



Validation of the Aeolus L2A products with the eVe lidar during ASKOS/JATAC campaign

Peristera Paschou^{1,2}, Nikolaos Siomos³, Eleni Marinou¹, Antonis Gkikas¹, Samira Moussa Idrissa⁴, Daniel Tetteh Quaye⁴, Désiré Dègbé Fiogbe Attannon⁴, Charoula Meleti², Jonas von Bismarck⁵, Thorsten Fehr⁶, and Vassilis Amiridis¹

¹Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing, National Observatory of Athens, Greece (pepaschou@noa.gr)

²Laboratory of Atmospheric Physics, Physics Department, Aristotle University of Thessaloniki, Greece

³Fakultät für Physik, Meteorologisches Institut, Ludwig-Maximilians-Universität, Germany

⁴West African Science Service Centre on Climate Change and Adapted Land Use, Atlantic Technical University, Cabo Verde

⁵European Space Agency (ESA/ESRIN), Italy

⁶European Space Agency (ESA/ESTEC), The Netherlands

Abstract. The Joint Aeolus Tropical Atlantic Campaign (JATAC) for the Calibration and Validation (Cal/Val) of the ESA's Aeolus mission was held on summer and September 2021 and 2022 at the remote tropical islands of Cabo Verde. The JATAC campaign comprises airborne and ground-based instrumentation delivering reference measurements of wind profiles and aerosol/cloud optical properties for the validation of the Aeolus products, as well as supporting related research activities. The ground-based component of JATAC, ASKOS (<https://askos.space.noa.gr/>) was stationed at the Ocean Science Center in Mindelo (OSCM), São Vicente Island, where measurements from active and passive remote sensing sensors have been deployed for the validation of the Aeolus Level 2 aerosol and wind products.

The eVe lidar, which is the ESA's ground reference lidar system, was deployed in ASKOS for the validation of the Aeolus Level 2A aerosol products. eVe lidar is a scanning system that can perform combined linear/circular polarization and Raman measurements that operates at 355 nm and retrieves the particle backscatter coefficient, the particle extinction coefficient, the lidar ratio, and the linear and circular depolarization ratios. The lidar is implemented in a dual-laser/dual-telescope configuration that allows eVe to simultaneously reproduce the operation of the ALADIN lidar onboard Aeolus, i.e. circularly polarized emission, as well as the operation of a traditional lidar system, i.e. with linearly polarized emission. Targeted measurements of eVe lidar for the Aeolus validation were performed every Friday evening during the nearest Aeolus overpass from Mindelo resulting to a dataset of fourteen collocations for the intensive ASKOS operation periods in 2021 and 2022. In this study, we present the results from the comparison of the particle backscatter and extinction coefficients, and the lidar ratio between eVe and Aeolus profiles.

Acknowledgements:

This research was supported by the European Space Agency project ASKOS (Grant agreement 4000131861/20/NL/IA) and the PANGEA4CalVal project (Grant Agreement 101079201) funded by European Union's Horizon Widera 2021 Access program.