Atmospheric System Research Program Update

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ASR Program Managers

November 6, 2013

2013 ASR Fall Working Group Meeting
Rockville, MD

Outline

- New around the Division and ASR (people, IPCC, awards) – Ashley
- Budget and implications for FY2014 activity
- GOAmazon and ASR general FOAs
- Housekeeping: PAMS/~~RIMS~~ and new procedures
- Lab SFA coordination meeting and plans
- Testbed workshop – Sally
- PI Data Product highlights – Sally
- Data Policy – Sally

Save the Dates:
2014 ASR Science Team Meeting

March 10-13, 2014

Bolger Center, Potomac, MD

New Personnel in CESD

Justin Hnilo, Program Manager,
Data informatics

Andrew Flatness, Science Assistant

Our two newest division staff have been attending this week; please welcome them if you see them.

US and DOE contributions to AR5 WG1

- Of the 258 WG1 international authors & editors, 69 (27%) are from the U.S.
- 27 were DOE Federal and national laboratory scientists (including Dorothy Koch, ESM program manager)
- BER has supported at least 41 of the scientists with formal roles in AR5 (ASR: 10 of the above)
- DOE (Mike Kuperberg) led and provided key reviewers for the U.S. government review of the Second Order Draft
- DOE Federal and national laboratory scientists were on the U.S. Delegation that approved the WG-1 report
- BER's PCMDI coordinates the AR5 international climate model output through the Earth System Grid Federation.

Partial list of Awards to ASR investigators

Jian Wang – 2013 AAAR Kenneth T. Whitby Award
for his technical contributions to aerosol science and technology

Pat Arnott, Hans Moosmueller –
2013 AAAR Benjamin Y. H. Liu Award
for their outstanding contributions to aerosol instrumentation and experimental techniques

Graham Feingold, Warren Wiscombe –
elected 2013 AGU Fellows

Scott Collis – named to Popular Science's "Brilliant 10"
(*researchers under 40 who have made revolutionary contributions to their fields)*

BER FY 2014 status

($ in thousands)

	FY 2013 Enacted	FY 2014 President's Request	FY 2014 House Mark	FY 2014 Senate Mark	FY 2014 3.5 Month CR allocation at the House Mark (29.32%)
Biological Systems Science	**292,927**	**321,066**	**258,085**	**321,066**	**75,671**
Research	214,049	236,371	197,835	236,371	58,005
Facilities	78,878	84,695	60,250	84,695	17,666
Climate and Environmental Sciences	**285,367**	**304,281**	**236,021**	**304,281**	**69,201**
Research	140,388	181,915	146,622	181,915	42,990
Facilities	144,979	122,366	89,399	122,366	26,211
BER Total	**578,294**	**625,347**	**494,106**	**625,347**	**144,872**

SBIR/STTR included in the Research lines

Budget and Implications for ASR

- DOE/SC is operating on a 3.5 month Continuing Resolution based on a reduced baseline which would reflect a budget cut for BER, including ASR
- The GOAmazon call (FOA SC00919) is an agency priority and will be funded as planned
- All other ASR budget items are under conservative initial funding
  - DOE LAB initial guidance for ASR reflects nominal 10% holdback
  - Awards from last year's ASR call (FOA SC00885) will be delayed until funding picture is clarified (at least January 1). Partial set of declinations will be processed later this month
  - We are hopeful that funding comparable to last year will ultimately be available, but cannot count on it until an appropriation is passed
  - Restored FY2014 funding would be used to fund ASR call and restore LAB cuts as available

GOAmazon Research Call FOA SC00919

- For collaborative research in support of ARM GOAmazon campaign
- Under collaborative arrangement with Brazilian State Research Foundations in Amazonas and Sao Paulo (FAPEAM and FAPESP), DOE accepted joint funding applications for grants with Brazilian collaborators from one or both of those states.
- ASR issued a targeted call in collaboration with the TES and RGCM programs; a panel with DOE, FAPEAM and FAPESP representatives jointly reviewed all 30 teams
- Reviews and selections are complete; a joint announcement of awards to six teams (2 each ASR, TES, RGCM) will be issued in mid-November.

