Cloud Lifecycle Value-Added Products – Progress and Current Status

M. Jensen

K. Johnson, D. Troyan, M. Dunn, E. Luke

ASR Cloud Lifecyle WG meeting

Fall 2010

Boulder, CO

ARM Atmospheric Radiation Measurement

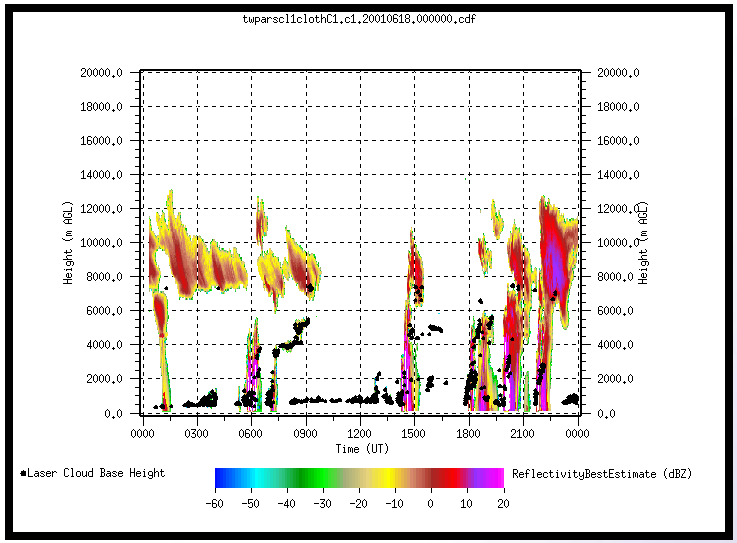
BROOKHAVEN NATIONAL LABORATORY

Active Remote Sensing of CLouds (ARSCL)

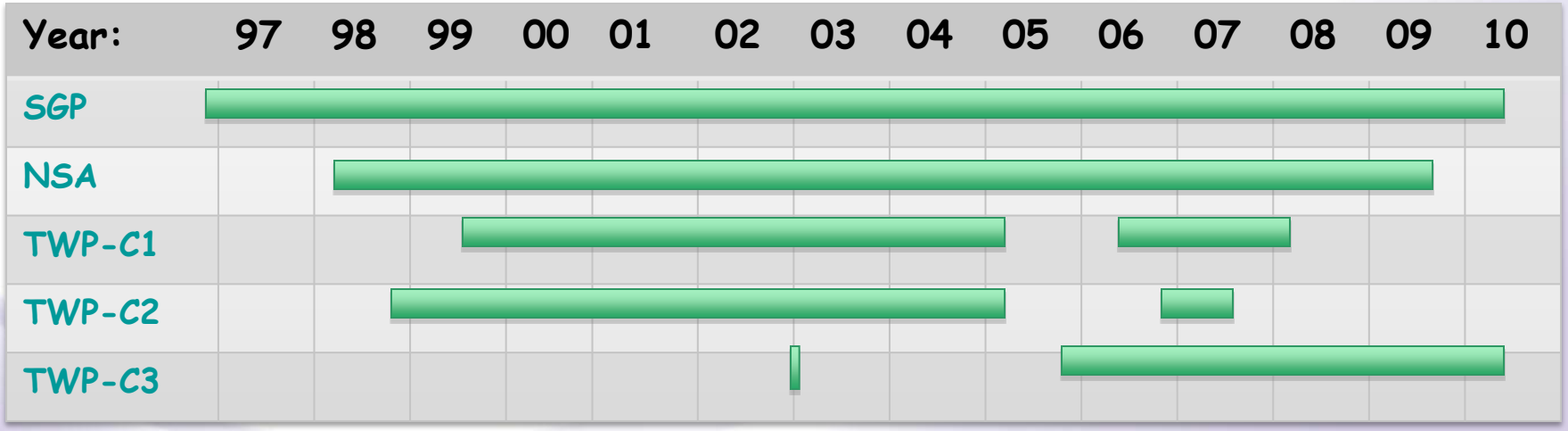
Developer: Karen Johnson

Provides:

- Cloud boundaries,
- Hydrometeor height distributions and radar reflectivity estimates
- Vertical velocities
- Doppler spectral widths



Availability at ARM Archive:



WACR – ARSCL Evaluation Product:

NIM, FKB, HFE, GRW (thru 201009) available, SGP underway

ARSCL (cont.)

