

## **Initial Impact Assessment of ADM Aeolus Wind Profiles on NCEP Global Analysis and Forecast**

The Atmospheric Dynamic Mission (ADM) Aeolus satellite of European Space Agency (ESA) aims to provide wind profiles globally from earth's lower surface to lower stratosphere for the first time since September 2018. In this study, the impact of a preliminary version of Aeolus Level-2B Rayleigh and Mie wind retrievals on NCEP Global Data Assimilation System (GDAS)/FV3GS is assessed for the period of September 12 to October 16 2018. First, L2B wind retrievals are verified with the collocated NCEP/GDAS analysis and background forecast. The statistics show that the Rayleigh and Mie winds have reasonable accuracy (random error), around 3-5 m/s. The biases depending on ascending/descending orbits and time are identified and removed by a stand-alone bias correction. Assimilation experiments are performed using the operational 4DEnVar at C384/C192 resolutions. The results demonstrated that Aeolus winds evidently improve 0-5 day forecast in the Southern hemisphere and tropics, particularly in the upper troposphere.