Future opportunities

- Awards from FY2014 ASR FOA 885 will be issued as possible when remaining FY2014 funds are available

- For FY2015 we plan an ASR topical call later in calendar 2014.
- We plan a funding opportunity for the “next generation” site scientist functions.
- We are investigating a targeted call in collaboration with the CESD modeling programs

The details are subject to appropriated funds

“Housekeeping”

- DOE is transitioning to PAMS, a new management system:

  Ultimately PAMS will be used for:

- All reviews (like the June 885 panel) and selections
- Awards and changes (like no-cost extensions) - starting this month
- Progress reporting (no more RIMS notices and submissions)

Lab SFA coordination meeting and plans

- Representatives of four DOE Lab SFAs met last night
- Reviewed areas of emphasis for each SFA
- Exploring areas of common interest for enhancing coordination:
  - Land-atmosphere interactions
  - Aerosol life cycle area: NPF, mixing state
- Enhance visibility of Lab science
- Stay tuned

CESD Testbed Workshop

- Testbeds are systematic, automated frameworks that compare model simulations with observations to evaluate and identify sources of errors in model simulations of physical processes.
- CESD currently funds 4 atmospheric modeling testbeds
  - Led by National Laboratories
  - Use ARM as key data source
  - Target distinct model type or processes
- Workshop held Aug 5-6 at DOE to discuss:
  - Coordination and synergies among testbeds
  - Interaction with ARM and modeling communities
  - Gaps in testbed portfolio

The 4 atmospheric testbeds today

Testbed	Title	Lead lab	Description
AMT	Aerosol Modeling (Jerome Fast)	PNNL (ASR SFA)	Regional model to test aerosol processes
FASTER	Fast-Physics (Yangang Liu)	BNL (ESM 5-yr project)	Cloud processes and parameterizations, from LES to global scales
CAPT	Cloud-associated parameterizations (Steve Klein)	LLNL (RGCM/ASR SFA) & UCAR (RGCM)	Global model framework to test global cloud parameterizations in forecast mode
CSSEF	Climate Science for a Sustainable Energy Future	ESM Multi-lab (5-yr project)	Framework to test cloud parameterizations for a variable-mesh version of the CESM.

Workshop Summary

- Distinctions and commonalities were identified
  - Distinctions include model configurations (e.g., regionally refined) processes examined (e.g., aerosol chemistry) and techniques (e.g., uncertainty quantification)
- Areas for improved future coordination include:
  - Datasets and scripts for model initialization
  - Expansion of testbeds to study land-atmosphere interactions
  - Analysis of aerosol indirect effects
- Gaps/needs include:
  - Standard formatting of datasets; documentation; user-friendly websites and quick look plots; archives for model simulations
  - An ARM instrument simulator package
  - Data assimilation methods & continuous LES simulations to create high resolution reanalysis dataset over the ARM sites
  - Automation & availability to wider community

Post-workshop actions: Enhance coordination

- ARM translators will link testbeds and ARM facility and will:
  - Discuss testbed data development activities and needs to ARM on Translator Conference calls
  - Facilitate movement of testbed datasets to ARM PI data archive
- Testbeds identified specific data/software to share among each other and with wider community
  - Datasets are currently being formatted and documented; will be hosted in ARM PI archive or ESGF

