

CERES Data Management Activity

Presented to CERES Science Team Meeting
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Topics To Be Covered

- DMT Overview
- Edition 2 Status Update
- Edition 3 Approach and Schedule
- NPP Update
- Optimization Efforts
- DMT/ASDC Process Improvement
- Scheduling Activities

Data Management Team Members

Instrument:

Denise Cooper
Thomas Grepiotis
Brain Magill
Richard Spivak
Mark Timcoe
Nelson Hillyer
Dianne Snyder

Production / Optimization:

Lisa Coleman
Carla Grune

ERBElike:

Dale Walikainen
Jeremy Lande

Convolution:

Walter Miller
Igor Antropov

Inversion:

Victor Sothcott

SSAI:

Lee Bodden

TISA Gridding:

Raja Raju
Ron Parrish

TISA Averaging:

Cathy Nguyen
Betty Lock

SARB:

Tom Caldwell

FM5:

Jim Closs

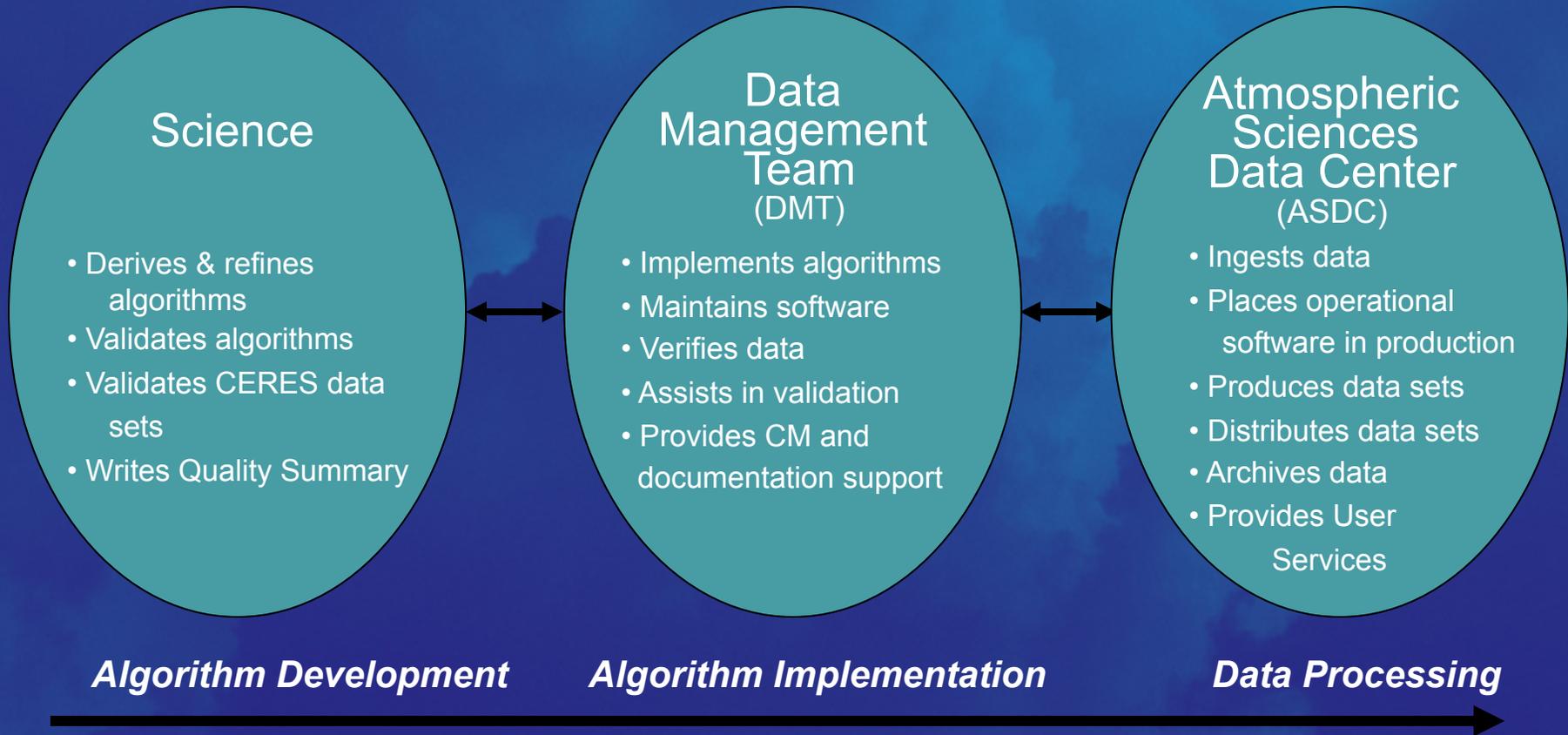
Clouds:

