

CERES Data Management Team Minutes for 06/05/2003

Schedule:

06/04/2003	DMT Meeting was postponed to 06/05/03 due to Center Safety Stand-down Day
06/30/2003	SGI3800 arrives at SCF
08/01/2003	CERES B1250 personnel move to B1189 (approximately)
09/23-25/2003	CERES Science Team Meeting highlighting CERES Terra ADM, beta SYN/AVG, Beta Terra SRBAVG, Aqua ERBE-Like, Aqua clouds
09/30/2003	All CPU's to be assigned to Certified SysAdmin or disconnected from LaRCNet
March, 2004	CERES Science Team Meeting jointly with GERB at NCAR

Ongoing Activities:

- B1250 Rehab (Planned completion ~03/2005)
- SA Certification (Completion by 09/30/2003)

Priority Items:

- Re-staging of MODIS data at ASDC to support faster processing/re-processing
- Acquisition of additional processing and storage capacity with a second SGI 3800 at the SCF.

• Announcements:

- New WinXP installations are banned due to IT Security considerations
- The Phase 2 Proposal Briefing is attached to the end of this report

Standing Committee Reports

(These notes supplement the reports posted by the various Committee's on the CERES DMT status page.)

Agenda	Committee	Responsibility	Updated	Status/Issues
1.00	ASDC/ECS Interfaces	Hopson/Sorlie/ Direskeneli	06/05/03	Clouds, GGEO, TISA deliveries were promoted today. A problem was identified with GGEO starting with 02/01/02 data; GMS-5 data file formats were changed. samantha has been converted to the Origin3800 platform and the Origin 2000 taken out of service. Trance has also been replaced; some problems in ingest have been identified and are being worked out.
2.00	SCF	Flippo	06/05/03	The Instrument Support Terminal problem in B1202 was not a computer security problem, but rather a configuration problem and has been corrected. The leased SGI3800 continues to be held in procurement; resolution is expected on 06/16/03.
3.00	Toolkit	Flippo	06/05/03	v5.2.9 has been installed and is ready for testing.
4.00	System Issues			
4.01	Processing Strategy	Geier	06/05/03	A meeting will be held on 06/11/03 to discuss Terra Ed1b vs. Terra Ed2 changes. GGEO processing will complete through 01/02 until file header problems are resolved.
4.02	Systems Engineering Committee	Nolan/Sorlie/ Hopson/ Ayers/Cooper	06/05/03	J.Robbins will provide requests for SEC studies on delivery and release processes.
4.03	Configuration Management & SCCR/DCCR Review	Ayers/Franklin/ Saunders	06/05/03	SCCR 442 was released NAG95 compiler is available to support CERESlib compilation at the ASDC. SCCR443 provides ability to read zonal information.
4.04	Process Improvement Committee	Stassi	04/09/03	J.Stassi to discuss changes in the Test Plan Document format with V.Hopson to reduce rekeying.

				Auto Delivery Memo demo was conducted; end users should now be able to run it.
5.00	Working Group Status			(See posted Subsystem Status Reports)
5.01	External Interfaces- Instrument	Spence	06/05/03	Special operations of FM2 to support intercalibration with GERB occurred from 05/24/03 to 06/06/03. Intecalibration with GERB is planned 06/18/03. Intercalibration of Terra and Aqua over Greenland is planned. Lunar scanning is planned during the full moon of 06/14/03. May Aqua data is mostly in hand, however, May data for Terra Attitude and Ephemeris is uncertain due to the ingest problems in the ASDC described above.
5.01	External Interfaces- Data Sources	Sorlie	06/05/03	All data receipts are occurring on schedule. Reports from DAO indicate that skin temperature accuracy may be improved shortly permitting its use instead of ECMWF.
5.01	External Interfaces- Customers	Detweiler / Koziana	06/05/03	Browse images are being incorporated into the web site. Dr. Wielicki would like them running by end of July, 2003.
5.02	Simulator	Chapman	04/09/03	No additional information was provided.
5.03	Visualization/ Validation Tools	Lee	01/15/03	No additional information was provided.
5.04	Instrument (SS 1)	Escuadra/Cooper/ Hess/Spence/ Szewczyk/Filer	06/05/03	No additional information was provided.
5.05	ERBE-like (SS 2, SS3)	Kizer/ Walikainen/ Robbins	06/05/03	The QC checker was modified to detect additional problems. An examination of LINT was conducted for applicability to code development problems. A pre-compiler version would cost \$5k; when IFMP restrictions on procurement are lifted, it will be acquired.
5.06	Clouds (SS 4.1, 4.2, 4.3)	Sun-Mack	06/05/03	No additional information was provided.
5.06	Clouds (SS 4.4)	Miller	06/05/03	No additional information was provided.

