Yan
Liu
Numerical Weather Prediction Center, China Meteorological Administration
Oral
Radio occultation (RO) is a limb-sounding remote-sensing technique used for measuring the physical properties of a planetary atmosphere. The numerical weather prediction centers have shown that RO data have a substantial impact on the analysis and forecast quality, and become an anchor in determining the bias correction for radiances and other observation types that require calibration. However, the RO data volumes are currently declining as some RO system, such as COSMIC, are approaching the end of its lifetime. As a new member of RO sounder, GNOS (Global Navigation Satellite System Occultation Sounder) onboard the Chinese FY-3 series polar orbiting meteorological satellites has begun to provide data since the first FY-3C satellite launched on 23 September 2013. GNOS is capable of tracking the signals of both GPS and Beidou navigation satellite systems, which provide approximately 400 GPS and 100 Beidou RO events daily. In this paper, the quality of GNOS data will be evaluated again, because some improvements of GNOS data have been made before they will be provided via the global telecommunication system in June this year. The quality was assessed by examining observation minus background, and comparing them to those from other RO data, also including assimilation impact experiments. Results show that the lowest probing height of 90% GNOS profile can reach 4KM away from the surface. The standard deviation of GNOS refractivity is approximately 2% compared to ERA_Interim reanalysis and radiosonde data. The assimilation experiments show that GNOS data can improve the analysis in the upper troposphere and lower stratosphere, particularly in the southern hemisphere and the ocean, which produce the neutral and positive impacts in GRAPES assimilation system. The combined impact of assimilating both GPS and Beidou GNOS RO data is greater than assimilating either sounder individually.
OSTS session
Regional and Global CAL/VAL for Assembling a Climate Data Record