CERES L3 Subsetting strawman

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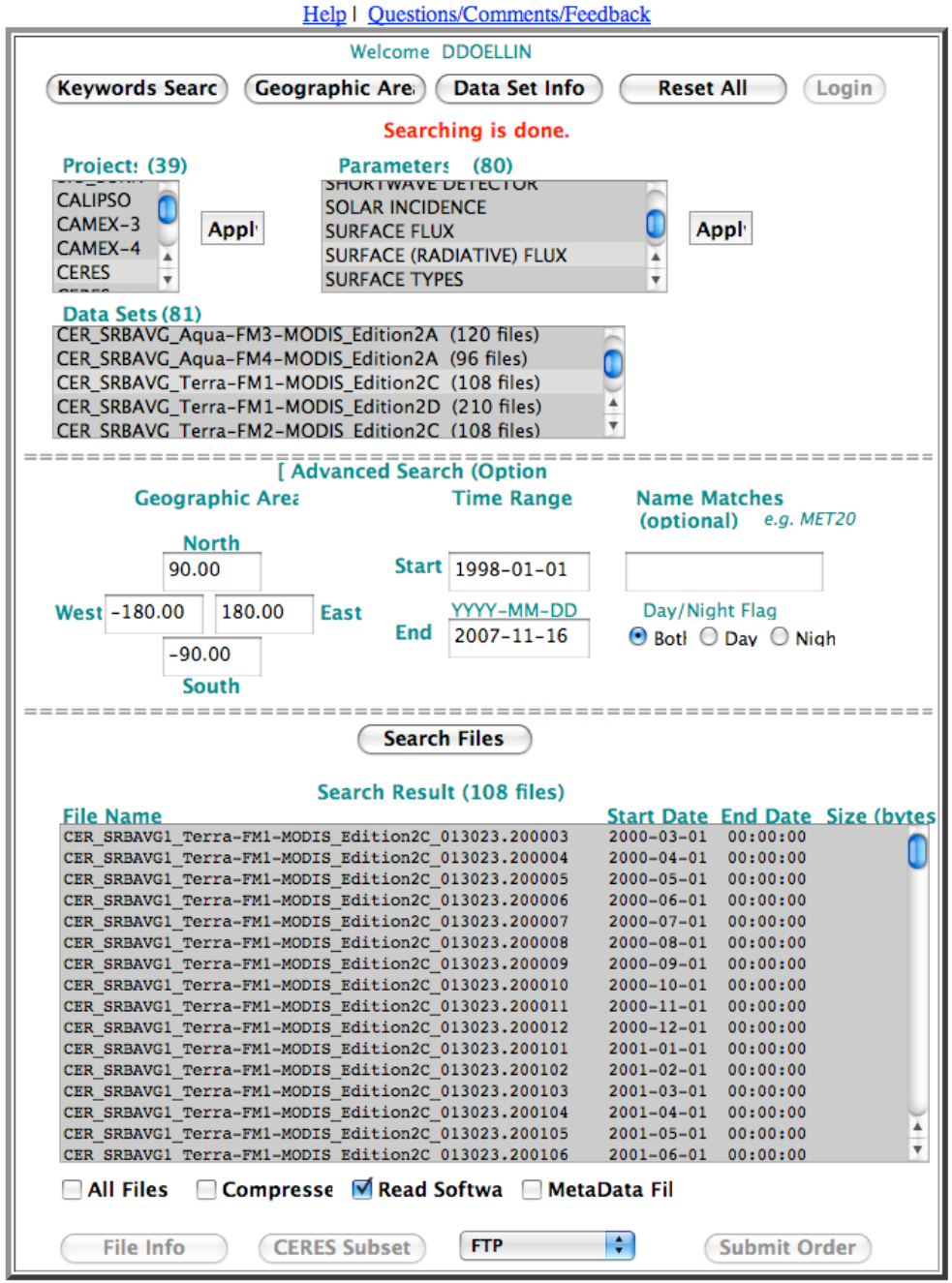
ATMOSPHERIC SCIENCE DATA CENTER