5.07	Inversion (SS 4.5, 4.6)	Nolan	06/05/03	Subsetting for the period 04/02 through 10/02 is ongoing with every other SSF footprint. An ADM working group meeting was held leading to an 08/15/03 delivery.
5.08	SARB (SS 5.0, 7.2, 12.0)	Coleman	06/05/03	SYNSARB delivery has slipped to an unknown date.
5.09	TISA -(SS 6.0, 9.0) Gridding	Raju	06/05/03	R.Raju will return on or about 06/18/03.
5.09	TISA -(SS 11.0) GGEO	Stassi	06/05/03	No additional information was provided.
5.09	TISA -(SS10.0, 8.0) Averaging	Nguyen	06/05/03	No additional information was provided.
5.10	CERESlib	Stassi	01/15/03	No additional information was provided.

CERES Climate Data Records

A Proposal to the NASA Office of Earth Science

NRA 03-OES-02

Mike Little

06/05/03

Presented to CERES Data Management Team

CERES Climate Data Records Proposal

Purpose

- **Purpose**
 - **Continue and Improve EOS CERES**
 - Continuation of measurements
 - Maintenance of existing CERES algorithms and data products
 - Completion of originally proposed set of data products for Terra & Aqua
 - Improvements based on first phase validation results
 - **Continue to build long-term radiation budget record** from which to establish variability of Earth's climate
 - Overlapped, high accuracy data record now over 25 years in length
 - Provide new capabilities to **quantify effects of individual components** of the climate system on Earth's radiative energy system
 - Close **interaction with climate modeling** efforts
- **End-State**
 - Re-process TRMM, Terra, Aqua Edition 3 during 4th year of Phase II
 - Good documentation
 - Publications

CERES Climate Data Records Proposal

Achieve 6 Science Objectives

- Provide Direct Measurement of Earth's Radiation Budget
- Provide the only measure of cloud-radiative variability capable of detecting decadal change
- Provide first global dataset with fundamentally new capability: accurately unscramble relationships between climate system components and Earth's radiation budget
- Provide first ERB dataset to accurately account for and observe the regional and global diurnal cycle of Earth's reflected solar and emitted thermal energy
- Provide new integrated energy budget from surface to TOA
- Create first long-term AVHRR record with climate-quality stability

CERES Data Products

Data Product	Parameters	Space Scale	Time Scale	TRMM Products 1/98-8/98; 3/00	Terra Products From 3/00	Aqua Products From 7/02
Instrument						
BDS	Radiances	FOV, 20km	Instantaneous	Edition 1	Edition 2	Edition 1
ERBE-Like						
ES-8	SW,LW TOA Flux	FOV, 20km	Instantaneous	Edition 2	Edition 2	Ed 1: 6/03
ES-9	SW,LW TOA Flux	2.5 dg grid	Monthly	Edition 2	Edition 2	Ed 1: 6/03
ES-4	SW,LW TOA Flux	2.5 dg grid	Monthly	Edition 2	Edition 2	Ed 1: 6/03
TOA and Surface						
ADMs	SW, LW, Window Anisotropy Factors	scene types	2 yr Ensemble	Validated	Validated 9/03	Validated 4/05
DMS	SW Albedo (solar zenith angle)	scene types	2 yr Ensemble	Validated	Validated 12/03	Validated 7/05
SSF	Surface Properties Cloud Properties Aerosol Properties SW, LW, Window TOA Fluxes SRB-like SW, LW Surface Fluxes	FOV, 20km	Instantaneous	Edition 2B	Edition 1 uses TRMM ADMs Edition 2 using Terra ADMs avail 1/04	Beta, Ed 1: 1/04 uses Terra ADMs Edition 2 using Aqua ADMs avail 6/05
SFC	Same as SSF	1 dg grid	Instantaneous	Edition 2B	Beta, Ed 2: 2/04	Beta 6/03, Ed 2: 9/05
SRBAVG	Same as SSF	1 dg grid	Daily, Monthly	Edition 2B	Beta, Ed 2: 3/04	Beta 8/03, Ed 2: 10/05
TOA Atmosphere and Surface						
CRS	SSF plus integrated SW, LW, Window Surface Fluxes SW, LW, Window Atmosphere Fluxes	FOV 20 km	Instantaneous	Edition 2C	Beta, Ed 2: 3/04	Beta 8/03, Ed 2: 10/05
FSW	Same as CRS	1 dg grid	Instantaneous	Edition 2C	Beta, Ed 2: 4/04	Beta 8/03, Ed 2: 10/05
SYN	Same as CRS	1 dg grid	3-hourly	Ed 2C: 10/03	Ed 2: 9/04	Beta 11/05, Ed 2: 4/06
AVG	Same as CRS	1 dg grid	Daily, Monthly	Ed 2C: 10/03	Ed 2: 9/04	Beta 11/05, Ed 2: 4/06
ZAVG	Same as CRS	1 dg lat zone global	Daily, Monthly Daily, Monthly	Ed 2C: 10/03 Ed 2C: 10/03	Ed 2: 9/04 Ed 2: 9/04	Beta 11/05, Ed 2: 4/06 Beta 11/05, Ed 2: 4/06