Recent Activities:

- Work begun to incorporate MPL cloud mask product from Lidar group
- TWP-C3 processing through Year of Tropical Convection period

Short-term Plans:

- Focus on TWP-C1 processing in support of Year of Tropical Convection
- Develop new ARSCL to handle new MMCR radar data

Microphysical Active Remote Sensing of CLouds (MicroARSCL)

Developer – Ed Luke

Archived

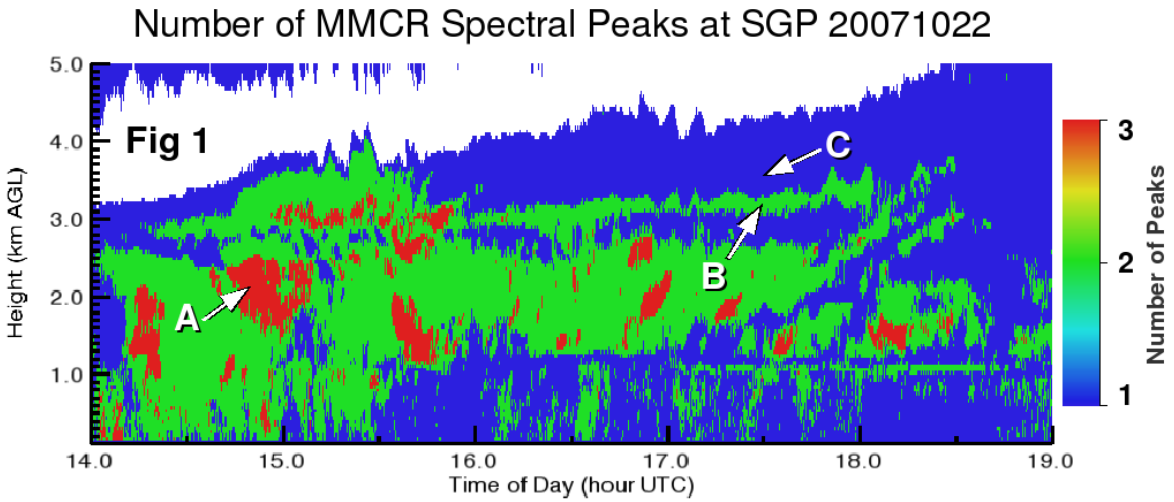
SGP (BL): May 07, Jun 07, Sep 07, Oct 07, Dec 07, Jan 08, Feb 08, Mar 08, Apr 08

