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Sandia National Laboratories

Current Status of the Three ARM Raman Lidars

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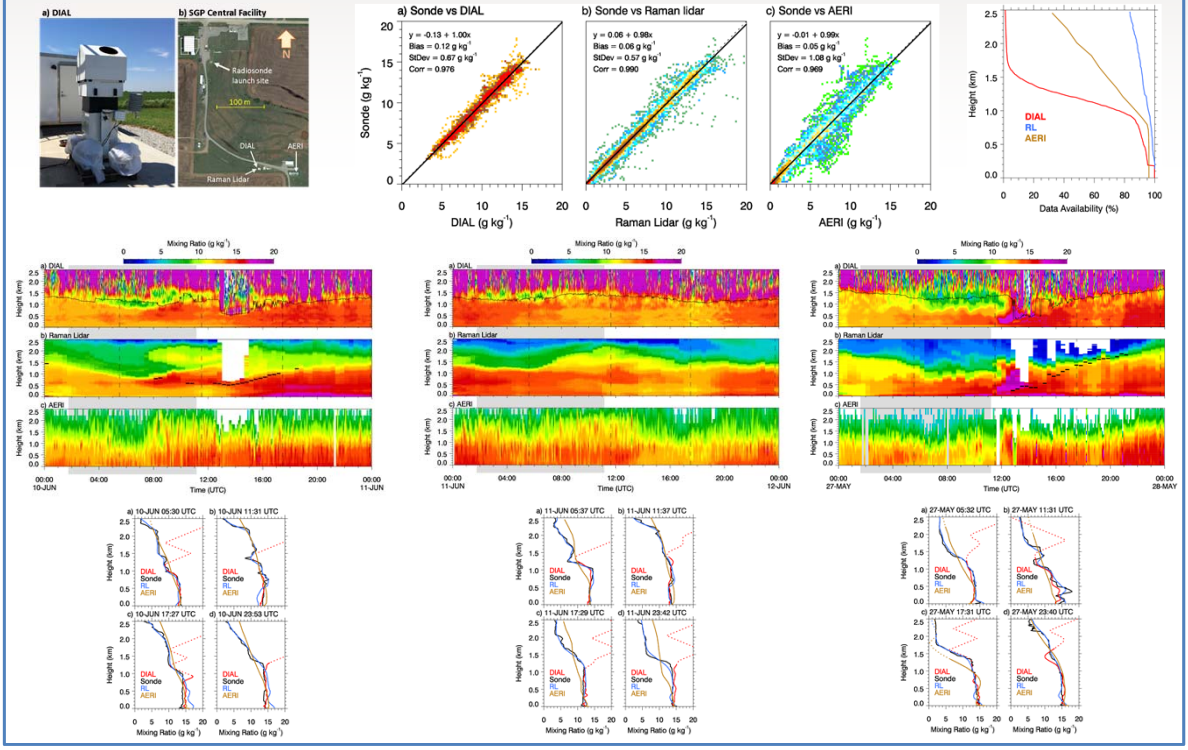
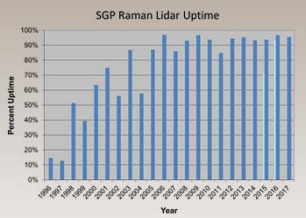
The ARM program currently operates Raman lidars (RLIDs) at the Southern Great Plains (SGP) site in Oklahoma (since 1996), the Eastern North Atlantic (ENA) site in the Azores (since 2015 after relocation from Darwin, Australia), and the third ARM mobile facility (AMF3) at Oliktok Point, Alaska (since 2014; currently "down" due to operational difficulties). All three systems, which incorporate a similar design, transmit at 355 nm and use nine detection channels for measurement of elastic backscatter and Raman backscatter due to vibrational transitions in atmospheric H_2O (at 408 nm) and N_2 (at 387 nm), and rotational transitions in O_2 and N_2 (at 353 nm and 354 nm). Raw photon counting and analog voltage data are recorded with a vertical resolution of 7.5 m and temporal resolution of 10 s. These raw data are then further averaged in time and height and used to compute various value-added data products (VAPs) such as profiles of water vapor mixing ratio, temperature, aerosol backscatter, aerosol extinction and linear depolarization ratio.

Raman lidar / Vaisala DIAL / AERI / Radiosonde Intercomparison (SGP)

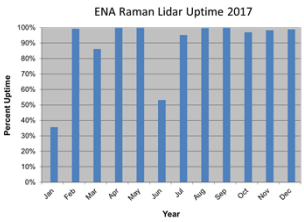
Goal: evaluate the newly developed water vapor DIAL with operational sensors (5/15/17-6/12/17)



Southern Great Plains

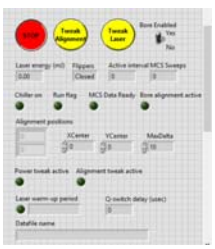


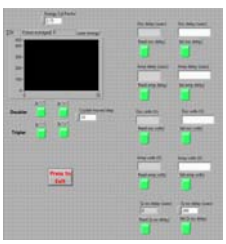
Eastern North Atlantic

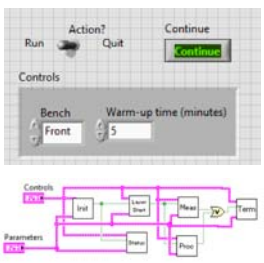


North Slope of Alaska

The LabVIEW code that operates the three systems had become increasingly contorted since it was first developed over 20 years ago, and had diverged into three separate versions for the three lidar systems. It was completely rewritten last year, with a single version now operating the three systems (coded to take into account hardware differences between the systems).







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