ASDC Java Order Tool



CERES Ed2 Ordering Experience

- User wants to order global monthly mean surface fluxes

User needs to

- Select from SSF, SFC, SRBAVG, SYN, AVG, ZAVG, what are the time and spatial averaging scales?
- Select from Edition2A, 2B, 2C, 2D, Do I use the latest?
- Select from Aqua FM3, FM4, Terra FM1, FM2, whats in cross-track mode?
- Geographic Area and Day/Night flag do nothing

- Highlight files, there are 210 CER_SRBAVG_MODIS_Edition2D files

Current HDF reading Experience

- Spend a day learning how to read HDF data or have IDL, MATLAB available
  - Download read software
  - Most climate users experienced in netCDF, ascii
- There are 5 CER_SRBAVG_MODIS_Edition2D files, which one has the parameter I want?
  - Read the Data Product Catalogue
  - Find out that the monthly mean surface fluxes are in the SRBAVG1 file
- What Surface parameterization model do I use A,B or C?
- If the user wants the TOA SW flux, does he choose nonGEO, GEO, untuned or tuned fluxes
  - What is the best CERES product for the parameter in question?
- Read the Data Quality Summary, find out I did not apply Rev1 correction
  - Apply correction
- No CERES data browser available to make sure I have read it correctly
- Users only have so much patience!

Ed2 CERES L3 data products

- Are process (PGE) driven
  - Filenames are not intuitive and each PGE has a different filename
- Are written out as they are stored in memory during processing
  - Everyone worried about getting their algorithms right and not about how to organize the output
  - For SRBAVG the output is organized by region rather than by synoptic maps
  - Files were organized by size and were always between 1-2GB
    - For SRBAVG the files were named SRBAVG1-5
  - all temporal scales are in one file, and organized monthly
    - For SRBAVG the monthly hourly with the monthly means
    - If the user wanted a single parameter global mean for the Terra record, the user would have to read through ~85GB of files
  - A file has the same parameter based on several differing algorithms
    - SRBAVG has Arithmetic, nonGEO, GEO, TOA fluxes
- Very little documentation defining the differences between algorithms
  - Publications, DQS, web based

Ed3 should have user friendly L3 products

- Edition3 is our chance to organize the CERES products into a more user friendly way
  - If we wait for Ed4 or NPP CERES products will be set in stone
  - Except for the CERES instrument calibration only minor improvements are expected for the Ed3 deliveries
  - Can concentrate on organization of products
- There are many CERES parameters that are derived from multiple approaches and instruments
  - TOA Fluxes: ERBElike, nonGEO, GEO, computed, EBAF
  - Surface Fluxes: Model A-C, computed
  - **Need a better way informing the user which approach to use based on application, what is the most robust method?**
- Need to subset the parameters from the product
  - The HDF files include every possible parameter, users only interested in a few parameters
  - Users want easily readable file formats, netCDF, ascii
  - Users are parameter driven not product driven
  - Include a product visualizer or browser

National Aeronautics and Space Administration

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MODIS Terra and Aqua Monthly Level-3 Data

Atmosphere Monthly Global 1X1 Degree Products

Home

This interface is designed for visualization and analysis of the Atmosphere Monthly Global Products. Users can generate plots or ASCII Output for Lat-Lon Map, Time Series, Hovmoller diagram, Scatter Plot, and Correlation Map. Animation is available for Lat-Lon Maps. The MODIS Science Team recommends MODIS Collection 5 (005) or 5.1 (051) data be used for scientific investigations. Collection 5.1 is currently being processed, but not yet complete, and will eventually replace Collection 5. More details about the data will be available in the future.

- Further information about this MOVAS instance can be obtained here.
- Giovanni MOVAS Daily instance is here.

Select:

Spatial

- Note Giovanni is parameter driven

Area of Interest: West: -180 North: 90 South: -90 East: 180

Data subsetting page

Parameters

Display: Data Product Info, Climatology Info, Units, Only Parameters with Climatology

Analysis Options: Parameter, Climatology, Anomaly

MOD08_M3.005(2000/02 - 2009/07)

Parameter	Data Product Info
Aerosol Cloud Mask Cloud Fraction (Land)	MODIS-Terra Ver. 5
Aerosol Cloud Mask Cloud Fraction (Ocean)	MODIS-Terra Ver. 5
Aerosol Cloud Mask Cloud Fraction Pixel Counts (Land)	MODIS-Terra Ver. 5
Aerosol Cloud Mask Cloud Fraction Pixel Counts (Ocean)	MODIS-Terra Ver. 5
Aerosol Optical Depth at 550 nm	MODIS-Terra Ver. 5