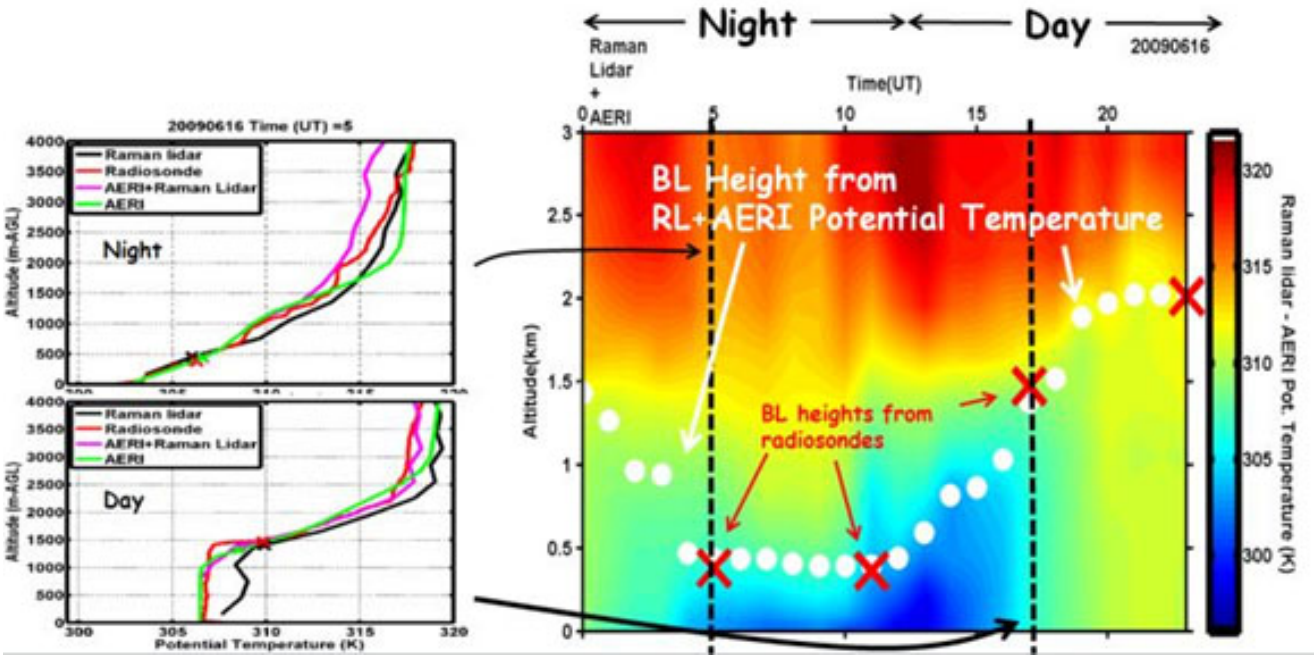
- Testbeds identified potential joint activities
  - Coordinated study of aerosol indirect effect (AMT, FASTER, CAPT)
  - Test case intercomparison activity from ARM field campaigns, e.g. GOAmazon, MAGIC
- Ongoing DOE discussion on how best to coordinate these activities and align with programmatic goals

Testbed Session at ASR Meeting

- Wed evening – 7:30 pm
- Brief overview of AMT, FASTER, CAPT testbeds
- Brief presentation on continuous LES
- Discussion of ASR community testbed needs

New PI Data Product Highlights (1)