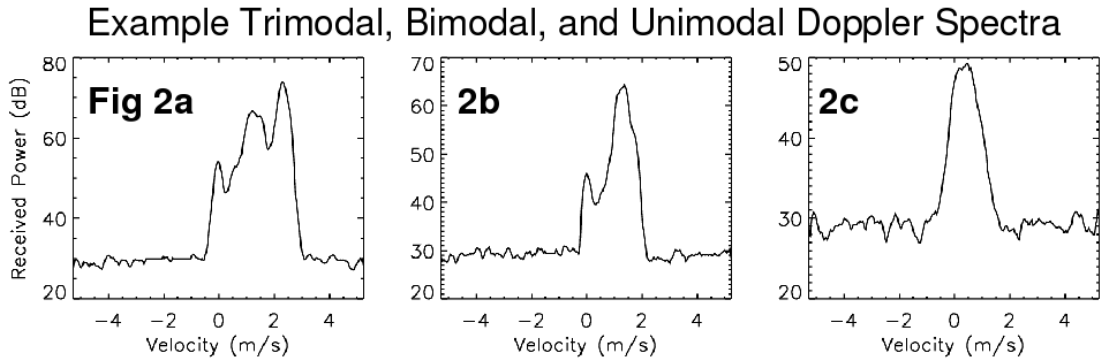
Processed *

SGP (BL): May 06, Jun 06, Sep 06, Oct 06, Dec 06, Jan 07

NSA(BL): Oct 04, Apr 08

TWP (BL/GE): Feb 07





* 100 most active days

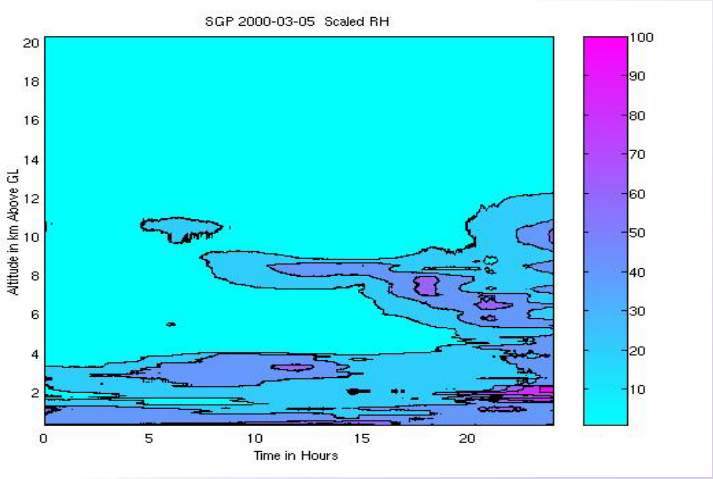
Merged Sounding (MS)

Developer: David Troyan

• Uses a combination of radiosonde profiles, MWR integrated water vapor, surface meteorology, and ECMWF model output to provide a thermodynamic profile of the atmosphere at one minute intervals

• Version 1 (available as an Evaluation Product)
  - Uses ARM radiosondes without humidity corrections
  - 266 Altitude Levels to 20 km AGL

SGP:	1996 - 7/2009	PYE:	2005
NSA:	2002 - 2009	NIM:	2006
TWP-C1:	2000 - 2008	FKB:	2007
TWP-C2:	2002 - 2007	HFE:	2008
TWP-C3:	2002 – 2008	GRW:	5-11/2009



• Version 2
  - Uses ARM radiosondes corrected for using Miloshevich method
  - 315 Altitude Levels to 60 km AGL
  - Beta version SGP 2002-2009 (soon evaluation product)

Sonde Adjust (Temporary Name)

Developer: David Troyan (troyan@bnl.gov)

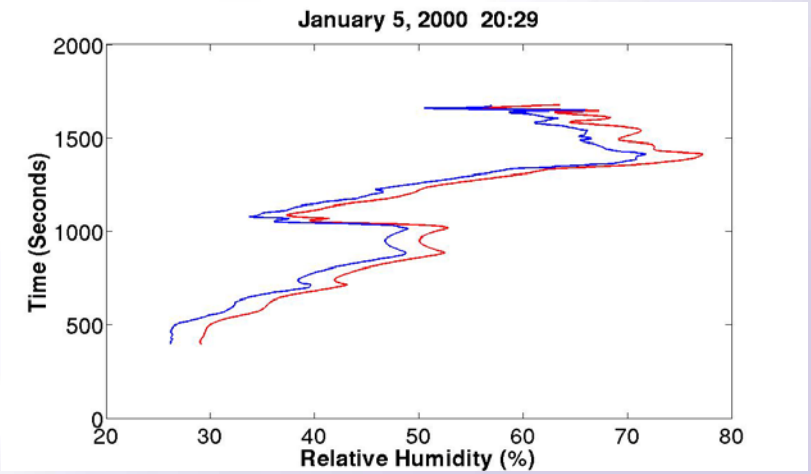
- Corrects the dry-bias found in Vaisala radiosondes

- Employs the correction algorithms described in
  - Miloshevich et. al. (2001, 2004, 2006)
  - Turner et. al. (2003)
  - Wang et. al. (2002)
  - Vomel et. al. (2007)

- Output includes all fields required for merged sounding: pressure, temperature, winds, RH original, RH adjusted, RH Scaled by MWR integrated water vapor.

