REMOTE SOUNDINGS

Remarkable progress has been achieved during the last two decades in retrieving temperature profiles by means of passive infrared sensors. Recent efforts have been concentrated on the development of sensors with high spectral resolution. The AIRS (Advanced Infrared Sensor), with 2378 channels, is the first operational instrument with these characteristics. Concerning temperature and moisture profiles, it exhibits substantial improvements when compared with previous instruments (Parkinson 2003). AIRS sensor was launched onboard EOS-PFM (AQUA) satellite in May 2002, together with microwave units AMSU-A and HSB (Humidity Sensor for Brazil). AIRS sensor provides radiances in 2378 channels, yielding significant increase of information about radiative emission/absorption of many secondary gases in Earth’s atmosphere. However, it is not obvious how to quantify or efficiently manage this information (Rodgers 1998).

RESULTS

The atmospheric profiles retrieved by ICI-3 are within the sensor specifications, which foresee errors of up to 1.5K for the temperature profiles and 1.5g/kg for the moisture (Lavanant et al., 1999). The results showed that temperature profiles from ICI, NCEP and NASA C60 model have similar performance for pressure level above 750 hPa. All of them exhibit similar standard deviation in the lower troposphere (about 2 K), but ICI and the analysis showed lower bias (1 to 2 K) compared with C60 (about -5 K, near ground level). On the other hand, the mixing ratio profiles estimated from the NASA inversion model suggested the expected accuracy of about 1 g/kg, a performance comparable to and even better than that observed in ICI and NWP estimates.

REFERENCES