Update and Status Report on The Microbase VAP

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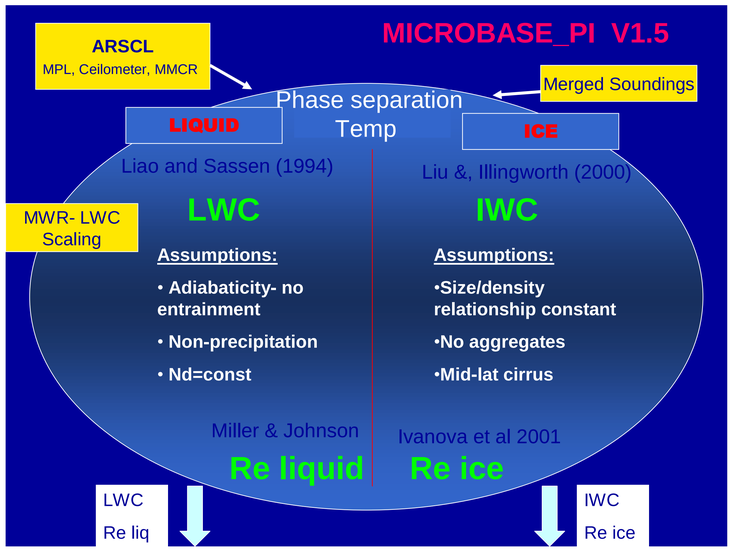
What is Microbase?

The Microbase Value Added Product (VAP) provides continuous, 10 second profiles of the baseline cloud microphysical properties; liquid water content, ice water content, liquid effective radius and ice effective radius. It uses observations from the MMCR, MPL, MWR and radiosondes by incorporating information contained in the ARSCL, Merged Sounding and MWRRET VAPS. Microbase serves as input to the Broadband heating rate Project (BBHRP) .

http://www.arm.gov/data/vaps_all.php



Available Data

SGP.C1 (Lamont) 2000-2007,
NSA.C1 (Barrow) 2004-2007,
TWP.C1 (Manus) 20004-5, 2002-2004
TWP.C2 (Nauru)
TWP.C3 (Darwin) 200601-200603

