

Comparison of IAPP and ICI Sounding Products at CIMSS



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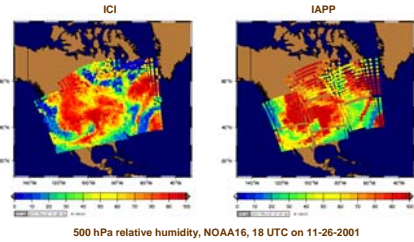
Introduction

The International ATOVS Processing Package (IAPP) and its predecessor, the International TOVS Processing Package (ITPP), have been developed at SSEC/CIMSS to retrieve atmospheric temperature and moisture profiles and other parameters in both clear and cloudy atmospheres from (Advanced) TIROS Operational Vertical Sounder (ATOVS/TOVS) radance measurements. The software has been run operationally for NOAA TOVS and/or ATOVS Global Area Coverage data and direct broadcast (DB) data since the early 1990s. Meanwhile, another ATOVS/TOVS DB processing package, called Inversion Coupled with Imager (ICI), was developed by Meteo-France. At SSEC/CIMSS the DB ATOVS data have been processed operationally in near real-time by both IAPP and ICI, since February 2001. The products separated over land and sea and clear and cloudy condition are monitored on a daily basis and validated on the web site:

http://cimss.ssec.wisc.edu/iapp_ici/

The poster presents comparisons of the temperature retrievals processed by the two software packages between July and October 2003 for both clear and cloudy skies, and land and ocean cases altogether. Temperature bias and RMS difference fields between retrievals and NCEP/AVIATION global NWP analyses are shown for the morning and the afternoon orbits. The retrievals are interpolated to the NWP model grids. The daily bias and RMS vertical distributions vs. time are also shown.

Acquisition area



Details

	ICI	IAPP
Input	•NOAA17/HRPT level 1D data Processed by AAPP & MAIA •NCEP/AVN NWP analyses, forecast	•NOAA17/HRPT level 1B data Processed by AAPP •Surface meters •Regression first guess for real-time NWP analyses/forecast first guess for post processing
Channels used <small>vary on clear/cloudy/partly-cloudy and sea/land/coast situations</small>	HIRS channels: 2-8,10-16 AMSU-A 5-11, AMSU-B 3,4	HIRS 1-17, AMSU-A 3-14, AMSU-B 2-5 (AMSU-A 1,2,15 and AMSU-B 1)
Resolution	1X1 HIRS	3X3 HIRS
Bias adjustment	Yes	No

Conclusions

- Results show retrievals compared to NWP analyses
- Retrieval biases in both algorithms are large over mountain regions in lower levels (700 hPa)
- Retrieval RMS are approximately 2-3K; surface and tropopause regions have largest RMS differences
- IAPP shows larger biases, likely a result of not doing a radance bias adjustment in the retrieval
- This study is a result of a strong collaboration between Meteo-France and UW CIMSS

References

ICI documentation: <http://www.meteorologie.eu.org/ici/>
To obtain IC source code: <http://www.emetsat.de>

IAPP documentation:
Li, J., W. Wolf, W. P. Menzel, W. Zhang, H.-L. Huang, and T. H. Achtor, Global Sounding of the Atmosphere from ATOVS Measurements: The Algorithm and Validation, *J. Appl. Meteor.*, 39, 1248-1265, 2000.

Acknowledgements

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