MW Satellite Data Bias Correction

Variational bias correction considers

- NWP model error,
- RT calculations error,
- Surface emissivity error,
- collocation error,

} **Bias in satellite data**

- cannot be applied over land due to the limitation in microwave surface emissivity
- Only radiometric corrections and no **geometric corrections**

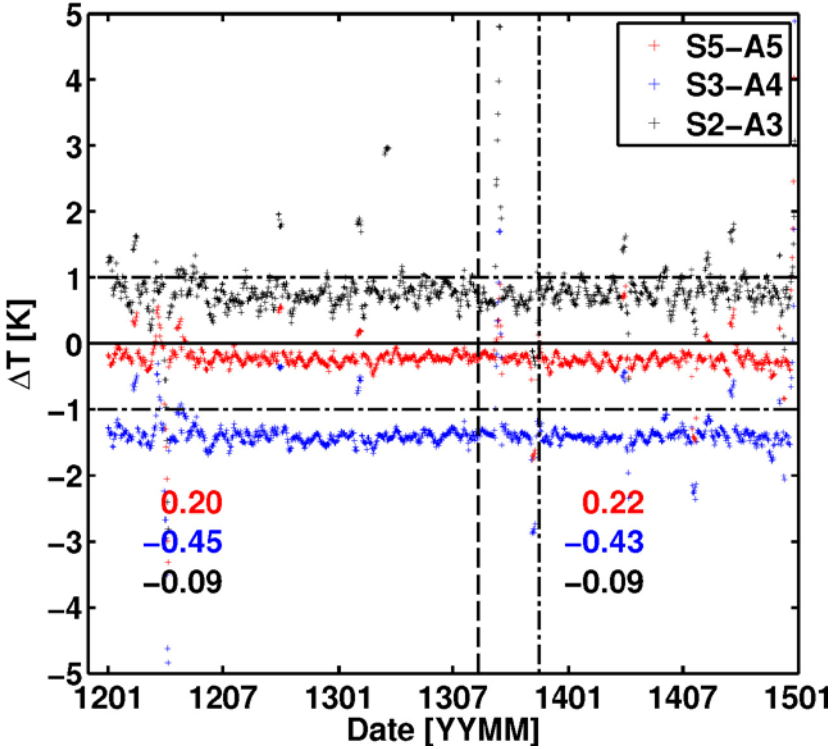
Proposed method:

- **based on the physics of microwave satellite data**
- **doesn't depend on the NWP and RT models**
- **Can be applied over either land and ocean**
- **considers both radiometric and geometric errors**

Isaac Moradi, ESSIC, CICS-MD, University of Maryland @ JCSDA / NOAA

Detected drift in ATMS calibration

MHS NOAA-18 Chan 3



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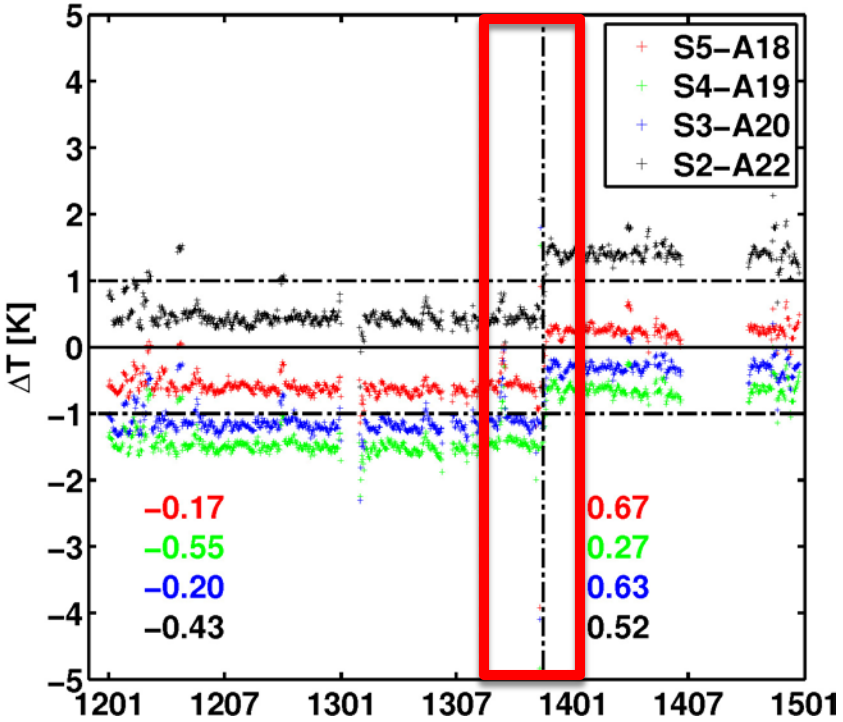
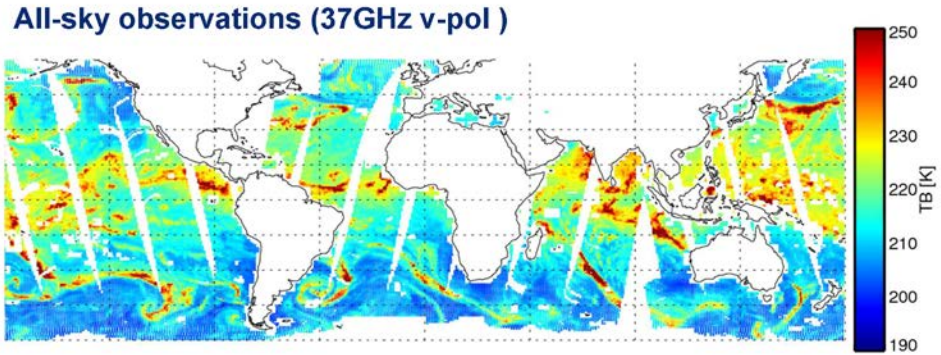


Assimilation of all-weather MW data

- Assimilation of all-weather MW satellite data using a combination of a Monte Carlo method (cloudy data) and a RT model (clear-sky data)
- The method has been successfully used for retrieving geophysical variables from satellite data in all-weather conditions
- The method is much faster than scattering calculations using a RT model



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