MYD08_M3.005(2002/07 - 2008/12)

Parameter	Data Product Info
Aerosol Cloud Mask Cloud Fraction (Land)	MODIS-Aqua Ver. 5
Aerosol Cloud Mask Cloud Fraction (Ocean)	MODIS-Aqua Ver. 5
Aerosol Cloud Mask Cloud Fraction Pixel Counts (Land)	MODIS-Aqua Ver. 5
Aerosol Cloud Mask Cloud Fraction Pixel Counts (Ocean)	MODIS-Aqua Ver. 5
Aerosol Optical Depth at 550 nm	MODIS-Aqua Ver. 5

MYD08_M3.051(2002/07 - 2009/07)

Parameter	Data Product Info
Aerosol Cloud Mask Cloud Fraction (Land)	MODIS-Aqua Ver. 5.1
Aerosol Cloud Mask Cloud Fraction (Ocean)	MODIS-Aqua Ver. 5.1
Aerosol Cloud Mask Cloud Fraction Pixel Counts (Land)	MODIS-Aqua Ver. 5.1
Aerosol Cloud Mask Cloud Fraction Pixel Counts (Ocean)	MODIS-Aqua Ver. 5.1
Aerosol Optical Depth at 550 nm	MODIS-Aqua Ver. 5.1

Temporal

Begin Date Year 2007 Month Jul (Date Begin: Feb 2000)

End Date Year 2007 Month Jul (Date End: Jul 2009)

Select Visualization:

Lat-Lon map of time-averaged differences | Visualization Help

Generate Visualization | Reset

Responsible NASA Official: Steven.J.Kempler@nasa.gov
Web Curator: Anthony Drake ‹web-contact-disc@listserv.gsfc.nasa.gov›

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Climate Datasets: By Category
All
Sub-daily
Daily
Monthly
Surface
Multi-level
Land
Ocean
Radiation
Reanalysis
Climate Indices
Search Datasets
New Datasets
20th Century Reanalysis
Popular Datasets
ICOADS
NCEP/NCAR Reanalysis
N. American Regional Reanalysis
Plotting & Analysis
Basic Plots
Analysis Tools
Access
FTP Access
OpenDAP Access
Software Resources
"Complete Data Resources"
About NetCDF
Reading Data in NetCDF Format
FAQ
Other Data Resources
Acronyms
How to Cite
Feedback

NCEP/NCAR Reanalysis Monthly Means and Other Derived Variables

Go To: Temporal Coverage | Spatial Coverage | Levels | Update Schedule | Download/Plot Data | Restrictions | Details | Caveats | File Naming | Citation | References | Original Source | Contact

One-Line Description:

- NCEP/NCAR Reanalysis Monthly Means and Other Derived Variables..

Tempora

- Da
- Lo

- Note NCEP Reanalysis first divides by group of parameters

Spatial C

- Global

Levels:

- 17 Pressure levels: 5 sigma levels

Update Schedule:

- Monthly

We have separated the data documentation into seven sections:	• Pressure level • Surface • Surface Fluxes • Other Fluxes • Tropopause • Spectral Coefficients

Usage Restrictions:

- None

Detailed Description:

- The NCEP/NCAR Reanalysis 1 project is using a state-of-the-art analysis/forecast system to perform data assimilation using past data from 1948 to the present. A large subset of this data is available from PSD in its original 4 times daily format and as daily averages. However, the data from 1948-1957 is a little different, in the regular (non-Gaussian) gridded data. That data was done at 8 times daily in the model, because the inputs available in that era were available at 3Z, 9Z, 15Z, and 21Z, whereas the 4x daily data has been available at 0Z, 6Z, 12Z, and 18Z. These latter times were forecasted and the combined result for this early era is 8x daily. The local ingestion process took only the 0Z, 6Z, 12Z, and 18Z forecasted values, and thus only those were used to make the daily time series and monthly means here.

