CERES USER METRICS
CERES and FLASHFlux Archive Volume

By Data Date Through September 2013

Total Volume Archived ~ 809 TB
NPP Volume Archived ~ 4.75 TB
CERES Ancillary Data Archived
(September 2008 – September 2013)
CERES Data Orders
(June 2010 – September 2013)

Total Orders: 14,519
CERES Data Distribution
(June 2010 – September 2013)

Total data distributed
- ~270 TB
- 534,259 data months
- ~1,820 users
Number of Users by Product
(June 2010 – September 2013)

Total: 2,753
Users by Country (June 2010 – September 2013)
PLANNED DATA ACCESS IMPROVEMENTS
ASDC Areas of Modernization

- **Data Stewardship**
  - GIS
  - iRODS
  - OPeNDAP

- **Data Distribution**
  - Ontology

- **Data Production**
  - Cloud Computing

- **ASDC**
  - Partners: NASA NCCS, RENSI, HIFLD, OPeNDAP
  - Planning: April/May
  - Experiments in April – Sep
  - IOC: Oct
  - Adds: Nov-Mar

- **Ontology**
  - IOC: Nov
  - Adds: Dec-Jan

- **Semantic Technology**
  - Defn: FY14
  - IOC FY15

- **Service Oriented Architecture**
  - Defn: Nov 13
  - Expt: Jan-Jun 14
  - IOC FY14

- **Digital Library**
  - Plan Nov 14
  - IOC 1Q14

- **Hadoop**
  - Concept Nov 14
  - IOC 3Q14

- **Analytic Tool Support**
  - Defn: Nov 14
  - Expt: Dec-Jun
  - IOC FY14

**Partners:** AWS, OCIO
**Planning:** April 2013
**Experiments:** May/June ‘13
**Authorization to Operate:** 2014
**IOC:** 2014

**Defn:** FY14
**IOC:** FY15

**Defn:** Nov 13
**Expt:** Jan-Jun 14
**IOC:** FY14

**Plan Nov 14**
**IOC 1Q14**

**Concept Nov 14**
**IOC 3Q14**

October 29, 2013
ASDC Update for CERES STM

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GIS Initial Capability – Using ArcGIS software and EBAF Surface Data
Possible GIS Use Case

CERES Surface Flux with Freshwater Lakes
LaRC Cloud Computing Scenarios

ASDC Data Product Re-processing
- Current approach: Buy extra hardware
- Bursty behavior
- High Data Throughput

Foreign National short-term Visitors and remote partners
- Current approach: NIA or company provisioning and Duplicate Data
- Irregular visitors, local hardware is often inadequate
- Permit their sponsor to buy time Public Cloud without NASA participation
  - Permit NASA funded option depending on agreement with sponsor
- NASA makes public data available to their cloud instance
- Continue collaboration on non-NASA assets after they return home
ASDC EOSWEB RE-DESIGN EFFORT

eosweb.larc.nasa.gov
EOSWEB Re-design Effort

ASDC deployed new website April 8, 2013

Goal

- Enhance user experience for data discovery, ordering and external site access
- Improve sustainability for ASDC staff and science content providers. Drupal 7 Content Management System provides modularity and maintainability.

Stakeholder Input

- Incorporate features & best practices from ESDIS & other NASA DAACS
- ASDC User Working Group and CERES team engaged to provide input
- Project teams solicited and feedback successfully incorporated
- New design addresses findings from ESDIS GIBS study
EOSWEB Re-design Effort

Status

- Ongoing effort to incorporate enhancements to website
- Significant interaction with CERES team (Doelling, P. Mlynczak, Loeb) since initial deployment to tailor data informational pages
- October 25th, 2013 deployment incorporates CERES updates

CERES Updates

- CERES data info pages reflect 4 tier design
  - Tier 1 – Level (1, 2, 3, 3b)
  - Tier 2 – Processing Stream Name
  - Tier 3 – Product Name
  - Tier 4 – Filename
October 25th CERES Updates

- Combined overlapping Terra/Aqua datasets into one webpage per stream (SYN1deg, ISCCP-D2-like, CRS)
- Updated temporal coverage to list date ranges per platform and per instrument for combined dataset
- Added Instrument and Platform fields for merged data products
- Added “Current Products” and “Legacy Versions” links were relevant
- Reorganize ES4/9 product pages to separate Edition3 from Ed1-CV and organize by platform
- Added capability to list product specific notes
- Added netCDF label to subset/visualization tool links
- Added ES4/9 links to NPP Data Products Page
- Implemented misc. corrections per feedback from CERES team
EOSWEB Re-design Effort

Tier 1 – Level
Each level contains streams

CERES Data and Information

The Clouds and the Earth's Radiant Energy System (CERES) is a key component of the Earth Observing System (EOS) program. The CERES instruments provide radiometric measurements of the Earth's atmosphere from three broadband channels. The CERES missions are a follow-on to the successful Earth Radiation Budget Experiment (ERBE) mission. The first CERES instrument (PFM) was launched on November 27, 1997 as part of the Tropical Rainfall Measuring Mission (TRMM). Two CERES instruments (FM1 and FM2) were launched into polar orbit on board the EOS flagship Terra on December 18, 1999. Two additional CERES instruments (FM3 and FM4) were launched on board EOS Aqua on May 4, 2002. The newest CERES instrument (FM5) was launched on board the Suomi National Polar-orbiting Partnership (NPP) satellite on October 28, 2011.