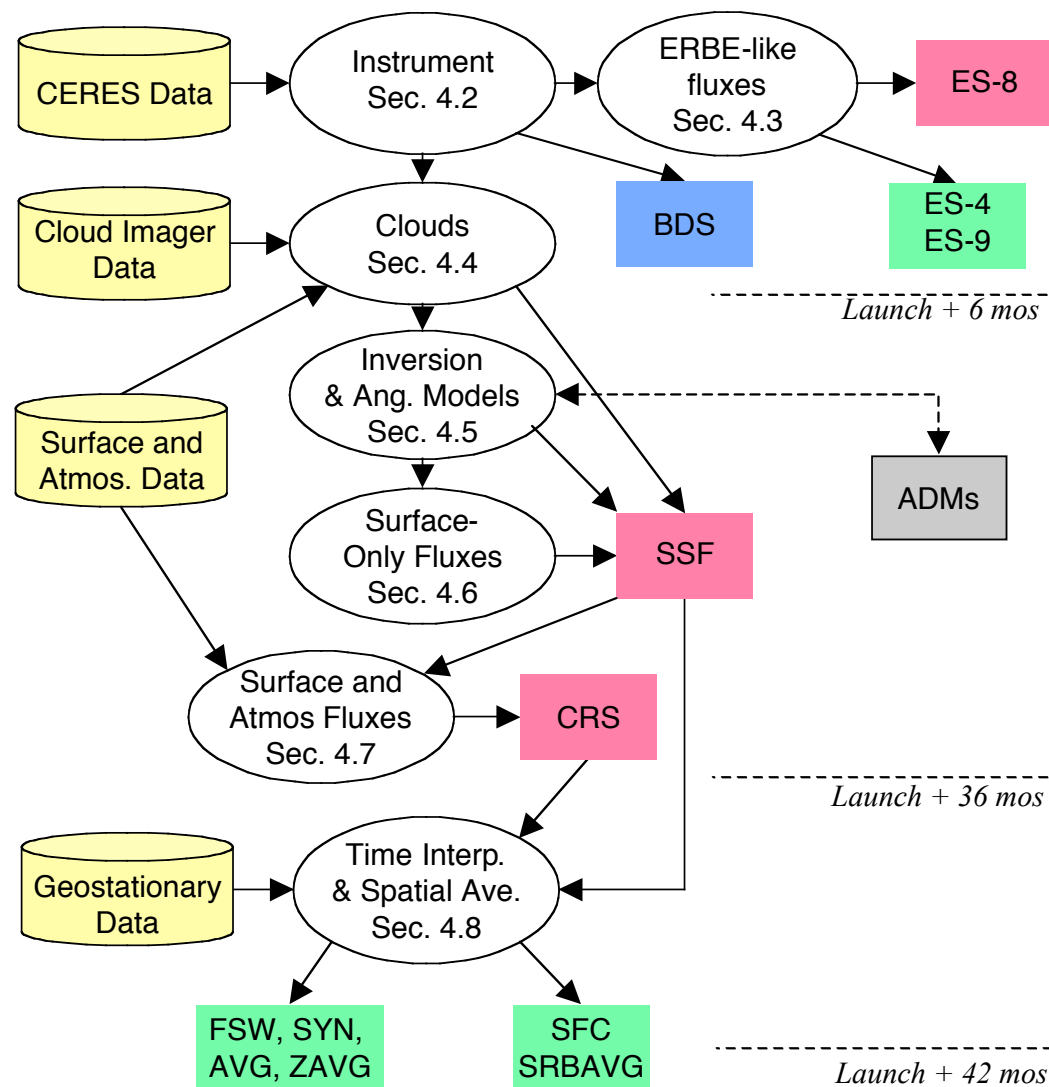
All Fluxes are provided separately for both Clear-sky and All-sky Conditions