Caveats:

- None

Related File Naming & Structure Information:

File Names:

- var.time.stat.nc *(In directory: /Datasets/ncep.reanalysis.derived/)*

Data subsetting page

Climate Datasets: By Category
All
Sub-daily
Daily
Monthly
Surface
Multi-level
Land
Ocean
Radiation
Reanalysis
Climate Indices
Search Datasets
New Datasets
20th Century Reanalysis
Popular Datasets
ICOADS
NCEP/NCAR Reanalysis
N. American Regional Reanalysis
Plotting & Analysis
Basic Plots
Analysis Tools
Access
FTP Access
OpenDAP Access
Software Resources
"Complete Data Resources"
About NetCDF
Reading Data in NetCDF Format
FAQ
Other Data Resources
Acronyms
How to Cite
Feedback

Go To: Temporal Coverage | Spatial Coverage | Levels | Update Schedule | Download/Plot Data | Restrictions | Details | Caveats | File Naming | Citation References | Original Source | Contact

NCEP/NCAR Reanalysis Monthly Means and Other Derived Variables

One-Line Description:

- NCEP/NCAR Reanalysis Monthly Means and Other Derived Variables..

Temporal Coverage:

- Note NCEP Reanalysis is parameter driven

Spatial Coverage:

- T62 Gaussian grid (192x94)
- 88.542N - 88.542S, 0E - 358.125E

Data subsetting page

Levels:

- All but PV are at nominal top of atmosphere (NTAT).
- PV is at 345 Kelvins isothermic level

Update Schedule:

- Monthly

Download/Plot Data:

Variable	Statistic	Level	Download File	Create Plot/Subset
Clear sky upward longwave flux	Monthly Mean (ltm, inter.std)	NTAT	csulltop.mon.mean.nc	
Clear sky upward solar flux	Monthly Mean (ltm, inter.std)	NTAT	csusltop.mon.mean.nc	
Downward solar radiation flux	Monthly Mean (ltm, inter.std)	NTAT	dswrltop.mon.mean.nc	
Upward longwave radiation flux	Monthly Mean (ltm, inter.std)	NTAT	ulwrltop.mon.mean.nc	
Upward solar radiation flux	Monthly Mean (ltm, inter.std)	NTAT	uswrltop.mon.mean.nc	

Derived Variables	Statistic	Level	Download File	Create Plot/Subset
Potential Vorticity	Monthly Mean (ltm, inter.std, std)	NTAT	pv.mon.mean.nc	

Notes:

These variables are averages of instantaneous values at the 4 reference times; 0,6,12 and 18z over the averaging period (month, day)

Usage Restrictions:

- None

Detailed Description:

- The NCEP/NCAR Reanalysis 1 project is using a state-of-the-art analysis/forecast system to perform data assimilation

ype of level
Potential temperature
Potential vorticity
Pressure levels
Surface

RA Interim Fields
Daily
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Synoptic Monthly Means
Monthly Means of Daily Means

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Your Requests

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Conditions

ee also...
Data FAQ
Data Servers
Data Services
GRIB decoder

Note: **In order to retrieve data from this server, you first have to accept the conditions of use.**

Select date

Select a date range between 1989-01-01 and 2009-05-31:

Start date: 1989-01-01 End date: 2009-05-31

Select a list of month:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1989	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	1990	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
1991	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	1992	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
1993	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	1994	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
1995	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	1996	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
1997	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	1998	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2007	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	2008	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2009	☐	☐	☐	☐	☐																				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Select All or Clear