Sunny Sun-Mack
Ricky Brown
Yan Chen
Liz Heckert
Rita Smith

Configuration Management:

Tammy Ayers
Joanne Saunders

CERES Organization



CERES Subsystems

- CERES is made up of 7 Working Groups
 - Instrument
 - ERBElike
 - Clouds
 - Inversion or ADM
 - SOFA
 - SARB
 - TISA
- Code organized into 12 Subsystems
 - Each subsystem tied to 1 or more working groups
- Each Subsystem made up of 1 or more Product Generation Executives (PGEs)
 - Currently there are 75 active PGEs

Data from other Instruments used by CERES

- CERES Instrument/ERBElike only subsystems that can process when only CERES data available.
- CERES directly uses the following MODIS data sets:
 - MYD02SS1/MOD02SS1* (19 channel radiance subset of every other pixel every other scanline)
 - MYD03/MOD03* (geolocation)
 - MYD04_L2/MOD04_L2 (5 min 10 km aerosol swath)
 - MYD08_D3/ MOD08_D3 (daily 1 deg aerosol)
 - Critical data sets; must have matched pairs to process.
- Additionally CERES uses, Geostationary satellite data:
 - MET-5, MET-6, MET-7, MET-8, MET-9
 - GOES-8, GOES-9, GOES-10, GOES-11, GOES-12
 - GMS-5, MTSAT-1R

