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# ASKOS-WIND –A Contribution to the Aeolus CAL/VAL Campaign in Cape Verde in June-July 2020

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In August 2018, the Aeolus satellite carrying the first UV Doppler lidar in space (ALADIN) was successfully launched. The particular gap that Aeolus is closing in the global observing system is measurements of winds in cloud free regions and thus we expect Aeolus to substantially improve analysis fields and subsequently predictions of synoptic- to planetary-scale wave phenomena in the Tropics. As part of the Aeolus CAL/VAL activities, an experimental campaign named ASKOS will be organized in June-July 2020 in Cape Verde. ASKOS will deploy advanced instrumentation over Cape Verde to provide unprecedented observations of high quality and accuracy for the wind and aerosol component of Aeolus.

Cape Verde during boreal summer is ideal for this study. The generally high aerosol loading is interesting because it will allow the measurement of both aerosol optical properties and wind, thus opening the way to the study of the interaction between the two. The midlevel African easterly jet allows for the formation of synoptic-scale African easterly waves (AEWs) that typically reach their maximum intensity close to the coast of West Africa. AEWs interact with convection and its mesoscale organisation through modifications in wind, temperature and vertical wind shear, and often serve as initial disturbances for tropical cyclogenesis. In addition, the tropical atmosphere sustains different types of planetary waves that frequently interact with the monsoon and AEWs.

Science questions to be addressed in ASKOS-WIND include: (A) How well does Aeolus monitor winds at different vertical levels in comparison with aircraft measurements and what limits the quality of the retrievals? (B) How well are characteristics of wave disturbances represented in analysis and forecast data relative to the satellite measurements? (C) How much deterioration do we get if we deny the satellite / aircraft measurements to the data assimilation system? (D) Does a better analysis lead to better forecasts of waves rainfall, dust emission and tropical cyclogenesis?

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