- Note ECMWF interim is parameter driven

Select Time

☐ 00:00:00 ☐ 06:00:00 ☐ 12:00:00 ☐ 18:00:00

Select All or Clear

Select Step

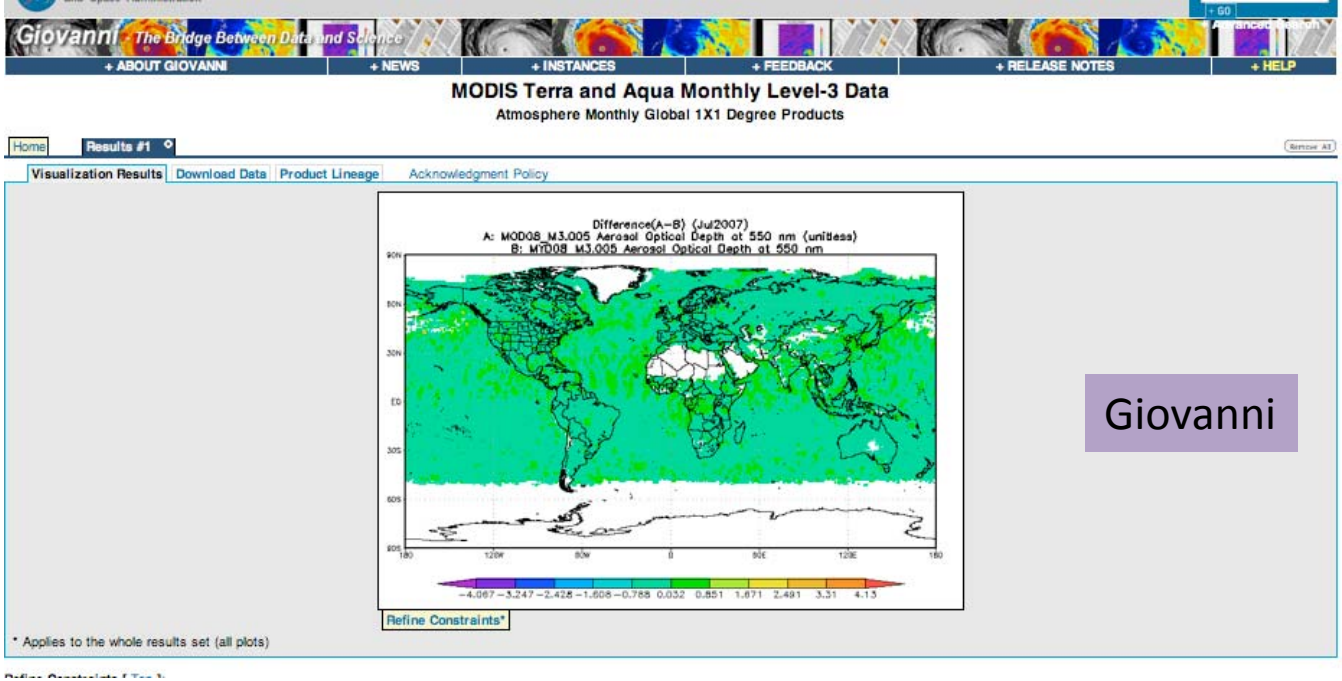
☐ 0 ☐ 3 ☐ 6 ☐ 9 ☐ 12

Select All or Clear

Select parameters

- ☐ 10 metre U wind component
- ☐ 10 metre V wind component
- ☐ 10 metre wind gust
- ☐ 2 metre dewpoint temperature
- ☐ 2 metre temperature
- ☐ Albedo
- ☐ Boundary layer dissipation
- ☐ Boundary layer height
- ☐ Charnock
- ☐ Clear sky surface photosynthetically active radiation
- ☐ Convective available potential energy
- ☐ Convective precipitation
- ☐ Convective snowfall
- ☐ Downward UV radiation at the surface
- ☐ East-West surface stress
- ☐ Evaporation
- ☐ Forecast albedo
- ☐ Forecast logarithm of surface roughness for heat
- ☐ Forecast surface roughness
- ☐ Gravity wave dissipation
- ☐ High cloud cover
- ☐ Ice surface temperature layer 1
- ☐ Ice surface temperature layer 2
- ☐ Ice surface temperature layer 3
- ☐ Ice surface temperature layer 4
- ☐ Instantaneous X surface stress
- ☐ Instantaneous Y surface stress
- ☐ Instantaneous moisture flux
- ☐ Instantaneous surface heat flux
- ☐ Large-scale precipitation fraction
- ☐ Large-scale snowfall
- ☐ Latitudinal component of gravity wave stress
- ☐ Logarithm of surface roughness length for heat
- ☐ Low cloud cover
- ☐ Maximum temperature at 2 metres since previous post-processing
- ☐ Mean sea level pressure
- ☐ Mean wave direction
- ☐ Mean wave period
- ☐ Medium cloud cover
- ☐ Meridional component of gravity wave stress
- ☐ Minimum temperature at 2 metres since previous post-processing
- ☐ North-South surface stress
- ☐ Photosynthetically active radiation at the surface
- ☐ Runoff
- ☐ Sea surface temperature
- ☐ Sea-ice cover
- ☐ Significant wave height
- ☐ Skin reservoir content
- ☐ Skin temperature
- ☐ Snow albedo
- ☐ Snow density
- ☐ Snow depth

