Radiance Data Assimilation for WRF model: overview and results
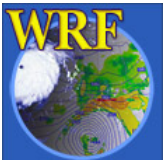
Zhiquan Liu

NCAR/MMM

Current Team: T. Auligné, H.-C. Lin, X. Zhang, H. Shao
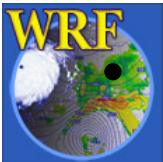
Work supported by AFWA, NASA, NSF, KMA
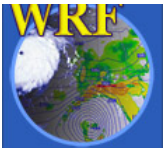
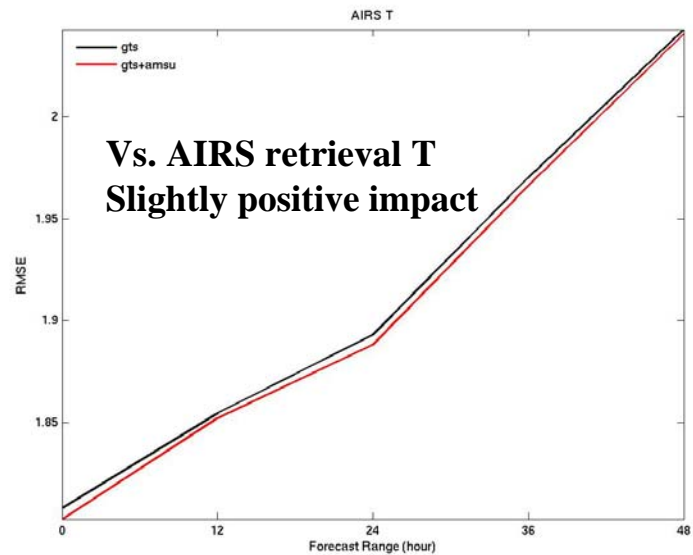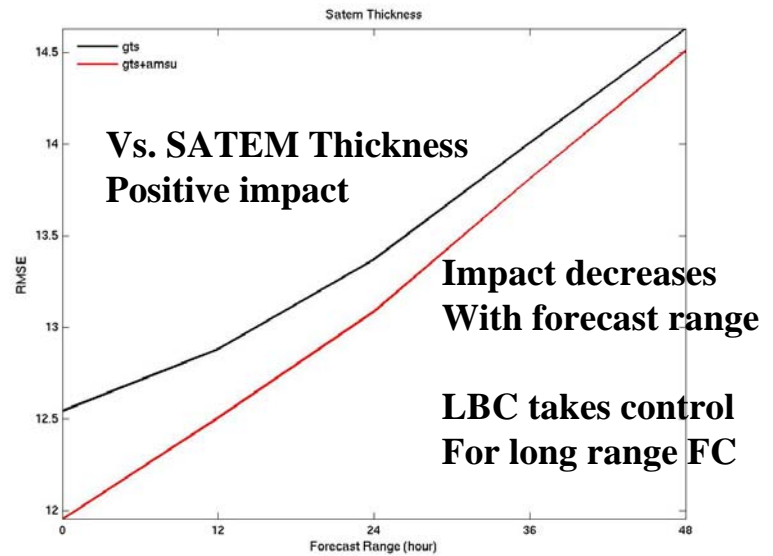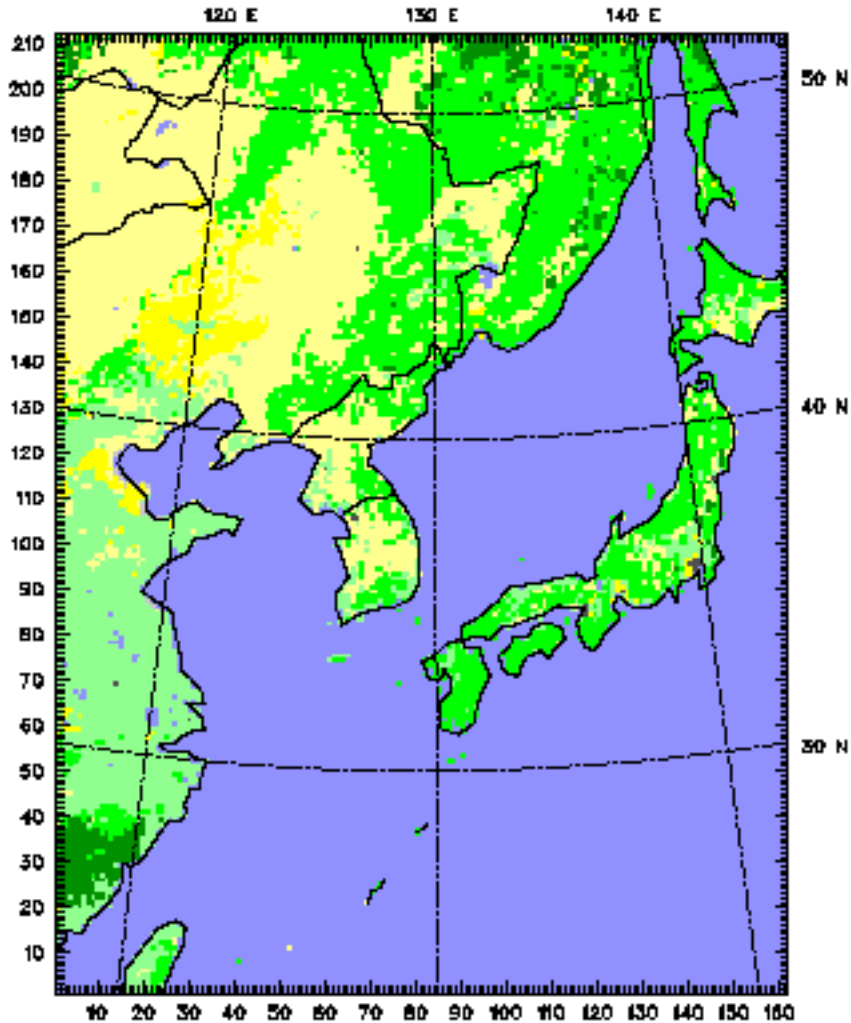**ITSC-16, 7~13 May 2008**

Components of radiance assimilation

- Data Ingestion
  - NCEP radiance BUFR data
    - AMSU-A/B, MHS, HIRS, AIRS
  - SSMIS from AFWA/NRL, UPP produced

- Radiative Transfer Model
  - Both CRTM_1.1 and RTTOV8_7

- Bias Correction
  - Scan bias and air-mass bias (Harris and Kelly, 2001)
  - Variational Bias Correction (Derber and Wu, 1998)

- Quality Control: AMSU/MHS, SSMIS, AIRS

- Thinning and Load balancing

- Observation error tuning (Desroziers & Ivanov, 2001)

- Monitoring tool

- Work for 3DVAR/FGAT/4DVAR

- Initial cloudy radiance capability

DATC: East Asia Testbed

Vs. SATEM Thickness
Positive impact

Impact decreases
With forecast range

LBC takes control
For long range FC

Vs. AIRS retrieval T
Slightly positive impact

Future plans

- Add more instruments
  - IASI, GOES platforms
- Tune the system for various testbeds
- Further developments for cloudy radiance assimilation and 4DVAR+radiance
- Explore ensemble-based radiance assimilation
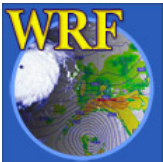
Come to see Poster 6.11 for more detail