

## **Preparation of the Calibration – Validation phase with the Airborne Demonstrator for the ESA ADM – Aeolus Wind-Lidar Mission during the international campaign NAWDEX 2016**

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The spaceborne wind lidar ALADIN shall provide vertical wind profiles within the ESA Earth Explorer Atmospheric Dynamics Mission (ADM) Aeolus. After launch end of 2017 such profiles will be available on a global scale for the first time to improve the quality of numerical weather prediction (NWP). The ALADIN Airborne Demonstrator (A2D) was developed at DLR (German Aerospace Center) focusing on a high degree of commonality in terms of laser source and Doppler lidar receiver design. With these features operating at the same ultraviolet wavelength of 355 nm as the satellite, it is the key instrument for the planned calibration and validation activities. Since 2005, A2D has been deployed in a series of ground and airborne campaigns to support the Aeolus mission by validating retrieval algorithms, the instrument concept and operation procedures. In September and October 2016, the international airborne campaign NAWDEX (North Atlantic Waveguide and Downstream Impact Experiment) based in Iceland was the framework to significantly extend the wind data-set from A2D and the coherent 2- $\mu\text{m}$  wind lidar, both on-board the DLR Falcon research aircraft. While the Falcon mainly focused on jet-stream intersections and calibration-validation procedures, other aircraft and ground stations delivered a comprehensive suite of additional measurements to complement the meteorological picture. For the first time flights with this payload of the Falcon were performed in coordination with the German HALO deploying an aerosol lidar, cloud radar and dropsondes as well as the French Falcon with on-board cloud radar and UV aerosol Doppler lidar. Subsequent to the NAWDEX campaign additional flights were conducted in the Mediterranean area which aimed at aerosol (incl. Saharan dust) detection using the A2D. An overview of the field experiments will be presented together with first results from the ongoing data analysis.