



New information on radiative forcing functions in CEOP domains

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Objective

Develop capabilities to derive surface and top of the atmosphere radiative fluxes for key CEOP regions.

Emphasis on:

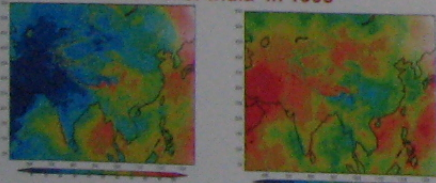
- observations from geostationary satellites that represent the diurnal cycle
- new satellites relevant for radiation studies that augment information from geostationary platforms (e.g., MODIS)
- incorporation of new model improvements
- Use of CEOP observations in evaluation

Monsoon regions are of particular interest to the scientific objectives of CEOP, the Indian Monsoon being the dominant one. Therefore, development of radiative fluxes over monsoon regions took priority.

Preliminary results will be shown for:

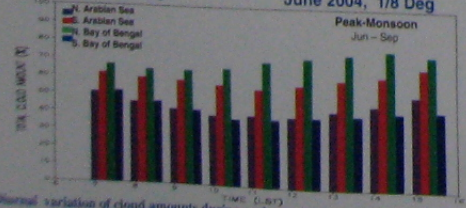
- Surface fluxes and cloud amounts over extended Indian Monsoon region
- MODIS low spatial resolution (1°) radiative fluxes at global scale
- Use of CEOP observations for product evaluation: example for the Tibet Plateau
- High resolution (5 km) MODIS SW over the Tibet Plateau
- High resolution (5 km) MODIS SW over North America
- High resolution (1/8 deg) SW from GOES over GCIP/GAPP

In support of INDOEX METEOSAT 5 was moved over India in 1998



Monthly Mean Cloud Amt June 2004, 1/8 deg

Monthly mean Sfc SW Flux June 2004, 1/8 Deg

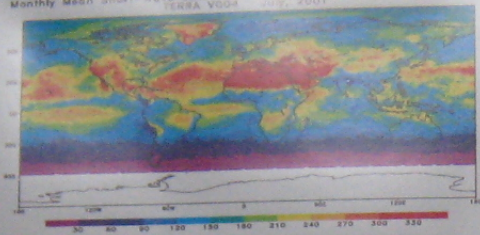


Diurnal variation of cloud amounts during peak monsoon (June-September) 2004

Sixth CEOP International Implementation Planning Meeting
NAS, Washington, DC, 12 - 14 March 2007.

Linkage to current relevant satellite observations

Monthly Mean Short-Wave Surface Downward Flux from MODIS (W/m²)
TERRA V004 July, 2001



Consistent global scale observations from MODIS augment observations made from various geostationary satellites of lower spectral and spatial resolution

Products currently available

Terra and Aqua

Radiative fluxes at global scale at 1°, daily time scale, Sep 1 2002-Aug 31 2003

Radiative fluxes at 5 km resolution over North America For 2003

GOES-8 and 12

GCIP/GAPP radiative fluxes, cloud amount, LST- operational from 1996-present

Meteosat-5 over the Indian Monsoon region:

Radiative fluxes, cloud amount and typing for 2000; Aug 2002 - July 2003; 2004

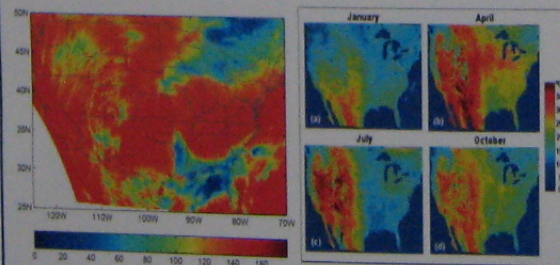
In progress: 2001

Meteosat-7 over Africa:

Radiative Fluxes for Jan 2000

In progress: May, July, Oct, Dec 2004

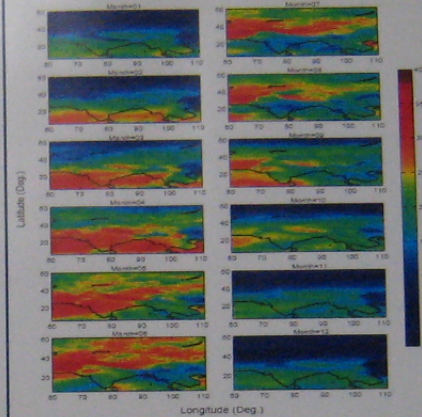
GOES Products



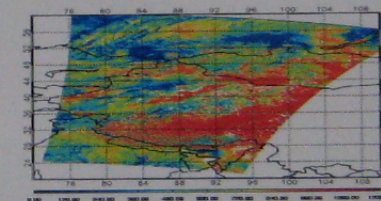
PAR at 1/8th resolution

Diurnal Temperature Range

Evaluation over Tibet Plateau

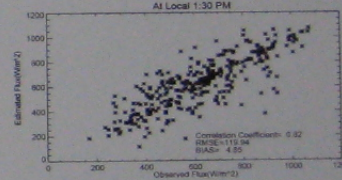
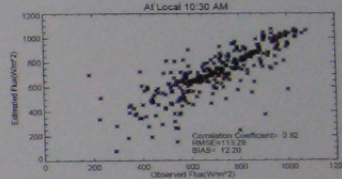
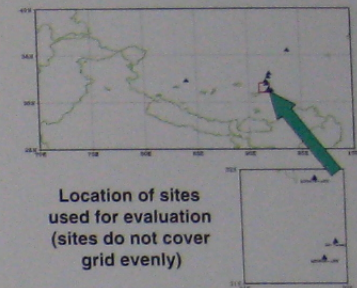


Monthly mean surface downward SW fluxes from MODIS (Terra and Aqua) at 10 resolution for Sep 2002-Aug 2003



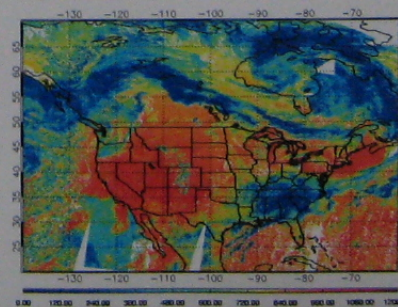
Surface downward Short-Wave Fluxes from MODIS Level-2 swath products, July 4, 2001

Ground sites from CAMP

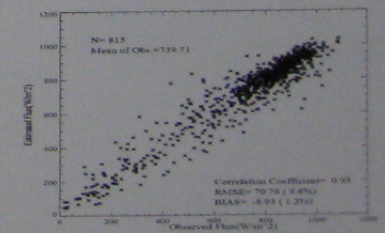


Evaluation of instantaneous SW fluxes from MODIS at 1° against CEOP Asia-Australia Monsoon Project Observations for Oct 2002-Aug 2003

North America



Surface SW flux from MODIS at 5 km resolution at local 10:30 AM, July 1, 2003



Evaluation of instantaneous SW fluxes re-sampled to 35 km against hourly averaged observations around scan time (four SURFRAD sites and five ARM sites), July 1-Sept 30, 2003 (latest version of SRB model)