Data subsetting page



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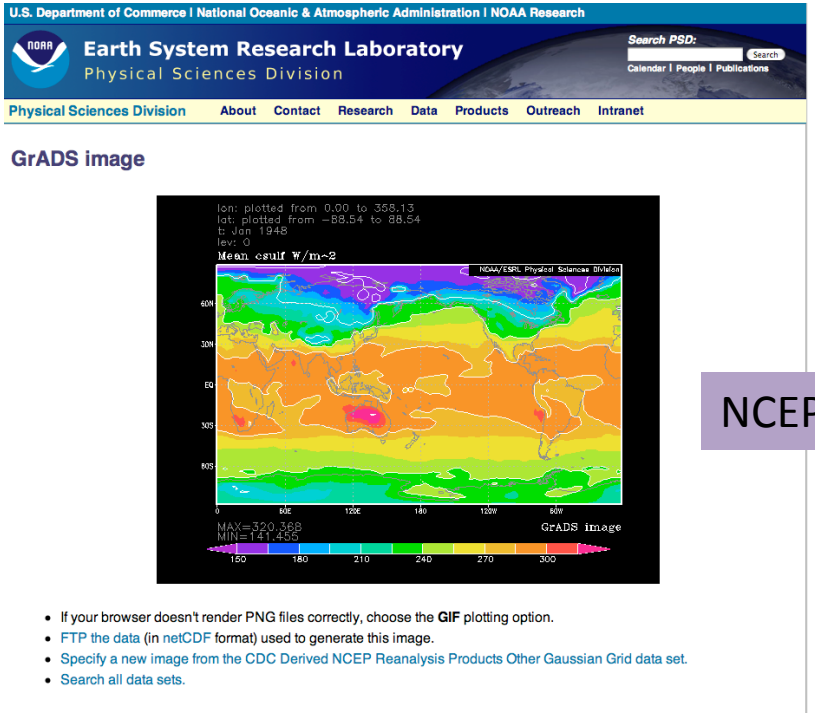


