Providing observations and analysis for the Earth System Grid Federation: update and plans

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AIRS, AMSR-E, CERES, MLS, MODIS, OSTM, OVW, TRMM, (PO)DAAC, others...

MANY OTHERS

NASA obs4MIPs Science Working Group


Program Executive: T. Lee/HQ, Project Manager: Robert Ferraro/JPL
Initial obs4MIPs data effort led by JPL

How to bring as much observational scrutiny as possible to the IPCC process?

How to best utilize the wealth of Earth observations for the IPCC process?

AR5 – initial target
AR6 and other MIPs – long-term targets
Observation data holdings on the JPL and GSFC portals

- AIRS Air Temperature
- AIRS Specific Humidity
- AMSR-E Sea Surface Temperature
- AVISO Sea Surface Height
- CERES TOA Outgoing Clear-Sky Longwave Radiation
- CERES TOA Outgoing Longwave Radiation
- CERES TOA Incident Shortwave Radiation
- CERES TOA Outgoing Clear-Sky Shortwave Radiation
- CERES TOA Outgoing Shortwave Radiation
- MLS Specific Humidity
- MLS Air Temperature
- MODIS Cloud Fraction
- TES Ozone
- TRMM Precipitation 3-Hourly
- TRMM Precipitation Monthly
- QuikSCAT Wind Speed
- QuikSCAT Eastward Near-Surface Wind
- QuikSCAT Northward Near-Surface Wind
- GPCP Precipitation Monthly
- GPCP Precipitation Daily
- CALIOP Cloud
- CERES-EBAF Surface
- MISR Aerosol Optical Thickness
- PARASOL Reflectance
ESGF interface
Using the live Access Server for a quick view of data

Pick region, time interval and type of plot
Ultra-scale climate data analysis tool (UV-CDAT) is customized to work with data from ESGF (demo later)
An example of newly added variables - Leaf Area Index
ana4MIPs is a new project

- Analysis products reformatted to conform with CMIP5 and obs4MIPs
  - Will contain all of the major monthly averaged reanalysis products available today
  - MERRA ✔
  - CFSR ✔
  - ECMWF-Interim ✔
  - JRA-25
  - 20CR
Compared to CERES EBAF OLR

Data selected from ESGF: CMIP5, obs4MIPs, and ana4MIPs

Regridded, minus JJA CERES EBAF and plotted by UVCDAT

Suggests that difference among reanalyses could be significant for some variables
Compare January Eddy Heights at 300 hPa

Note scale difference
Demo of UV-CDAT using CERES EBAF data

- Free tool to visualize gridded data sets
- Connected to ESGF (optional)
- 2D and 3D visualization
CFSR Sea ice reanalysis

August 2009 positive anomaly in sea ice cover
Summary obs4MIPs and ana4MIPs

- One-stop shopping for climate models, observations, and reanalyses
- Tools for analysis in development
- Conforms to CF standards and beyond
- Standardized interface to data (ESGF)
- Documented