CERES data products for ARISE

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List of CERES data products

• SSF (level 2)
  – Terra (FM1 and FM2), Aqua (FM3), NPP (FM5)
  – TOA irradiance, MODIS-derived cloud properties
  – MODIS derived aerosol properties
  – Instantaneous surface irradiance from parameterized codes

• C3M (level 2)
  – CALIPSO, CloudSat, MODIS (Aqua), and CERES (FM3)
  – Irradiance profile computed with CALIPSO, CloudSat, MODIS derived cloud properties
  – CALIPSO and MODIS derived aerosol properties
  – T and Q from GEOS-5.2

• SYN (level 3)
  – Gridded (1° × 1°) hourly
### CERES SSF Data Products

**Level 2:** Instantaneous footprint level (20km nominal) fluxes and cloud properties.

**Description:** CERES observed TCA fluxes, MODIS clouds and aerosols, and parameterized surface fluxes.

<table>
<thead>
<tr>
<th>Products</th>
<th>Temporal Resolution</th>
<th>Spatial Resolution</th>
<th>Temporal Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSF Aqua-FMI EdrA</td>
<td>Instantaneous</td>
<td>Footprint</td>
<td>07/02/2002 - 11/02/2014</td>
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<tr>
<td>SSF Aqua-FMI EdrA</td>
<td>Instantaneous</td>
<td>Footprint</td>
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<tr>
<td>SSF NPP-FMS EdrA</td>
<td>Instantaneous</td>
<td>Footprint</td>
<td>01/27/2012 - 05/31/2012</td>
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<tr>
<td>SSF Terra-FMI EdrA</td>
<td>Instantaneous</td>
<td>Footprint</td>
<td>03/01/2000 - 11/02/2014</td>
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<tr>
<td>SSF Terra-FMI EdrA</td>
<td>Instantaneous</td>
<td>Footprint</td>
<td>03/01/2000 - 05/30/2014</td>
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<tr>
<td>SSF TRMM-FPM EdrB</td>
<td>Instantaneous</td>
<td>Footprint</td>
<td>01/01/1998 - 03/01/1998, 03/01/2009 - 03/01/2009</td>
</tr>
</tbody>
</table>

**Next Edition Data**

**Legacy Data**

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**Resources**

- [https://eosweb.larc.nasa.gov/project/ceres/ssf_table](https://eosweb.larc.nasa.gov/project/ceres/ssf_table)
C3M

- https://eosweb.larc.nasa.gov/project/ceres/cc cm_table
## CERES FM-2 targets

<table>
<thead>
<tr>
<th>Starting date and time</th>
<th>Ending date and time</th>
<th>location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 27 00 UTC</td>
<td>Sep 4 24 UTC</td>
<td>72° 35’N 38° 28’ W (Summit)</td>
</tr>
<tr>
<td>Sep  5 00 UTC</td>
<td>Sep  9 24 UTC</td>
<td>74° 50’N, 142° 30’W</td>
</tr>
<tr>
<td>Sep 10 00 UTC</td>
<td>Sep 14 24 UTC</td>
<td>73° 50’N, 134° 0’W</td>
</tr>
<tr>
<td>Sep 15 00 UTC</td>
<td>Sep 20 24 UTC</td>
<td>74° 48’N, 154° 50’W</td>
</tr>
<tr>
<td>Sep 21 00 UTC</td>
<td>Sep 25 24 UTC</td>
<td>74° 50’N, 142° 30’W</td>
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<tr>
<td>Sep 26 00 UTC</td>
<td>Sep 30 24 UTC</td>
<td>73° 50’N, 134° 0’W</td>
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</table>
CERES TOA irradiance from SSF Sep. 7
## CALIPSO CloudSat operation

<table>
<thead>
<tr>
<th>Date</th>
<th>CALIPSO</th>
<th>CloudSat</th>
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<tbody>
<tr>
<td>Sep 7</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Sep 9</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Sep 11</td>
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<td>Y</td>
</tr>
<tr>
<td>Sep 24</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>
CERES TOA irradiance from SSF, Sep. 15
(Sea/Ice) (Construction of 3D Clouds)
SYN1deg

- http://ceres-tool.larc.nasa.gov/ords-tool/jsp/SYN1degSelection.jsp
3 types experiments for CERES validations

• Grid box experiment
  – C-130 flies over a ~100 km by 100 km grid box at ~10 km (TOA) or near the surface

• Ground track experiment
  – C-130 follows the ground track of CALIPSO/CloudSat (within +/- 30 min). C-130 can above, below and within clouds

• Vertical profile and sea ice surface albedo experiment
Evaluation of SYN1deg-hour

• Scientific objectives
  – Estimate the uncertainty in gridded hourly mean irradiances in the CERES SYN and EBAF data products.
• Sep. 7 and 15 cases
• Construction of 3D cloud fields
• Comparison of computed irradiance at the aircraft altitude with aircraft observations.
• Comparison of gridded mean irradiance
  – Computed irradiance with 3D cloud fields versus aircraft observations
  – Gridded hourly mean irradiance from SYN and aircraft observations.
  – Computed irradiance with 3D cloud fields versus gridded hourly mean irradiance from SYN
7 September 2014, 21:11UTC

(QC Plot)

(C3M and Aircraft 20140907)

(Joseph Corbett)

(MOD L1B Image)
7 September 2014, 21:11UTC

(Sea/Ice)

(Construction of 3D Clouds)
Other satellite derived data products

- Arctic Observation and Reanalysis Integrated System (ArORIS)
  - Contact Matthew Christensen
    ([matt.christensen@jpl.nasa.gov](mailto:matt.christensen@jpl.nasa.gov))