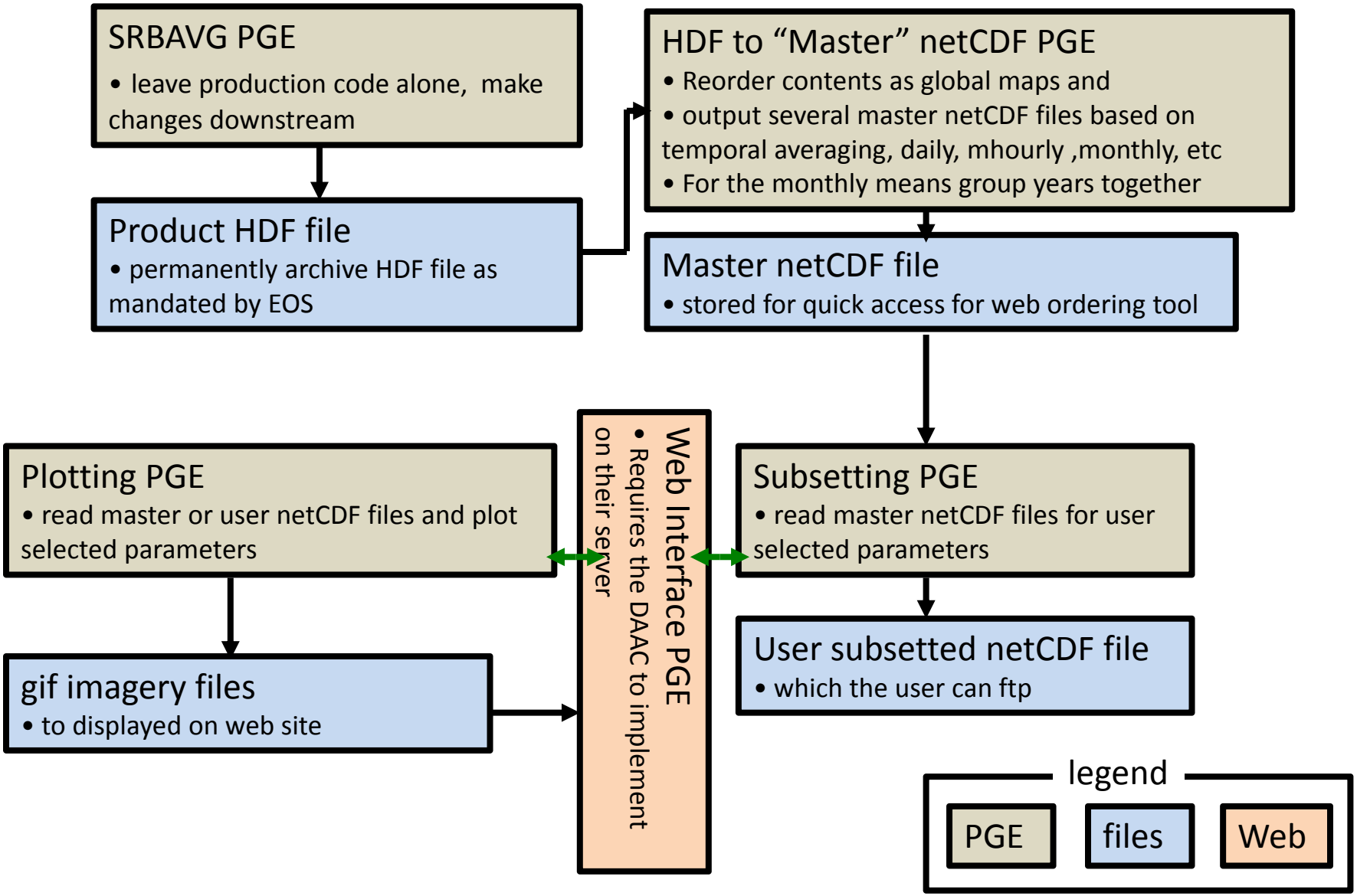
NCEP

Examples of data browser or plotting capabilities

Features of other data product sites

- Subsetting, select individual or subset of parameters
  - Don’t need to download the whole dataset
- Plotting of data, means, differences, etc
  - Is this really what I want
- Data format in netCDF, ascii
  - Familiar to most climate data users
- Temporal and spatial selection
  - Data arranged in global map time steps
  - Access multi-year file of monthly means

Subsetting flow chart for Product delivery



Subsetted file attributes

- Will have the same parameter attributes as the HDF file
- Will have index information for multi-dimensional parameters
- Will contain links to the DPC, DQS, read software, Parameter Definitions Document (PDD) and other helpful CERES web pages
- Will have a field for attribution for publication reference
- Will have a list of HDF files used to resolve user questions
  - Product name, satellite info, strategy, Ed, months, etc

Subsetter strawman

Stream	(•) SSF ( ) SYN ( ) CRS	• The user would be restricted to a single stream • These would be linakable to the data ordering tool web descriptions • The web pages would direct the user to the best stream for his application	
Parameter			
☑ TOA Flux		☑ Clear-Sky ☑ All-sky	☑ LW Flux ☑ SW Flux ☑ WN Flux ☑ Albedo ☑ Net Flux
☐ Cloud Properties	total ☐ High ☐ Upper Middle ☐ Lower Middle ☐ Lower	☑ Day only ☑ 24-hour	☐ Cloud Area Fraction ☐ Cloud Effective Pressure ☐ Cloud Effective Temperature ☐ Cloud Effective Height ☐ Cloud Top Pressure ☐ Cloud Base Pressure ☐ Cloud Particle Phase ☐ Liquid Water Path ☐ Ice Water Path ☐ Water Particle Radius ☐ Ice Particle Effective Diam ☐ Infrared Emissivity ☐ Cloud Visible Optical Depth - log

- All parameter names will be linkable to the PDD document
- If there are any cautions in the DQS will also be linked (easier to make a web change than to rerun the whole product)
- If error in parameter, remove parameter from subsetter
- There are too many parameters to list in a pull down menu

