

Mixed-Phase Breakout: Progress

Status

Major gap in our knowledge: vertically-resolved liquid microphysical properties!

We currently have no robust approach.

MMCR Doppler spectra (Kollias, Luke, Shupe, Verlinde)

- Phase classification
- Possible information on the vertical distribution of liquid in some cases,
- Information on both liquid and particle size distributions,
- Vertical motions in some cases

New products of interest:

- MPL depolarization product (Coulter)
- Multiple cloud classification products (Luke/Kollias, Shupe, Wang)
- Improved liquid water path retrievals (Wang, Turner)
- In situ cloud properties (Zhang/McFarquhar)
- Vertical motion properties (Shupe)

Mixed-Phase Breakout: Recommendations

Data streams

Support a cloud classification VAP or product(s)

Release of PI data sets on cloud properties (aircraft)

Instruments

MPL – need to ensure that new systems are solid in terms of depolarization ratio for identifying cloud phase.

Raman Lidar – Zhien Wang has a system that could be used for testing purposes at NSA

MMCR – A number of issues in the past few years, these need to be resolved and checks put in place to monitor the systems.