Beta Product Quality: An early test version with stable formats, early checkout, not publishable or archived

Validated Product Quality: A data product with specified accuracy estimates, publishable, archived

All Data Products are Produced, Archived, Distributed from the NASA Langley Atmospheric Sciences Data Center

CERES Data Products Data Flow Diagram



CERES Climate Data Records Proposal

Algorithm Maintenance and Improvement

- Instrument Calibration
 - Continued maintenance and health and more rapid production of science studies
 - Algorithms with higher spectral characterization of radiometric performance
- ERBE-Like TOA Fluxes
 - Continue production
- Cloud and Aerosol Properties for SSF
 - Improve accuracy of cloud mask and retrievals to improve derived radiative fluxes
 - Polar cloud masks (day, twilight and night) and Optically thin cloud heights
 - Multi-layered and broken clouds
 - Calibration and Validation
- ADMs for TOA Radiative Fluxes
 - Improve and cross-calibrate with other instruments
- Surface-only Flux Algorithms (SOFA)
 - Validation, broken clouds, cloud identification, sky classification
- Surface and Atmosphere Radiation Budget (SARB)
 - Surface albedo, aerosols, clouds, ozone
- Time Interpolation and Spatial Averaging (TISA)
 - New parameters and cal/val improvements
 - Algorithmic improvement using Terra, Aqua ADMs,
 - New interpolation techniques for more consistent cloud properties

CERES Climate Data Records Proposal

Phase II Validation

- The 3 Laws of Climate Data: Calibrate, calibrate calibrate
- Surface Radiative Fluxes and Aerosols
 - Aeronet, BSRN, CMDL, SURFRAD and Central ARM site
- Surface Based Cloud Observations
 - Surface based lidar/radar/radiometer cloud vertical profiles
- CERES Ocean Validation Experiment (COVE)
 - Other field campaigns
- Satellite-based Cloud Fraction, Layer and Aerosol Validation
 - Cloud fraction and cloud top height from Icesat and CALIPSO lidars
 - A-train formation
 - Cloudsat for multi-layered clouds
 - MATCH and GOCART models

Improving Past Climate Data Records

Proposed Options

- Apply CERES Algorithms to ERBE NOAA-9 (02/85-02/87)
 - Make more effective use of existing observational data
 - Proposed also under NRA 02-OES-06, NRA-03-OES-02
- AVHRR calibration with ERBS WFOV Active Cavity Record (85-89)
 - SW regional TOA fluxes
- Complete ERBS WFOV Active Cavity TOA Flux Record (99-03)
 - Develop correction factors and re-process observational data to obtain 2.5 years of overlap with Terra and 1.5 years of overlap with Aqua