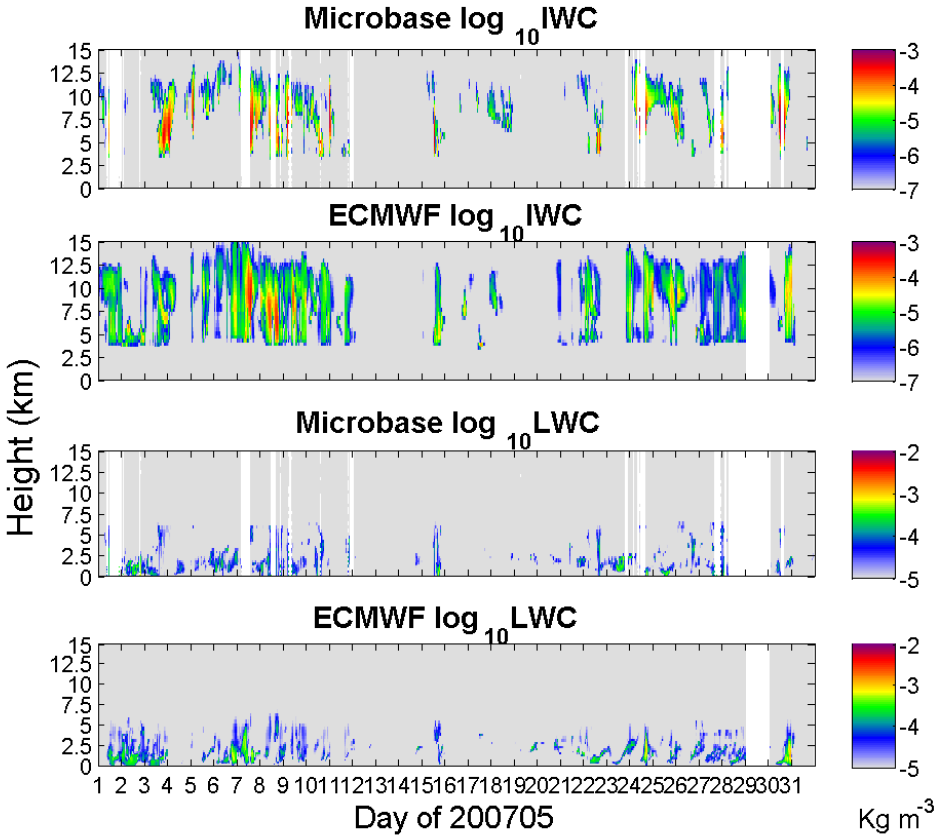
- RS-80 , RS-90, RS-92 – complete
- To be used as input into Merged Sounding
- SGP, NSA, TWP (~ 2002 – 2009)

- Available from David Troyan
- Any feedback is appreciated
- Will be released as an evaluation product soon



Continuous Baseline Microphysical Retrieval (MICROBASE) [developer: M. Dunn]

- **Provides time-continuous information on cloud location, liquid and ice water contents, and effective droplet sizes as a function of height (10 sec., 20 min.)**
- **Uses ARSCL, Merged Sounding, MWRRET with a combination of previously published microphysical parameterizations**



Availability

SGP – 1998 thru 7/2009
NSA – 2002 thru 2007
TWP C1 – 4/00 – 5/00
1/01 – 2/05
5/06 -10/06
TWP C2 – 1/02 – 12/02
7/03 – 12/04
TWP C3 – 1/03
11/05 -12/05
2007

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