Raman Lidar/AERI PBL Product – Rich Ferrare

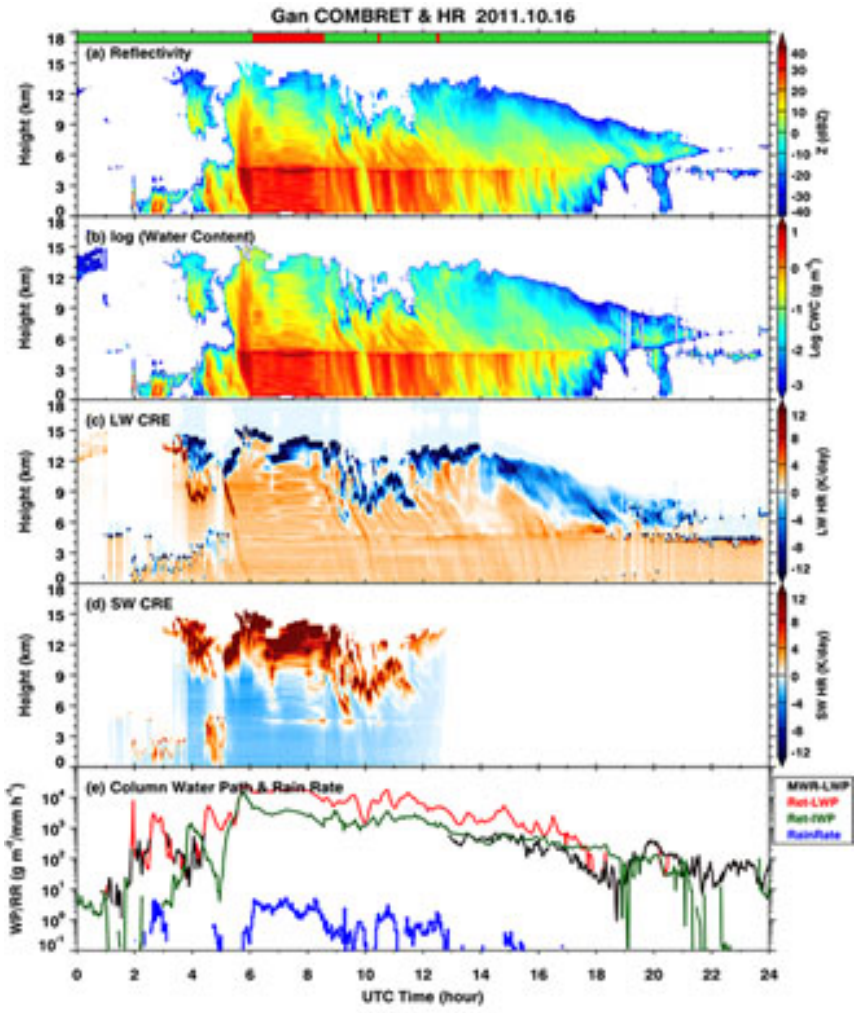


- Combines potential temperature from AERI (< 700 m) and Raman Lidar (> 700 m)
- Calculates mixing layer height using modified Heffter technique
- Produced on hourly basis for January 1, 2009 through December 31, 2011 at SGP

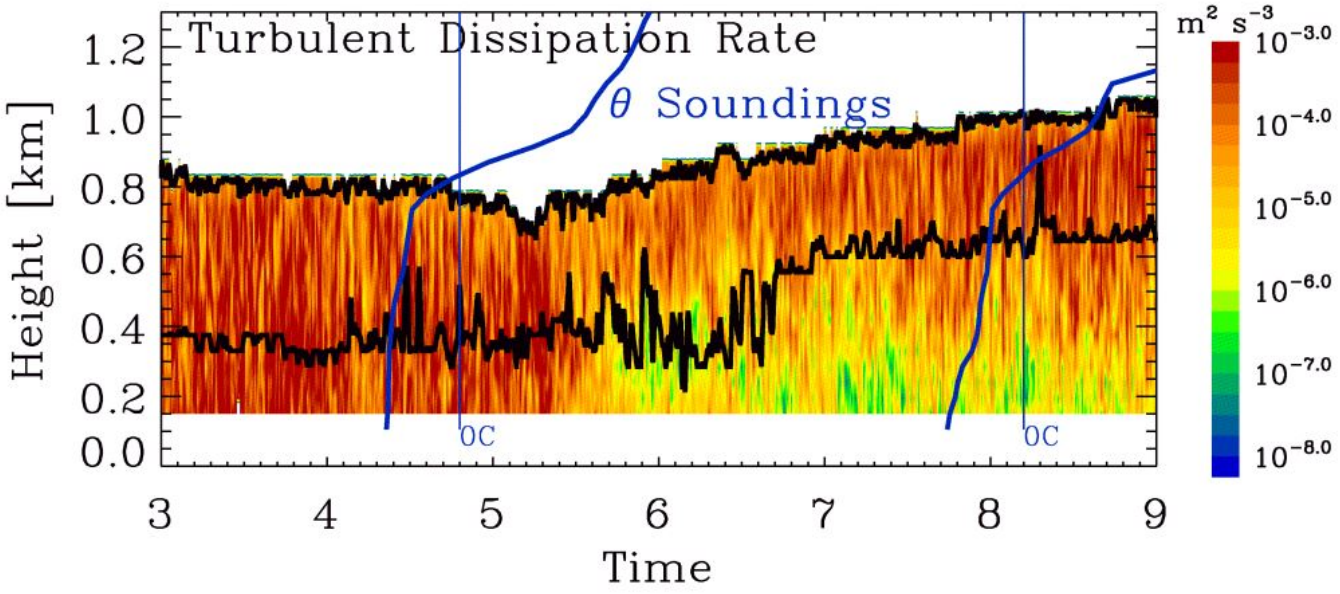
Combined Remote Sensor Retrieval –Zhe Feng & Jennifer Comstock