Enabling Data Use: A Wider User Community

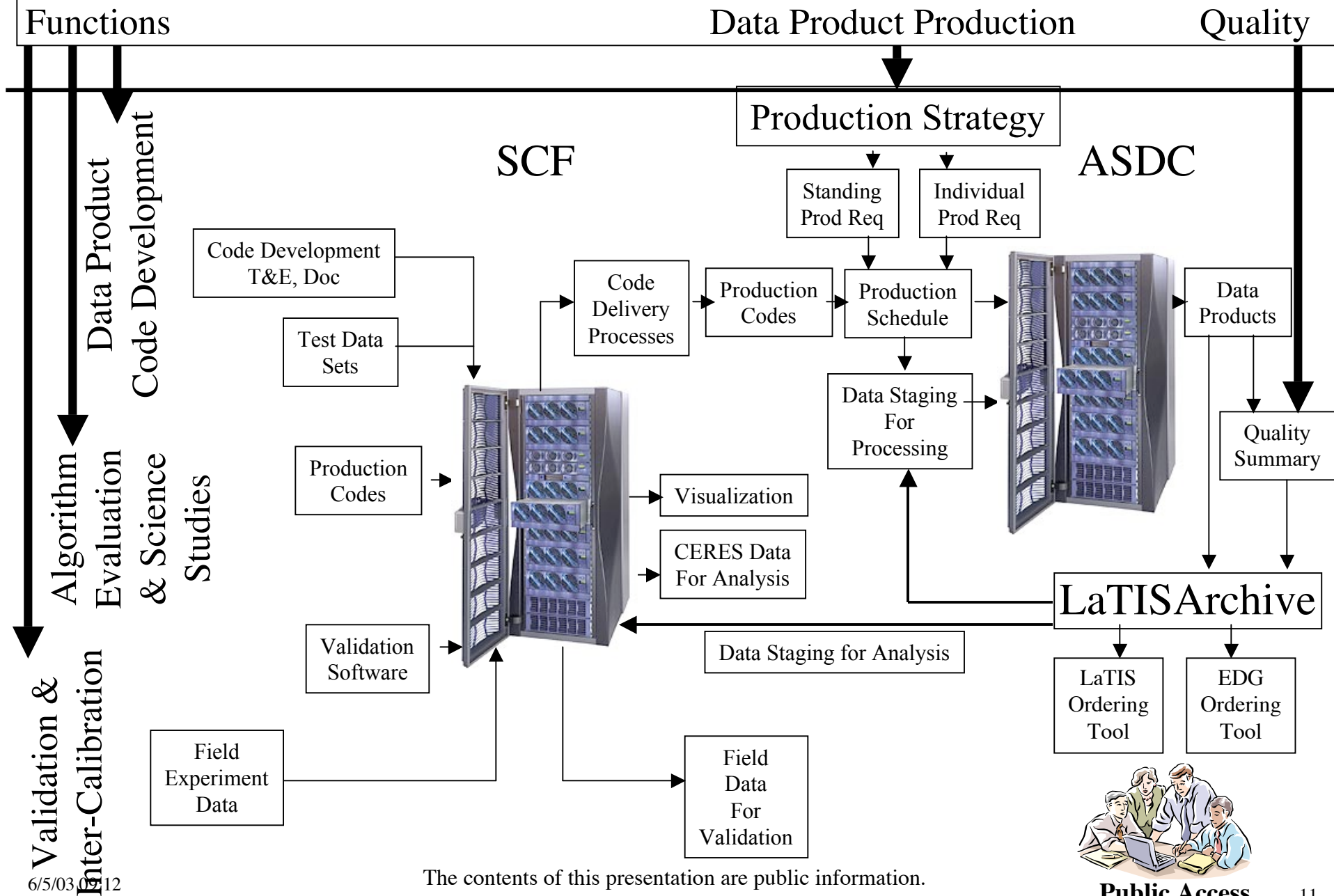
- Education and Outreach
 - S'COOL
- Subsampled Datasets
 - Extend S'COOL and CAVE parameter model
 - Datasets with reduced numbers of parameters
 - Datasets with long time series for specific regions
 - DVD distribution a possibility

Data Management Plan

Subsystem Characteristics

Subsystem	Formal Data Products (External)	Parameters	Thousands of Lines of Code (kLOC)	Monthly Data Vol (GB)
Instrument	2/satellite	75	233	504
ERBE-like	3/satellite	250	127	724
Clouds	1/satellite	160	496	595
ADM/Inversion	(in clouds)	(in clouds)	98	(in clouds)
SARB	2/satellite	263	102	121
TISA	7/satellite	808	569	556
CERES TOTAL	15		1,626	2500

CERES PI and Working Groups



CERES Data Management

Phase II Action Items

ID	Action Item	Impact	Benefit of Resolution	Actions
DM-3-1	Data Products must be checked to ensure the datasets are correct and complete.	Inconsistencies between approved and released data products are not detected systematically.	Quality of data products available to the Public will be confirmed to be consistent with Science Team intentions	Develop auto QC tools
DM-3-2	Data displayed fail to intuitively convey physical processes and phenomena.	<ul style="list-style-type: none">- Evaluation is labor-intensive- Public release is slowed	Reduction labor in cross-correlating data to speed release and to improve understanding of science data	Expand capabilities of visualization tools
DM-3-3	Science data codes are designed around expensive, SGI hardware platforms	<ul style="list-style-type: none">1 Cost of production data processing is high2 Future re-processing must be performed in large computer centers	<ul style="list-style-type: none">1. Broad base of systems where production can be performed efficiently2. Reduce costs without impact on quality.	Convert to Open Source (LINUX)

CERES Facilities

- COVE
 - Continue operations and maintenance of facility and equipment
- Science Computing Facility (3 locations)

