

The GPM Combined Algorithm Status

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Acknowledgments

This research was supported by the NASA Precipitation Measuring Missions Program. The authors are grateful to Dr. R. Kakar (NASA Headquarters), Dr. Gail Skofronick Jackson (GPM Project Scientist) and Dr. Scott Braun (TRMM Project Scientist) for their support.

Brief Description of the Combined Algorithm

- Ensemble of precipitation profiles is derived from Ku-band radar observations
- Ka-band radar and radiometer observations are simulated
- Ensemble filter is applied to update the initial ensemble distribution. Observations include:
- Path integrated attenuation (PIA) estimates from the Surface Return Technique
- Radiometer observations
- Ka-band radar observations (in the MS swath)
- Precipitation estimates and associated parameters are saved on the disk

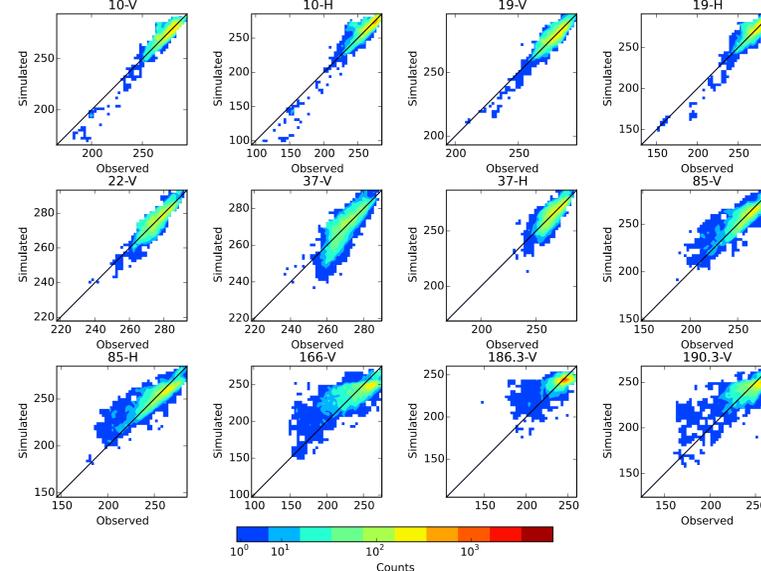
Algorithm Updates

- All frequencies and polarizations have been included in the ensemble filter
- New ocean emissivity model has been incorporated
- A Backus-Gilbert statistical deconvolution technique is used to derive radar resolution brightness temperatures
- Radar resolution Tbs are used in the filter
Filtered Tbs are used to calculate the radiometer resolution Tbs
- Robin Hogan's one dimensional radar multiscattering model has been incorporated in the framework

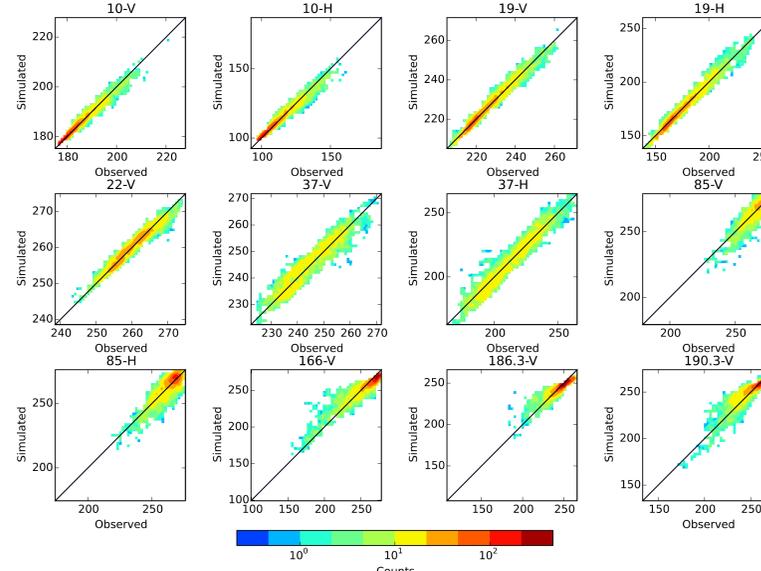
Algorithm Evaluation

- To evaluate the combined algorithm, multiple aspects have been considered. These include:
- Consistency between simulated and observed brightness temperatures
- Consistency between simulated and SRT PIAs
- Agreement between MS and NS retrievals
- Independent (GV) estimates