- Combines several algorithms to retrieve cloud and precipitation properties for all sky conditions
- Includes cloud microphysical properties, broadband fluxes, and heating rates
- At Gan AMF deployment, includes merged cloud/precipitation radar reflectivity dataset to improve cloud-top estimates & reflectivity in precipitation

- Current data: 10/2011 – 2/2012 at Gan AMF deployment
- Planned data: multiple years at TWP



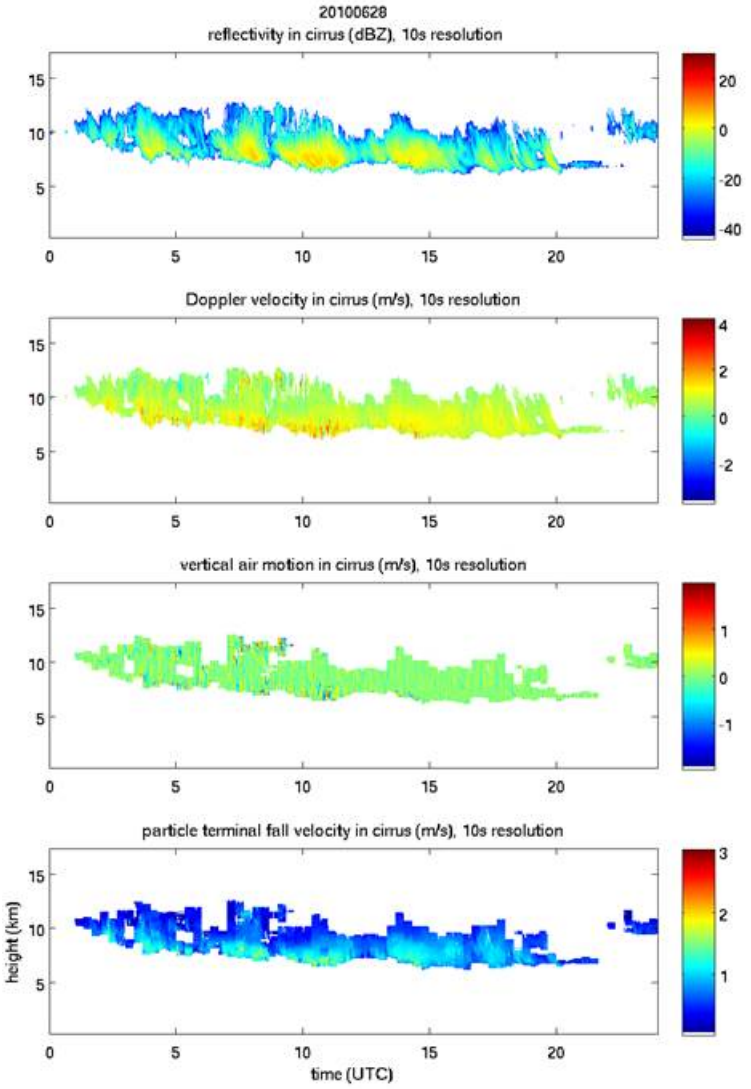
Cloud-scale Vertical Velocity and Turbulent Dissipation Rate – Matt Shupe



- In-cloud vertical velocity and turbulent dissipation rate derived from Ka-band radar spectra
- Dataset includes multi-sensor cloud phase classification
- Current dataset: Arctic stratiform mixed-phase clouds during MPACE and ISDAC

Ice cloud dynamics – Heike Kalesse

- Vertical air motion and reflectivity-weighted particle terminal fall velocity for ice clouds at 10s, 20min and 1hr resolution.
- Variables derived from mm radar data using a Doppler-velocity decomposition technique
- Gravity wave detection using wavelet analysis in long-lived clouds
- Manus: 1999-2010
- SGP: 1997-2010

