

Liquid Phase Cloud Breakout Summary

Group, thank you for your diehard dedication!

6:00 pm...



7:15 pm...



Agenda

Presentations (7)

- Wang - Refine Arctic Microwave Radiometer LWP Retrieval by Using Multiple-sensor Measurements and Retrievals
- Turner - Combined AERI and MWR Retrievals
- Chiu - How Can One Interpret ARM 2NFOV and SWS Measurements?
- Marshak - Lidar solar background for optically thick clouds
- Zinner - New means of airborne water cloud remote sensing
- Cadeddu - MWR IOP at SGP
- Vogelmann - MWR Validation Experiment IOP during COPS

Discussion Items (3)

Min/Vogelmann

- Proposed Instrument Modification: TC-RSR
(Thin Cloud Rotating Shadowband Radiometer)

Vogelmann/Turner

- Group Discussion: Addressing Scale Babble

Zhu

- Group Discussion: ARM LES Testbed

Presentation Summaries

Zhien Wang - Refined Arctic MWR LWP retrieval

- Improved 2-chan MWR retrieval using (a) clear sky calibration, and (b) different water dielectric constants
- How compare w/ MWRRet?

Dave Turner - Combined AERI and MWR Retrievals

- Combines complementary sens. of AERI & MWR
- Suggests AERI+MWR+MFRSR for overcast
- MWR 'undulation' indicated in data

Maria Cadeddu - MWR IOP at SGP

- Intercomparison of 6 MWRs
- LN₂ calibs → Δ BTs 1.6 K (31.4 GHz), and 3.1 K (23.8 GHz)?
- Diffs (smaller) also in obs. sky BTs

Andy Vogelmann et al. - MWR Validation Exp. at COPS

- Sent proposal (CP & RP endorsed).
- Pending

Christine Chiu – Interpetting 2NFOV and SWS Measurements

- 2-NFOV retrievals of τ , and effective cloud fraction
- Extending work to new SWS at SGP (w/ 1.6 μm chan)
- More inter-comps in radiance needed, esp. for 1.6 μm

Sasha Marshak - Lidar solar backgnd for opt. thick clouds

- Cld & aerosol prop. can be retriev'd using a single lidar.
- Showed very good agreement w/ 2-NFOV
- Limited by broken clds, and τ between 4 & 12
- Requests help with calibration and aerosol τ

Toby Zinner- New means of airborne water cld rem. sens.

CASI (Compact Airborne Spectrographic Imager)

Scanned radiance at 753 nm, horiz. res 15m, for 150 km²

- Use iteratively to infer 3D statocu fields w/ MC code
- 'Glory' remote sensing of τ , R_{eff} , σ

Discussion Items

Min/Vogelmann: Proposed Inst. Modification: TC-RSR

Modify FRSR to retrieve LWP (2 gm^{-2}), Reff (10%), τ (2%)

One of VERY FEW instrument's get LWP AND Reff/tau

Estimates: \$37K (prototype) OR \$58K (full, 1st-off, inst)

- Anthony questioned whether 3D effects acc't for
- Jim said could be difficult to get funding → sum' IOPs

Vogelmann/Turner - Addressing Scale Babble

Time and spatial (FOV) sampling differences between instruments or their uses (e.g., in 'climate' models)

- Important. Rename it – 'babble' misses importance.
- Use model simulations to eval. sampling vs averaging
- At the very, least document what did (like uncert.)
- Revisit at STM?

Zhu/Albrecht - ARM LES Testbed (WRF-LES)

Multiple, 2-way nested WRF grids

- Very enthusiastically received

Items for Recommendation

Calibrations

2-NFOV retrievals of tau and eff. cloud fraction

- Add 1.6 μm zenith radiance channel instrument
(Need for retrievals and intercomparison w/ SWS)

Lidar solar background retrievals of optical depth

- Calibrate the solar background (signal) noise;
- Retrieve aerosol optical depth below thick clouds

Proposed TC-RSR for MFRSR retrievals of LWP (R_{eff} , τ)

- One of very few inst. to get simult. LWP, R_{eff}
- Generally well received (A. Davis quest 3D effects)
- Time before summer IOPs running out

Scale Babble (handling time sync, ave., & FOV mismatch)

- At the very least, clearly document what did
- Revisit at STM?

The End

