassol as a coastal city, can be considered an ideal natural laboratory for advanced and comprehensive field studies on climate change, aerosol-cloud-dynamics-precipitation interaction, and the weather-precipitation-dryness complex, providing additionally valuable ground truthing observations for satellite missions.

The vision of the ERATOSTHENES Research Centre (ERC) in Cyprus is to become a Centre of Excellence for Earth Surveillance and Space-Based Monitoring of the Environment, in the framework of the EU H2020 Teaming project EXCELSIOR. Within this vision, a modern observational super site in Cyprus is of fundamental importance and will be build up for long-term profiling of the atmosphere (wind, humidity, aerosol and cloud properties, precipitation fields), in one of the hot spots of climate change increasing extreme weather events.

The ERATOSTHENES station in Limassol, Cyprus with the current instrumentation (EARLINET Raman depolarization lidar) follows the CAL/VAL activities of the AEOLUS satellite launched August 2018 through the participation to the VADAM project. Selected cases that demonstrate the complex aerosol and meteorological conditions over Eastern Mediterranean will be presented as well as lidar observations during AEOLUS overpasses over Cyprus.

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