- Level 3B
- Level 3
- Level 2
- Level 1B
- Documentation

- Level 3 Description
- SYN1deg - CERES temporally interpolated TOA fluxes (GEO-enhanced), MODIS and GEO clouds, and computed TOA/surface/profile fluxes
- SSF1deg - CERES temporally interpolated TOA fluxes (constant meteorology) and MODIS clouds.
- ISCCP-D2like - CERES-MODIS and GEO cloud properties stratified by ISCCP cloud types.
- FLASHFlux - Near real-time CERES observed TOA fluxes, MODIS clouds, and parameterized surface fluxes, not officially calibrated.
- ERBElke - CERES instrument TOA fluxes using algorithms identical to those used by ERBE.
**EOSWEB Re-design Effort**

**Tier 2 – Stream**

Each stream contains data products. Products organized by temporal and spatial resolution vs by filenames.

<table>
<thead>
<tr>
<th>Description</th>
<th>SYN1deg - CERES temporally interpolated TOA fluxes (GEO-enhanced), MODIS and GEO clouds, and computed TOA/surface/profile fluxes.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Products</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Products</strong></td>
<td><strong>Temporal Resolution</strong></td>
</tr>
<tr>
<td>SYN1deg-Day Ed3A</td>
<td>Daily</td>
</tr>
<tr>
<td>SYN1deg-3Hour Ed3A</td>
<td>3 Hourly</td>
</tr>
</tbody>
</table>

**Legacy Versions**

Legacy versions listed by filename
**EOSWEB Re-design Effort**

**Tier 3 – Data Product**
Each product contains detailed product info

### SYN1deg-Month Ed3A

<table>
<thead>
<tr>
<th>Project Title:</th>
<th>CERES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline:</td>
<td>Clouds</td>
</tr>
<tr>
<td></td>
<td>Radiation Budget</td>
</tr>
<tr>
<td>Version:</td>
<td>Edition 3A</td>
</tr>
<tr>
<td>Level:</td>
<td>L3</td>
</tr>
<tr>
<td>Platform:</td>
<td>Terra, Aqua</td>
</tr>
<tr>
<td>Spatial Coverage:</td>
<td>(-90, 90)(-180,180)</td>
</tr>
<tr>
<td>Spatial Resolution:</td>
<td>Regional, Zonal, Global</td>
</tr>
<tr>
<td>Temporal Coverage:</td>
<td>Terra: 03/2000 - 06/2002</td>
</tr>
<tr>
<td></td>
<td>Terra+Aqua: 07/2002 - 03/2013</td>
</tr>
<tr>
<td>Temporal Resolution:</td>
<td>Monthly</td>
</tr>
<tr>
<td>File Format:</td>
<td>HDF</td>
</tr>
</tbody>
</table>

**Temporal coverage shows both ranges in merged dataset**

**Reverb:** Order Data

**Subset/Visualization Tool:** CERES Order Tool (netCDF)

**Quality Summary:** SYN1deg Ed3A Quality Summary

**Shorter terms used to describe products vs detailed filename**
Both filename types (Terra and Terra+Aqua) appear in search.
EOSWEB Updates

Overlapping Terra & Aqua datasets combined for display at stream level

SYN1deg

http://eosweb.larc.nasa.gov

October 29, 2013

ASDC Update for CERES STM

ISCCP-D2Like

Page: 23
EOSWEB Updates
Added platform (L3) and instrument (L2 & L3) fields for merged product-level pages
EOSWEB Updates

Added “Current Products” and “Legacy Versions” links
EOSWEB Updates

ES4 & ES9 pages separate Ed3 and Cal/Val products

Products split by Ed3 and Ed1-CV
EOSWEB Updates

Added “Product Note” field and clearly labeled CERES subset tool with “netCDF”

http://eosweb.larc.nasa.gov
EOSWEB Updates

Added ES4 & ES9 to NPP Products page
Conclusion

• The ASDC continues to robustly support CERES ingest, archive, production, and distribution

• New alternative methods to file-level data access continue to be evaluated
  • “Get users the data the way they want it”
  • Potentially expand user community of CERES data
  • Cloud computing remains a possible model for future computing and data access needs

• Increased collaboration between ASDC and CERES team combined with new EOSWEB pages optimize CERES data discovery
  • Data info pages better guide users to appropriate product for user needs
  • New EOSWEB pages enable 4-Tier CERES data presentation
BACKUP CHARTS
LaRC Cloud Computing Scenarios

• ASDC Data Product Re-processing
  • Current approach: Buy extra hardware
  • Bursty behavior
  • High Data Throughput

• Individual Principal Investigator on-demand computing
  • Current approach: Buy small sets of hardware
  • Low duty cycle, infrequent usage

• New Mission Science Data Processing
  • Current approach: Buy dedicated or shared assets
  • Pre-launch mission processing runs out warranty
  • Compatibility with owned systems permits conversion when load warrants
LaRC Cloud Computing Scenarios

• Suborbital Missions
  • Current approach: Buy dedicated assets to take into field
  • Largely used only during field campaign (Bursty)
  • Remote Access is often difficult due to lack of connectivity

• Foreign National short-term Visitors and remote partners
  • Current approach: NIA or company provisioning and Duplicate Data
  • Irregular visitors, local hardware is often inadequate
  • Permit their sponsor to buy time Public Cloud without NASA participation
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    - IOC: July, 2013
    - Adds: Aug-Dec

- **ASDC**
- **Semantic Technology**
  - IOC FY14

- **Service Oriented Architecture**
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- **Digital Library**
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October 29, 2013

ASDC Update for CERES STM

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