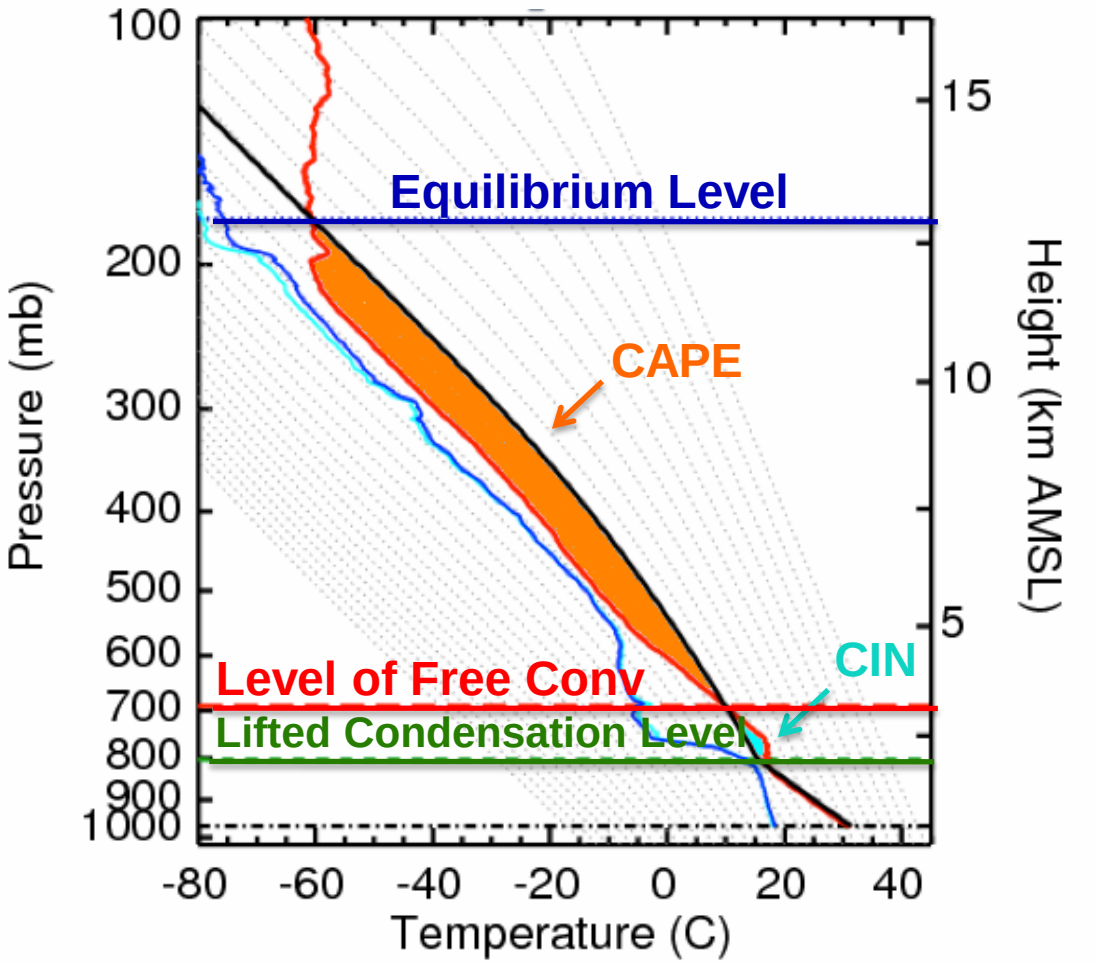


CAPE and CIN from ARM Soundings – Mike Jensen/FASTER project

ARM soundings used to calculate:

- Convective Available Potential Energy (CAPE)
- Convective Inhibition (CIN)
- Associated properties such as lifting condensation level (LCL) and level of free convection (LFC)

Data available for all ARM sites through 2011



DOE Data Policy

- Presidential memo in Feb - **Expanding Public Access to the Results of Federally Funded Research**
  - Make direct results of federally funded research available to the public, including research publications and digital research data
- New DOE data policy in development
  - Focus is on material required to validate research results
  - Data management plans (DMP) will be required
    - Include plans for making research data displayed in publications accessible at time of publication
    - Describe how data generated by the funded research will be shared/preserved **OR** why it is not possible or scientifically appropriate to share/preserve data
    - DMPs will be included in proposal review criteria
    - Data can be shared at host institution or public archive (e.g. ARM)
- New Metadata Editor tool for archive