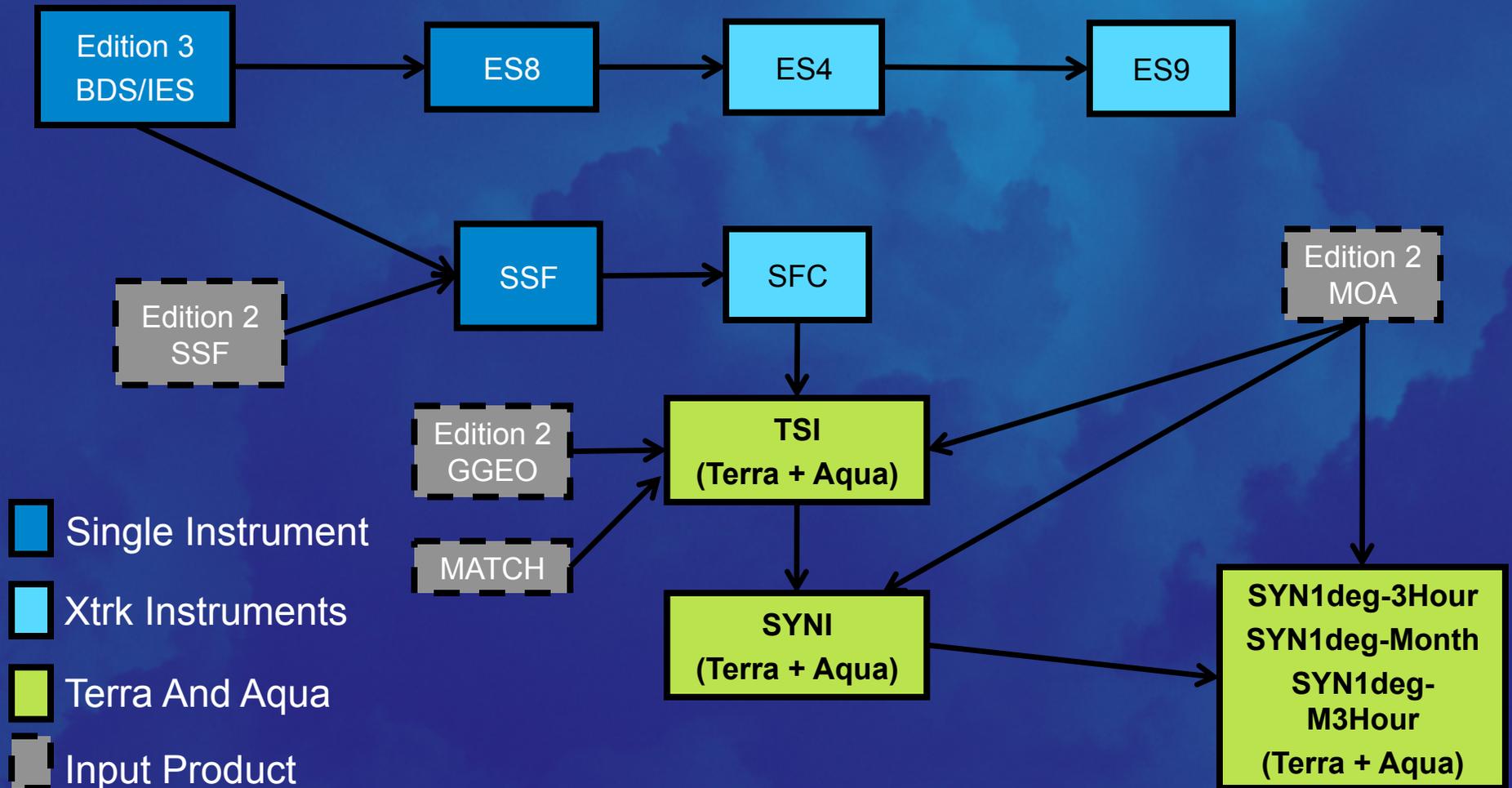
CERES Processing Software

Subsystem Number	Subsystem Name	LOC (to nearest 1K)	Publicly Available Data Products	Product Frequency	Comments
	CERESlib	133K			All Satellites
1	Instrument/Pre-Processor	4K			NPP only
1	Instrument	306K	BDS	1/day	All Satellites
2	ERBE-like/ Inversion	30K	ES-8	1/day	All Satellites
3	ERBE-like/ TSA	12K	ES-9, ES-4	1/month	All Satellites
12	MOA	15K			Run monthly
4.1 – 4.4	Clouds	359K			All Satellites
4.5 – 4.6	Inversion	227K	SSF	1/hour	All Satellites
5	SARB	164K	CRS	1/hour	All Satellites
6 & 9	TISA-Gridding	60K	FSW, SFC, ISCCP-D2like-Day/Nit	60/month, 36/month, 1/month	All Satellites
11	GGEO	172K	ISCCP-D2like-GEO	1/month	Geostationary
7.2	Synoptic SARB	47K			All Satellites
7.1 & 8 10	TISA-Averaging	249K	SYN, AVG, ZAVG SRBAVG	1/day, 1/month, 1/month 5/month	All Satellites
	TOTAL LOC	1,778K			