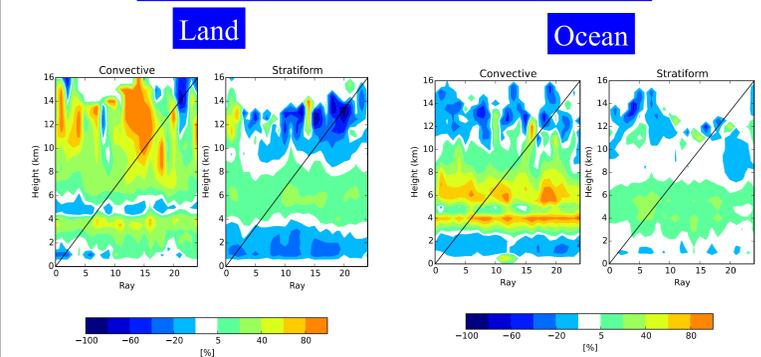
Land Brightness Temperature Joint Distribution



Ocean Brightness Temperature Joint Distribution

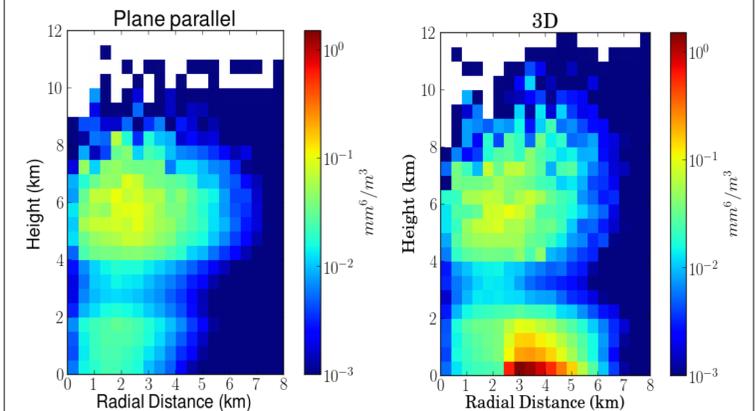


Differences between MS and NS retrievals

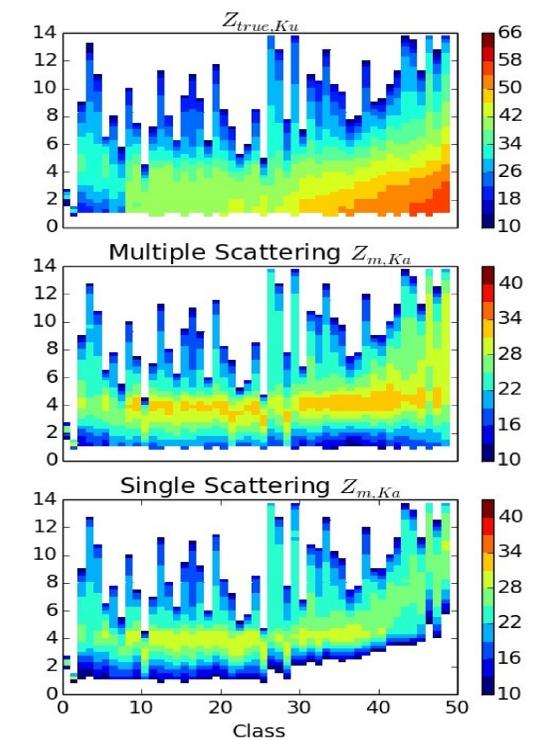


Near Future Work

- Investigate 3D effects and NUBF effects in multiple scattering calculations



- Investigate the agreement between the multiple scattering model and the reflectivity observations below the surface



- Quantify the impact of NUBF on combined retrievals and develop downscaling parameterizations using airborne radar observations