Upgrade	Reason	Consequence if Cancelled
Storage Capacity Increase by 3 TB Annually	Accommodate larger data sets in analysis and intercalibration due to growth of observational data and resulting growth of data products	Data staging requirements will delay instrument analysis and intercalibration analysis. Examination of trends in data sets will require special scheduling to permit data staging.
Add Backup Capacity by 2TB Annually	Protect growing body of critical data not available for staging	Lower priority data will be deleted, necessitating re-generation if lost.
Workstation Modernization in FY04, FY05, FY06	Workstations used for special computations will need upgraded speed, memory	Special studies will be shifted to Compute Servers and create a shortfall in capacity
Incorporate LINUX environment into SCF	Development of LINUX based production code	Unable to save costs in production environment.

Project Management

- CERES Project Office and Interfaces
 - PI model
- CERES Science Team
 - Membership from Algorithm Maintenance work, Successful EOS NRA, Climate model and analysis advisory panel
 - NHQ Data Products Progress Review (annual)
 - External Science Peer Review (4 year intervals)
- CERES Working Groups and Work Group Leads
 - Work assignments and responsibilities
- Input Datasets
 - Primary working group monitors changes, quality
- Validation Datasets
 - Data collected by surface, suborbital, orbital or field campaign
- Output Data Products and Users

CERES Climate Data Records

Investigator Responsibilities

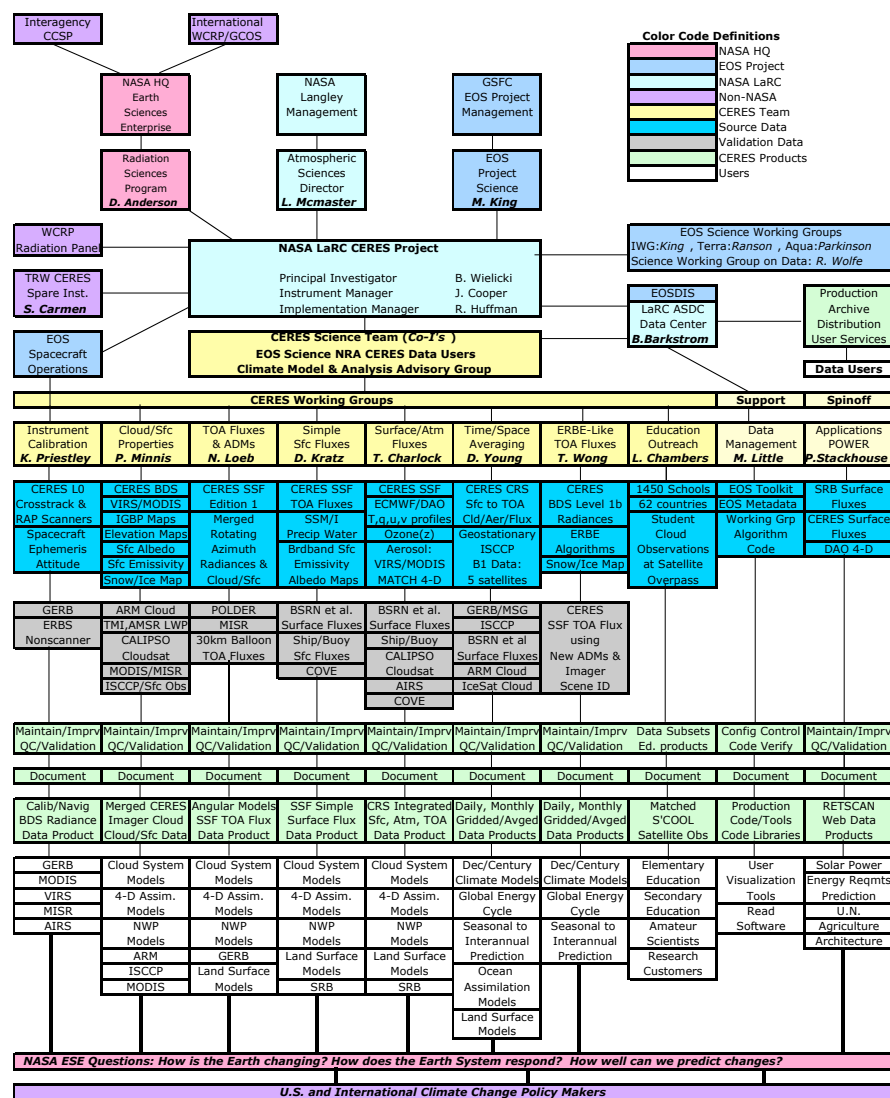
Principal Investigator	Responsibilities
Bruce A. Wielicki	Overall lead
Co-Investigators	
Lin Chambers	Head, S'COOL, TISA and sub-sampling studies
Tom Charlock	Chair, SARB Working Group
David P. Kratz	Chair, SOFA Working Group
Michael M. Little	Head, CERES Data Management
Norman G. Loeb	Chair, ADM Working Group
Patrick Minnis	Chair, Cloud Working Group
Kory J. Priestley	Chair, Instrument Working Group
William L. Smith, Jr.	Lead, CERES Ocean Validation Experiment (COVE)
Takmeng Wong	Lead, ERBE-Like Products
David F. Young	Chair, TISA Working Group
Robert Cess	SOFA cloudy sky surface LW algorithm
James Coakley	Development/testing partly cloudy pixel algorithms
William D. Collins	MATCH aerosol use and revision
Steven Dewitte	CERES ADM application to GERB
Xiquan Dong	Cloud validation at ARM SGP
Ellsworth Dutton	BSRN surface flux validation data
John E. Harries	GERB-CERES intercalibration and validation
Alexander Ignatov	Aerosol property retrieval and validation
Seiji Kato	CERES-Like NOAA-9 analyses; Fu-Liou model improvement
Gerald Mace	Cloud validation at ARM TWP
Alvin J. Miller	GCM Comparisons and SMOBA ozone profile data
V. Ramanathan	SOFA clear-sky surface LW algorithm
G. Louis Smith	ERBE WFOV + AVHRR analysis
Taneil Uttal	Cloud validation at ARM NSA
Michel Viollier	GERB/CERES TISA studies

