Happy Earth Day!
CERES Meeting Objectives

1. Review status of CERES Instruments and Data Products:
   - Status of NASA & CERES Project
   - CERES Terra, Aqua and SNPP SW/LW/TOTAL Channel Calibration Update
   - CERES FM6 and RBI Update
   - CERES SNPP SSF Edition-1: VIIRS Cloud Algorithm & Validation Status
   - CERES GEO Cloud Algorithm Status
   - CERES Edition-4 ADM Validation status
   - SOFA, SARB and TISA Working Group Reports
   - Data Management Team Update: Terra/Aqua/SNPP
   - Atmospheric Sciences Data Center (ASDC) Update
   - CERES Education Outreach

2. Invited Presentations Session: Each presentation is 45 min.

3. Contributed Science Reports. Each report is 20 min including time for questions.
CERES Team Leads

- Principal Investigator: Norman Loeb
- Project Scientist: Kory Priestley

CERES Working Groups:
- Instrument: Kory Priestley
- ERBElike: Takmeng Wong
- Clouds: Pat Minnis (Lead); Bill Smith Jr., (Deputy)
- Inversion: Wenying Su
- SOFA: David Kratz
- SARBB: Seiji Kato
- TISA: David Doelling
- FLASHFlux: Paul Stackhouse & David Kratz
- Data Management: Jonathan Gleason
- ASDC: John Kusterer
- Five CERES instruments on 3 satellites (Terra, Aqua, SNPP) are flying.
- FM6 will be fly on JPSS-1 in 2016 and the CERES Follow-on (RBI) will fly on JPSS-2 in 2021.

**CERES Flight Schedule**

<table>
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<tr>
<th>Sensors</th>
<th>PFM</th>
<th>FM-1,2</th>
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<th>FM-5</th>
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- Initial Studies/Reqmts Development
- Sensor Fab, Assembly, Test
- Sensor in Storage
- Spacecraft I&T
- Nominal Mission Lifetime
- Operational Lifetime
Establishment of the CERES Earth Radiation Budget Measurement Science Team

- Idea is to consolidate CERES Terra, Aqua & SNPP budgets into a single CERES budget line managed by LaRC SD.

- Current CERES budget is split between Terra, Aqua and SNPP missions.

- FM6 and RBI budgets will eventually be added.

- This means CERES team submits and presents its own budget in the NASA Planning, Programming, Budgeting, and Execution (PPBE) process. Starts this year.

- How this will affect CERES involvement in Senior Review process is TBD.
CERES Journal Publication and Citation Counts
(For Papers Between 1993-2013; Updated April 1, 2014)

- Total number of peer-reviewed journal articles: 821
- Total number of citations to CERES papers: 24,250

Compiled by Anne Wilber & Dave Kratz
## Number of Unique Users By Product

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Update on CERES Net TOA Flux and Argo Ocean Heating Rate

- Significant improvement after 2006 likely due to better screening of Argo (real time vs delayed mode ARGO data).
- Plan to update comparison through 2013.
CATALYST GOES Live!

- After 2 years of development, the CERES AuTomAted job Loading sYSTem (CATALYST) went live on April 17, 2014.

- CATALYST provides a framework for automation of CERES Product Generation Executive (PGE) execution, coordination & logging.
  - Ingests CERES production requests (PRs) to create collections of jobs
  - Executes jobs on AMI-P cluster
  - Initiates ANGe ingest wrapper scripts (ANGe is ASDC’s ingesting, archiving and distribution system).
  - Provides graphical interface for users to manage system
  - CERES Beta2 Ed4 Clouds and Inversion code (8 PGEs) was first to be incorporated into CATALYST.
  - Enables multiple SSF streams (e.g., Terra & Aqua) to be processed simultaneously.
  - Factor of 2-4 increase in throughput through ASDC production system!
  - Will expand to Inversion and CERES Level-3 processing in coming months.

- Congratulations CATALYST Development and Test Team!
CERES Terra and Aqua Edition 4

- Instrument gains and SRFs: Delivered.
  - Improvement to Aqua SW part of TOT SRF.

- CERES Clouds code: Delivered. Several years of Terra and Aqua processed SSF Edition 4-beta2.

- Inversion (ADMs and SOFA) code: Delivered. Currently in testing. Inversion-only runs to produce SSF Edition 4.

- Several SARB and TISA code deliveries within next few months.
  - Key decision on suitability of 5-channel GEO cloud retrievals required during this meeting.
## Edition 4 Planned Milestones

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<th>Product</th>
<th>Science Delivery to DMT</th>
<th>Target Public Release</th>
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<td>Ed4 TSI</td>
<td>June 27, 2014</td>
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<td>Ed4 SYNI</td>
<td>July 11, 2014</td>
<td>October 27, 2014</td>
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<td>Ed4 SYN1deg</td>
<td>July 25, 2014</td>
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<tr>
<td>Ed4 ISCCP-D2like Day/Nit + GEO + MRG</td>
<td>August 29, 2014</td>
<td>March 5, 2015</td>
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</table>
CERES FM5 SNPP

- CERES FM5 time-varying gains and beginning of mission SRFs to be used in SSF Edition 1.

- Receiving Collection 1.1 calibrated VIIRS radiances from GSFC Land PEATE (Xiong).


- SSF Edition 1 will use Edition 4 Aqua ADMs.

