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The ASKOS experiment for the validation of Aeolus L2A aerosol product

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For the in-orbit calibration and validation of the Aeolus products, ESA organized the Aeolus Tropical campaign, which will take place on June-July 2021 at Cape Verde region. During the campaign, Aeolus underfights will be performed with several aircrafts (by DLR, NASA, LATMOS, and the University of Nova Gorica (UNG)) and advanced ground-based instrumentation will be deployed in Mindelo island within ASKOS (https://askos.space.noa.gr/) experiment. ASKOS observations will provide an unprecedented dataset for the aerosol and wind conditions in the region, in order to provide reference values for the Cal/Val of the mission. Apart from the main aerosol Cal/Val objective of ASKOS, the foreseen synergistic activities will provide a wealth of information to address scientific questions posed by the participating groups on dust characterization, transportation and it's impact of radiation and cloud formation.

Here, we report on the status of the ASKOS preparations for the evaluation of the aerosol and cloud product, focusing on the instrumentation requirements and availability, as well as the

engagement of the scientific community so far. ASKOS will deploy advanced ground-based and airborne remote sensing and in-situ instrumentation, including the full ACTRIS aerosol and cloud remote sensing/in-situ facilities and airborne in-situ sensors to be operated on drones and/or aircrafts. The main ground-based remote sensing instrumentation in Cape Verde will consist of sophisticated lidar systems, including the EVE lidar, a circular polarization system that is tailored to mimic the Aeolus measurement from ground, the multi-wavelength Polly-XT and the WALL-E prototype for detecting particle orientation. The instrumentation will also include sun-photometers such as AERONET-CIMEL, but also polarimeters to advance microphysical retrievals for non-spherical particles such as dust. Cloud remote sensors including a cloud radar and a microwave radiometer will operate in parallel along with meteorological radiosondes. In-situ sensors at surface and onboard UAVs and light aircrafts will be available. ASKOS will be fully supported by several operational modeling simulations for meteorological and atmospheric composition forecasting. ASKOS will remain open to contributions from other communities and research groups and more synergies will be pursued in the future.

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