CERES Climate Data Records Proposal

Co-Investigators

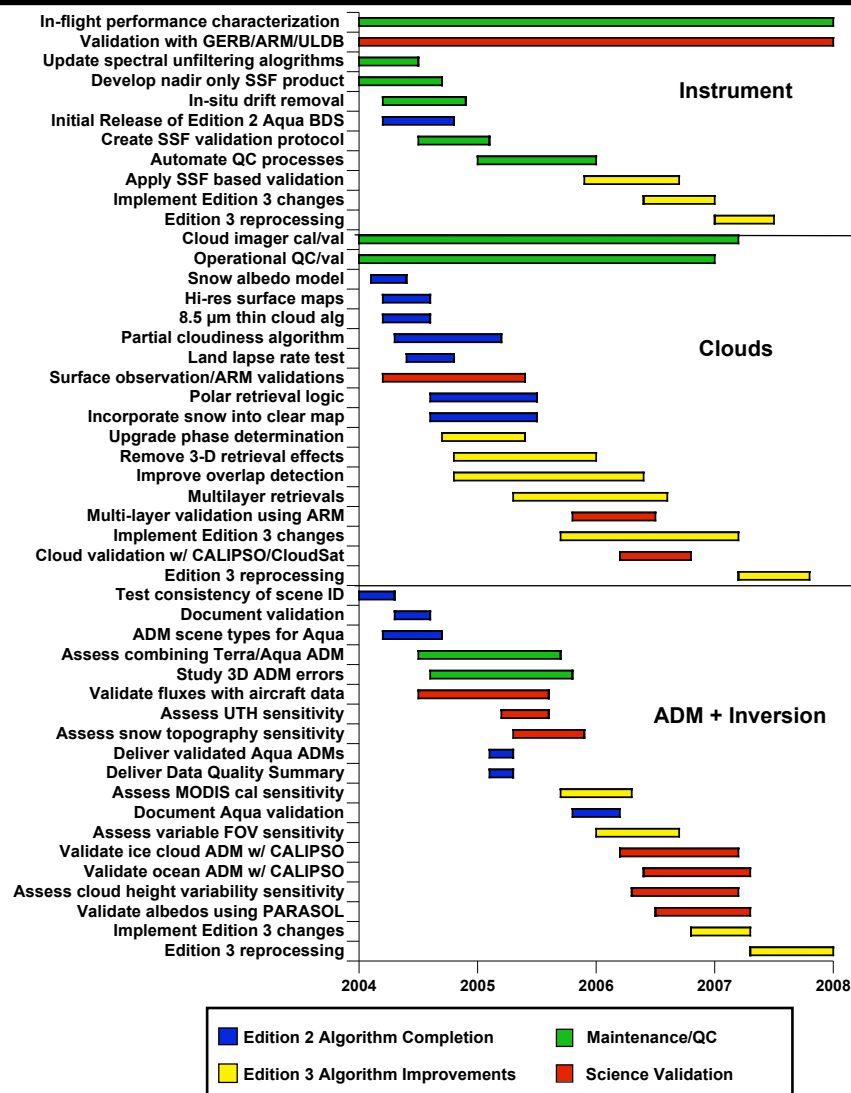
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CERES Science Team Management



