
ARM Climate Modeling Best Estimate (CMBE) Dataset

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Motivations



Atmospheric Radiation Measurement

Assembling those fields that are often used in climate model evaluations from the highest quality of data ARM has available for many years into one single data file.

- Reduce the headache of finding those fields from different data streams and different analysis products in the ARM archive**
- Encourage greater use of ARM data by the modeling community**

Current Status – Version 2 released in July 2008



- Cloud fraction, total cloud cover, LWP, PWV, and surface radiative fluxes
- Hourly data with qc flags for questionable data points

Data Availability

SGP-C1	Lamont, OK	1996 -- 2007
NSA-C1	Barrow, AK	1998 -- 2007
TWP-C1	Manus Island, PNG	1996 -- 2007
TWP.C2	Nauru, PNG	1998 -- 2007
TWP.C3	Darwin, AU	2002 -- 2007

<http://iop.archive.arm.gov/arm-iop/0showcase-data/cmbe/>

Potential applications

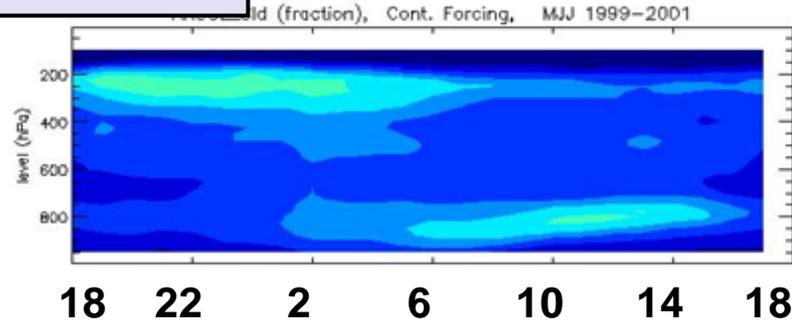


Atmospheric Radiation Measurement

Statistically evaluate
climate models

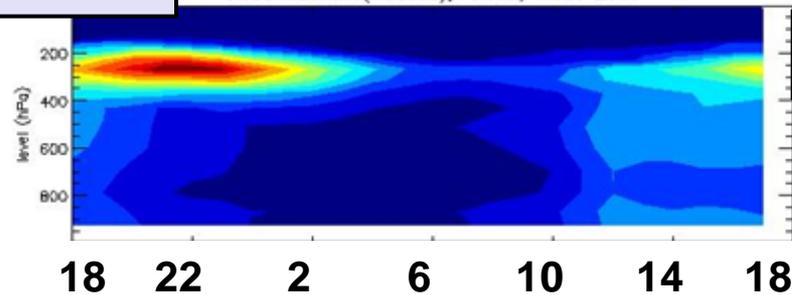
Diurnal, seasonal,
and inter-annual
variability,
Histograms