Subsetter strawman

Temporal Resolution	(•) Monthly Mean ( ) Daily ( ) Monthly-hourly
Spatial Resolution	( ) Selected regions Please specify search area: Top 90.00 Left -180.00 180.00 Right -90.00 Bottom (•) Regional (1° latitude by 1° longitude global grid) ( ) Zonal mean ( ) Global mean
Satellite	(•) Terra (3/2000 - 10/2005) ( ) Aqua (7/2002 to 10/2005)
Time Range	From: 3 - 2000 (MM-YYYY) To 10 - 2005 (MM-YYYY)

After parameters are selected than pick temporal resolution

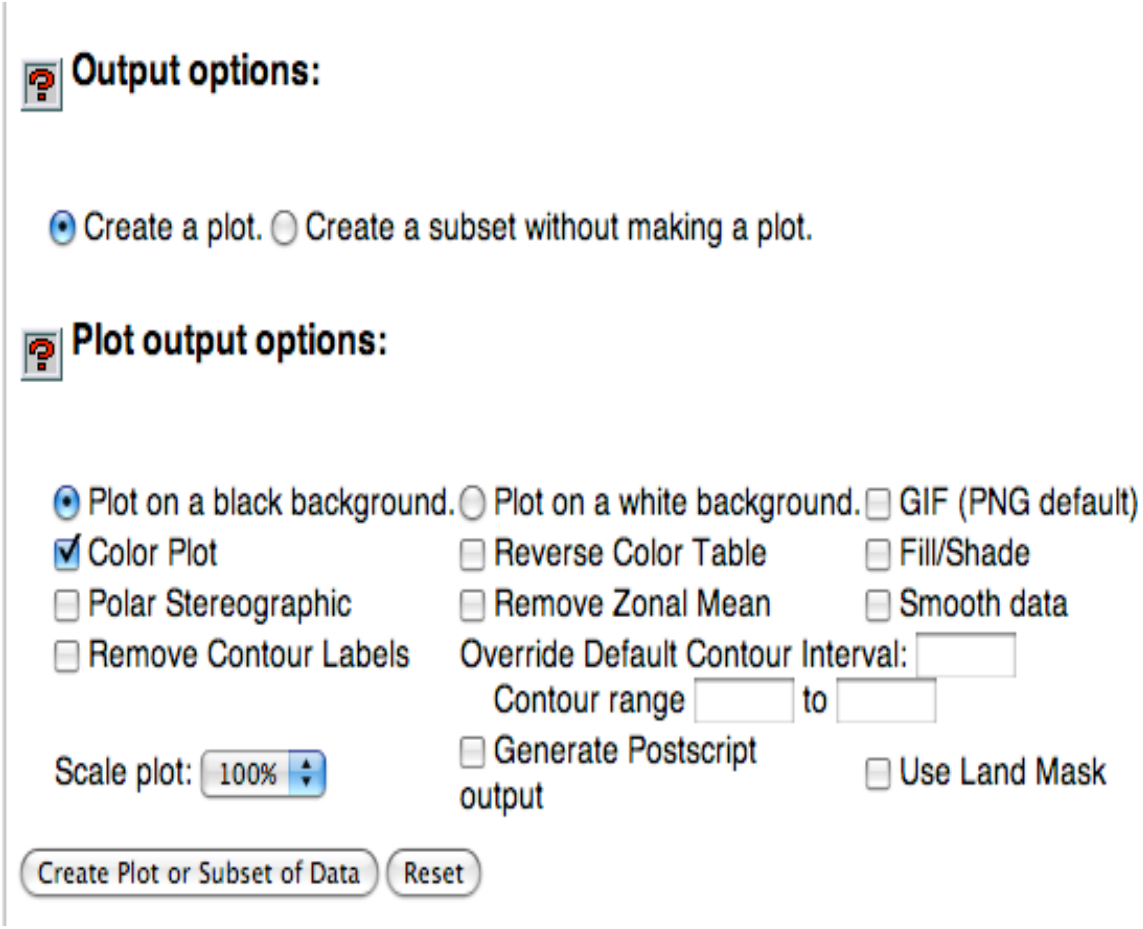
User can select a 1°x1° region to compare with surface data or regional, zonal or global means

There will be a filesize indicator, user may have create multiple files

The subsetter will pick the cross-track months

Time range updated for either Terra or Aqua

CERES web browser strawman



- We would eliminate a lot of the plot options in the subsetter package
- For the CERES data browser that would have differencing capabilities that would allow for two parameters we would add more options