



Validation of two calibrated AMSU measurements in lower stratosphere using COSMIC radio occultation data

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GPS Radio Occultation (RO) data from the Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC) mission is used to validate the measurements of Advanced Microwave Sounding Unit (AMSU) in low stratosphere on different satellites. The microwave brightness temperature (T_b) simulated from COSMIC data is compared with the AMSU observations, including two calibrated AMSU data, the pre-launch operational calibration and the post-launch Simultaneous Nadir Overpass (SNO) calibration.

The comparisons show that the both calibrated AMSU T_b on three NOAA satellites in lower stratosphere are underestimated, and the T_b bias on NOAA18 is more significant than those on NOAA 15, 16. The bias of AMSU measurements in the lower stratosphere is more obvious in polar region during the winter time, especially in the South Pole region. In addition, the comparisons preliminary show that the SNO calibration can significantly improve the AMSU data than the operational calibration, especially on NOAA 18. The introduced index Ratio quantitatively describes that the improvements on three satellites are rather significant, such as the Ratio on the NOAA 16 is about 70% and on the NOAA 18 and NOAA 15 are greater than 80%, which infers that the SNO calibration is effectively enhance the AMSU data quality.