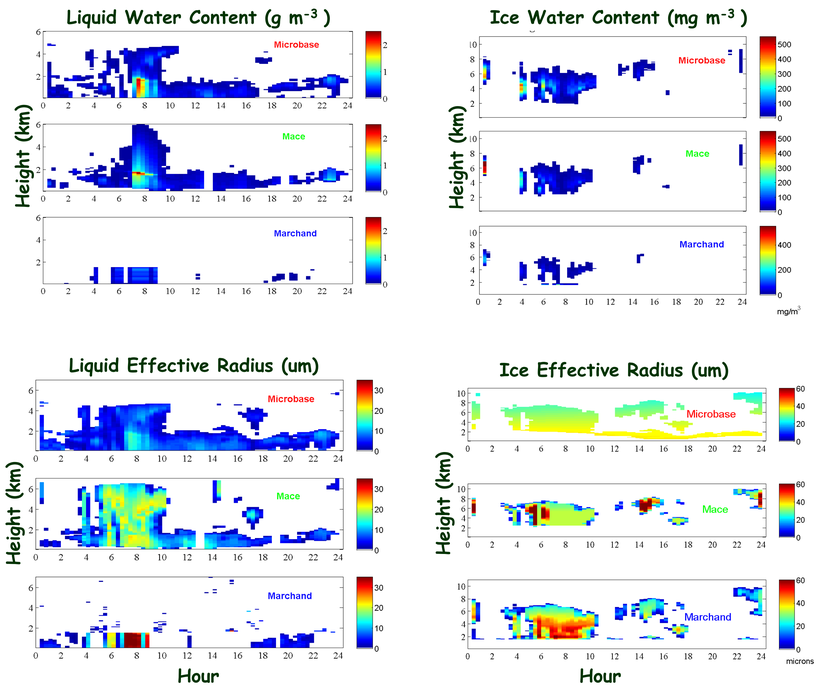
15 years total

http://iop.archive.arm.gov/arm-iop-file/0pi-data/jensen/microbase-pi

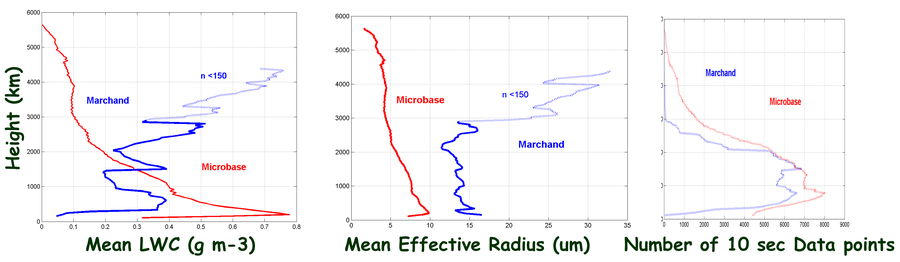
Comparison with other products

SGP C1 Site 2000-03-03

Comparison of Microbase, Mace and Marchand Products



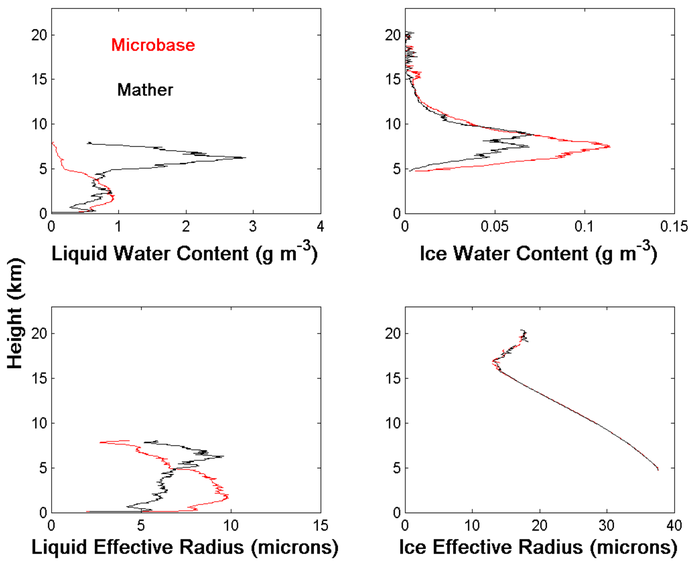
Analysis of Single layer Stratus Clouds at SGP for March 2000



Overview

- ❑ Microbase has been improved to use a superior merged sounding product.
- ❑Microbase LWC determination agrees well with the ECMWF model output.
- ❑The Marchand product retrieves detailed IWC and Ice Re information but may does not use a merged sounding product for phase determination.
- ❑The Mace Product generates similar results to Microbase for LWC and IWC.
- ❑The Mather product does not use a merged sounding for temperature determination and does not use the MWRRET VAP for liquid water content input.
- ❑Large differences in output occur between various methods of phase separation.
- ❑Cloudnet and Shupe-Turner products will be evaluated.

TWP C1 – Manus 2000-05 Monthly Mean



Other Microbase Flavors

(substituting Parameterizations)

Microbase - Matrosov SGP 2000

Microbase - Sengupta SGP 2000

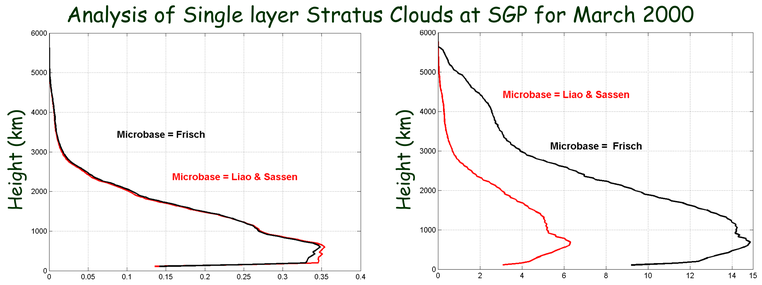
Microbase - Boudala SGP 2000

Microbase - Jensen/Korolev TWP C1 2004

Microbase - Frisch SGP 2000

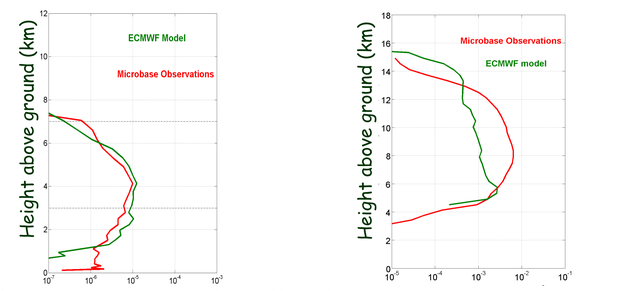
(example)

Analysis of Single layer Stratus Clouds at SGP for March 2000



Model comparison

Analysis of 1 Month SGP 2006-07 ECMWF and Microbase Data



Equivalent of 25.7 days of data
(12-36 hour forecasts)

References:

Mace, GG, et al. 2006. "Cloud radiative forcing at the ARM Climate Research Facility: Part 1. technique, validation, and comparison to satellite-derived diagnostic quantities." Journal of Geophysical Research 111, D11S90.

Marchand, RT, et al. 2007. "An assessment of multi-angle imaging spectroRadiometer (MISR) stereo-derived cloud top heights and cloud top winds using ground-based radar, lidar and microwave radiometers." Journal of Geophysical Research 112, D06204.

Mather, JH, et al. 2007. "Cloud properties and associated radiative heating rates in the Tropical Western Pacific." Journal of Geophysical Research 112, D05201.