<table>
<thead>
<tr>
<th>Product</th>
<th>Science Delivery to DMT</th>
<th>Target Public Release</th>
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<td>Ed3 SSF1deg-Day/Month</td>
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<td>August 21, 2014</td>
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<td>NPP Ed1 Inversion</td>
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<td>NPP Ed1 CRS</td>
<td>November 14, 2014</td>
<td>January 14, 2015</td>
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Future Earth Radiation Budget Missions

- Responsibility for sustained climate measurements transferred from NOAA to NASA.

- CERES FM6 to launch on JPSS-1 in Nov 2016.
  - CERES team to produce Earth Radiation Budget Climate Data Records using CERES FM6, closely following FM5/SNPP approach.

- Radiation Budget Instrument (RBI) Status:
  - Draft RFP released in April, 2013
  - Industry-Day April 30, 2013
  - Official RFP release: June 14, 2013
  - Award: Spring 2014
  - RBI delivery date: Spring 2019.
Arctic Radiation–IceBridge Sea-Ice Experiment (ARISE)

- Field experiment over Arctic Ocean to study Arctic sea-ice, clouds and radiation during late summer to early autumn (August 25-September 26, 2014).

- Consists of airborne polar geophysical project called Operation IceBridge.
  - Goal of IceBridge is to characterize annual changes in thickness of sea ice, glaciers, and ice sheets. Uses LVIS laser altimeter (1064 nm backscatter).
  - Bridges gap between ICESat satellite missions.

- Radiation science goals: Evaluate CERES clouds and radiation products for coincident Terra, Aqua and Suomi NPP satellite overpasses.

- Base of operation: August 27-Sept 2: Thule Air Base, Greenland.
  Sept 4-Sept 24: Fairbanks, AK.

- Aircraft: Wallop’s C-130

- Instruments: BBR (Bucholtz), SSFR (Schmidt), 4STAR (Redemann), NAST-I (Noe), LVIS + Digital Camera (Blair), in-situ Probes (Anderson)

Personnel:

a. Hal Maring – HQ Program Manager, Radiation Sciences
b. Tom Wagner – HQ Program Manager, Cryospheric Sciences
c. Bruce Tagg – HQ Program Manager, Airborne Sciences
d. Christy Hansen – NASA Goddard, IceBridge Project Manager, and Radiative Balance Project Manager
e. Bill Smith – NASA Langley, Science Team Lead
DOE purchased Ches Light to create RFORE -- Reference Facility for Offshore Renewable Energy.

DOE to reach final decision on:

i) whether to proceed with engineering design (due any day now).
ii) whether to proceed with construction of 100 m tower.

Positive decision for both will mean offshore construction during summer of 2016.

MPLNET is still operating at the lighthouse while we await approval from LAFB and FAA to operate on LaRC.

The RFORE steering committee proposed an extensive suite of instrumentation, which includes current COVE instrumentation (except MPL).

COVE uplooking instruments (AERONET, BSRN radiometers) will be located on top of the tower; downlooking radiometers at tower top and/or platform level.

Meanwhile, the COVE project is still collecting data.

For more details, see Greg Schuster Presentation Thursday morning.
Upcoming Conferences & Meetings of Interest

European Geophysical Union General Assembly
- April 27–May 2, 2014, Vienna, Austria

14th AMS Conference on Atmospheric Radiation & Cloud Physics
- July 7–11, 2014, Boston, MA

IGARSS 2014
- July 13–18, 2014, Quebec City, Canada

7th International Science Conference on the Global Energy and Water Cycle

Fall CERES Science Team Meeting (Joint with ScaRaB & GERB)
- October 6–10, 2014, Toulouse, France

The Climate Symposium 2014
- October 13–17, 2014, Darmstadt, Germany

Fall American Geophysical Union
- December 15–19, 2014, San Francisco, CA

3rd International A-Train Symposium 2015
- March 4–6, 2015, Southern California
Other News

• SORCE successfully transitioned to a new “hybrid” operating mode on Monday, Feb. 24th.

• The hybrid mode allows SORCE to take solar measurements again after an approximate 6-month hiatus due to the loss of another battery cell.

• “Hybrid” Mode: Every orbit SORCE makes solar observations during the daylight part of the orbit, and then put itself into safe-hold every eclipse (to conserve power during nighttime).

• Goal is to operate SORCE until after the TSIS launch in 2017.

• Total Solar Irradiance Calibration Transfer Experiment (TCTE) launched November 4, 2013. Mission duration: 18 months.

• Successful SORCE/TCTE cross-calibration campaign occurred between Dec 22-Dec 28, 2013.

• CERES team is switched to V15 SORCE TIM for Feb03-Jun13.

• For July 2013 onwards, RMIB TSI composite (mainly DIARAD/VIRGO instrument on SOHO) is being used (anchored to SORCE TIM V15).
Other News

• GERB instrument on Meteosat-10, operational since Jan 2013 failed (could not activate the counter spin).

• Met-11 will be launched next year but will be in storage for a few years and activated when Met-10 has been in operation for a few years.

• Currently, GERB team is using Met-9 GERB at 10°E with Met-10 imager data from 0°E longitude.

• ScaRaB/Megha-Tropiques – Functioning nominally

• CALIPSO – Functioning nominally

• CloudSat – Returned to the A-Train. Nominal Daylight Only Operations (DO-Op) continue.

• Deep Space Climate Observatory (DSCOVR) is to be launched in early 2015.
End