MJJ 1999-2001



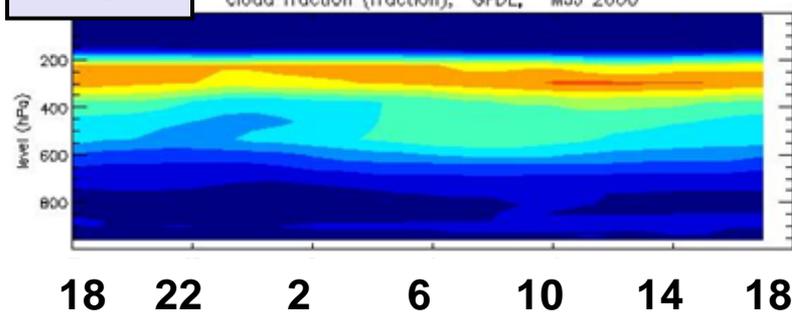
ARM obs

MJJ 2000



CAM3

MJJ 2000



AM2

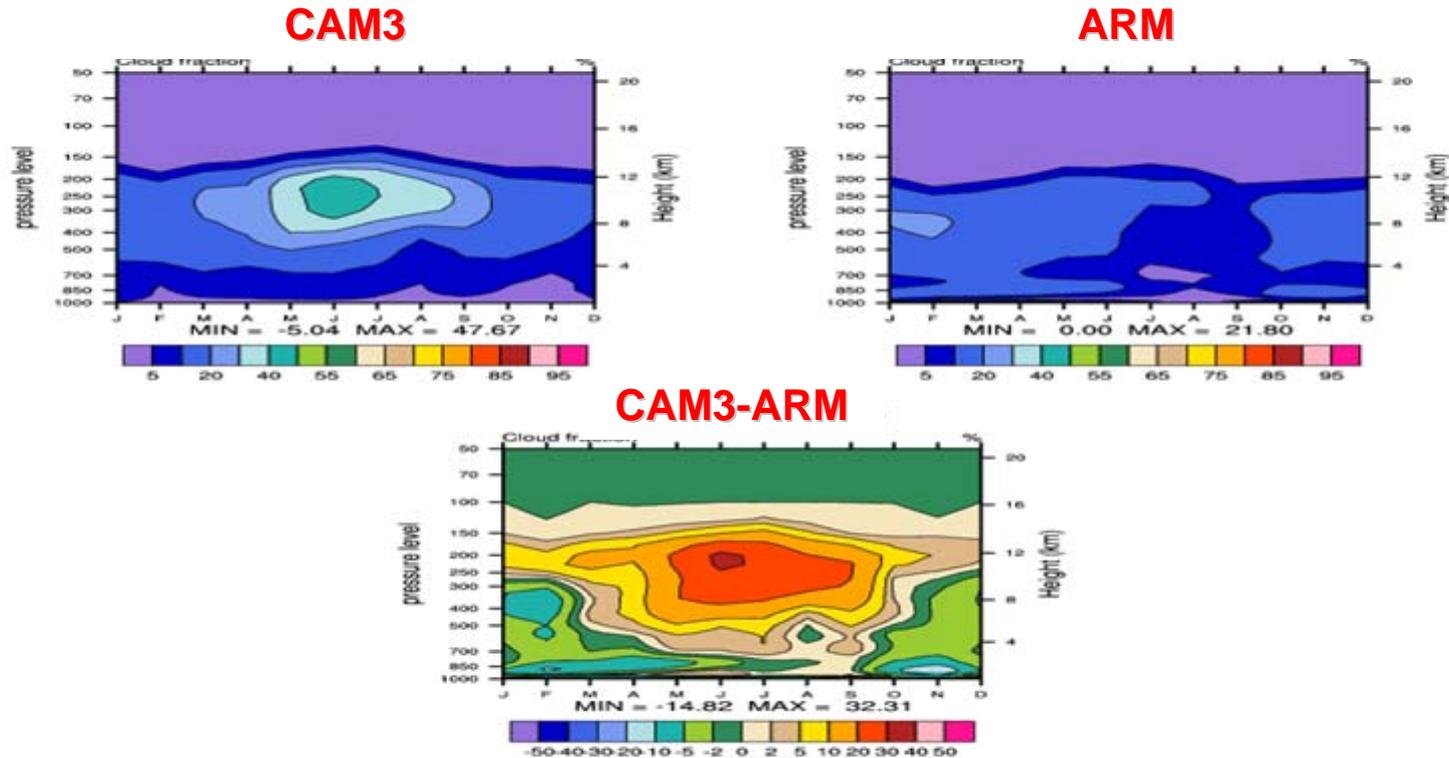
Cloud Fraction diurnal cycle at SGP

ARM data used in the NCAR Diagnostic Package



Atmospheric Radiation Measurement

Clouds at SGP: CAM3 vs. ARM



CAM3 produces too much high cloud in warm season (May-Sept) and less mid- or low-level cloud in cold season (Oct. – April) at SGP

Future Plan on CMBE Data

- **More important fields to be added to the CMBE data set**
 - **Soundings**
 - **Surface rainfall, turbulence fluxes, and other surface meteorology variables**
 - **TOA radiative fluxes**
 - **Cloud microphysical properties**
- **Variables will be classified into different classes to reflect the quality of each field contained in the CMBE data**

We plan to release the new version of CMBE before next year's ARM science team meeting

<http://iop.archive.arm.gov/arm-iop/0showcase-data/cmbe/>

THE END