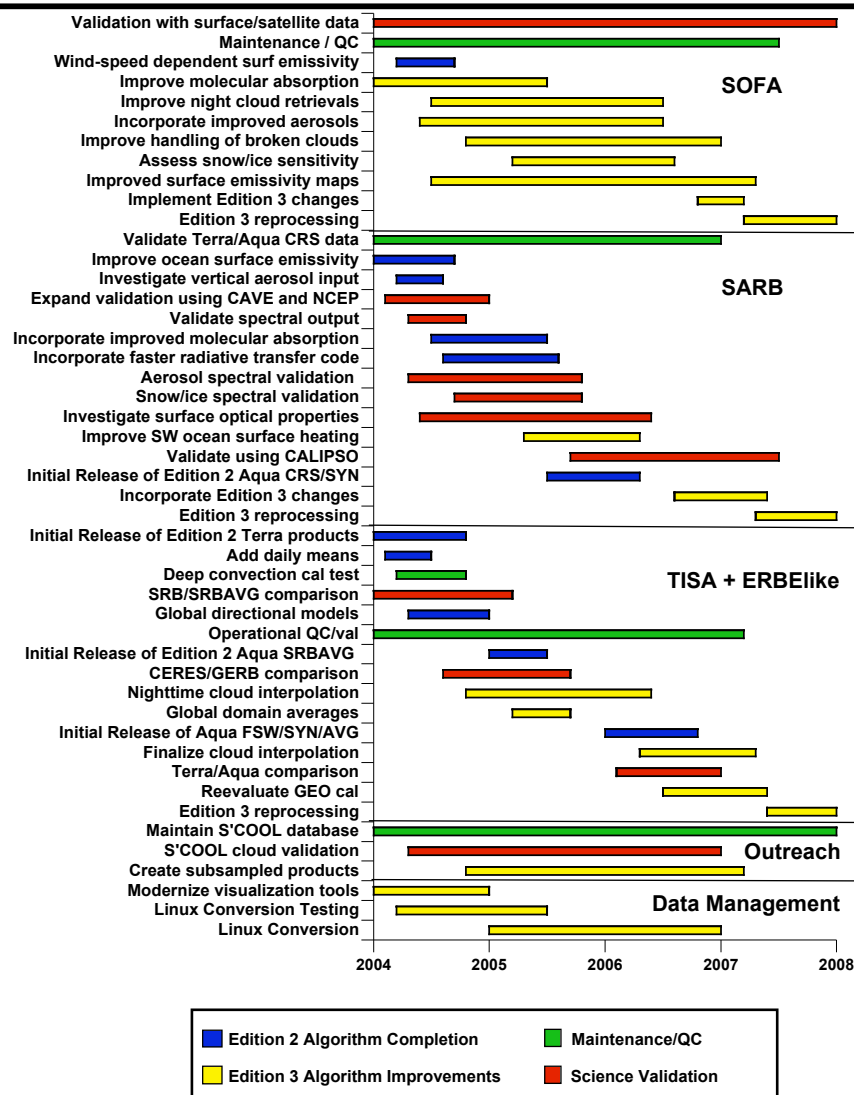
CERES Climate Data Records Project Management

Task Schedule-1



CERES Climate Data Records Project Management

Task Schedule-2



CERES SCF Characteristics

Feature	Aspect	Value
CERES Personnel Supported		80
Server Systems		12
Workstations		102
Bandwidth	Desktop	100 Mbps (80%)
	Between CERES Sites	50 Gigabit per second (ATM)
	to ASDC	1 Gigabit per second
External Access Controls	Current	Username/Password
	Sep03	VPN Authentication Service
Storage (May03)	Data (Programs, Data)	9 TB
	Disk Capacity	12 TB
	Archive Capacity	10 TB
	Backup Capacity	
Storage Projected Annual Growth Rate	Data	25%
	Disk	3 TB
	Archive	1 TB
	Backup	2 TB