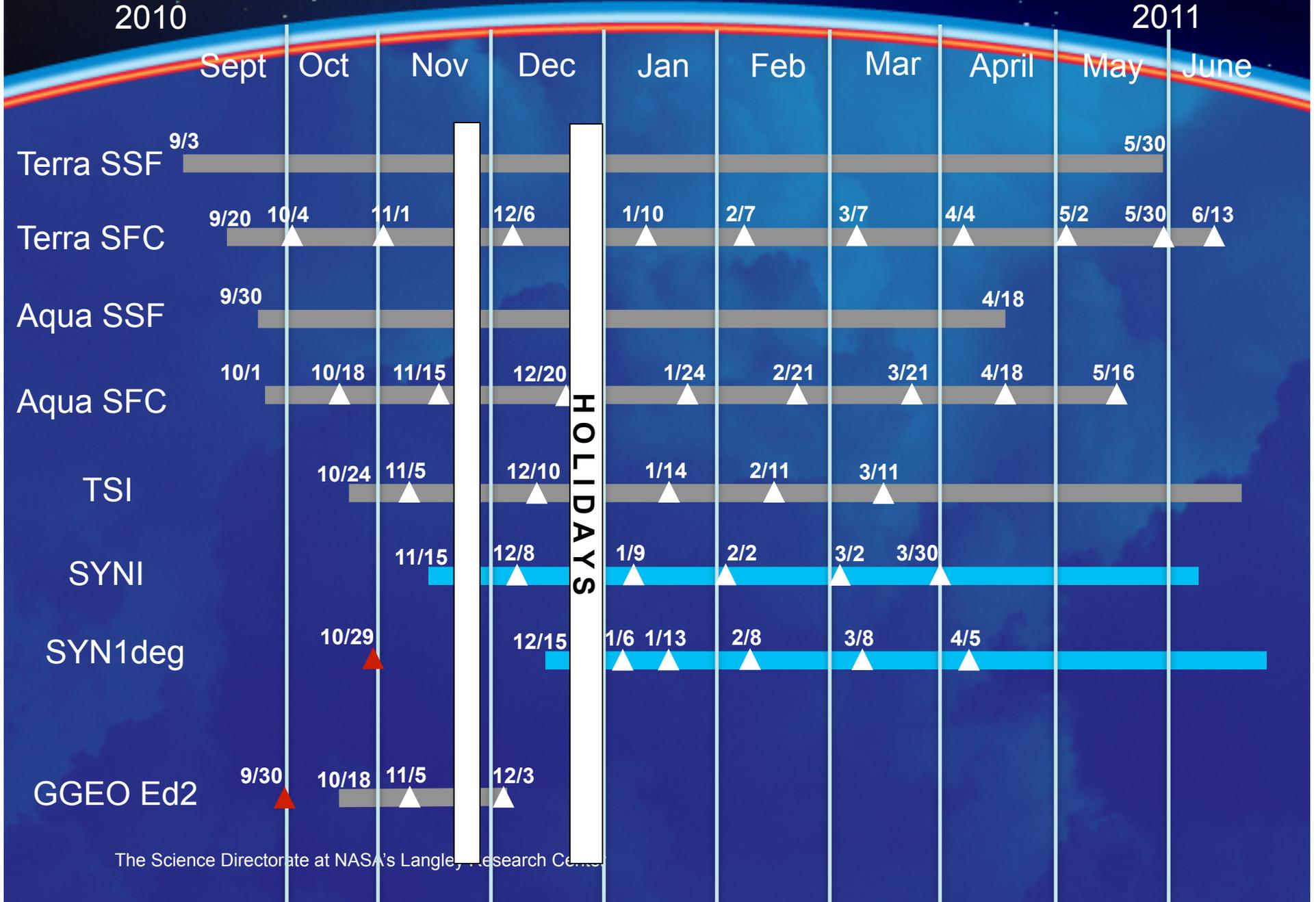
Edition 2 Data Sets

Product	Edition 2	Available through	Comments
BDS, ES8, ES9, ES4	Edition2 (Terra, Aqua)	Feb '10	Gains Delivered Through 7/1/2010
SSF	Edition2G (Terra) Edition2D (Aqua)	Feb '10 Sept '09	Aqua processing ongoing
SFC	Edition2G (Terra) Edition2D (Aqua)	Feb '10 Aug '09	
SRBAVG	Edition2D (Terra) Edition2A (Aqua)	Oct '05	Need GGEO Coefficients
CRS	Edition2G (Terra) Edition2C (Aqua)	Dec '09 Dec '07	
FSW	Edition2G (Terra) Edition2C (Aqua)	Nov '09 Dec '07	
SYN, AVG, ZAVG	Edition2C (Terra) Edition2B (Aqua)	Oct '05	Need GGEO Coefficients

Edition 3 Processing Approach



Edition 3 Production Schedule



Relevant NPP Issues

- Imager input data required for Climate Data Record (CDR) must be of climate quality and consistently calibrated over entire period.
 - In NPP era, Land PEATE provides CERES aggregated radiance and geolocation files and sub-sampled data files using CERES provided code. Land PEATE also provides AOT files that correspond to sub-sampled radiance/geolocation.
 - For Terra/Aqua, MODAPS provides radiance, geolocation, and aerosol files from a collection that begins at covers open.
- NPP CERES made use of already existing interfaces.
 - Cost savings by using existing infrastructure.
 - Land PEATE already getting VIIRS data. Agreed to also obtain CERES RDRs.
 - Network between Land PEATE and ASDC exists for Terra/Aqua.

FM5 Code Development

- Instrument only subsystem modified
 - Preprocessor will convert data to format consistent with Terra and Aqua
 - Instrument subsystem currently implemented with Ada
 - Convert Ada to C++ and deliver preprocessor for Ada as schedule risk mitigation
- Seven total code deliveries
 - Delivered 11 Ada PGEs (Risk Mitigation)
 - Delivered 5 C++ PGEs (will replace Ada)
- VIIRs subsetter updates delivered to Land PEATE and test output from Land PEATE verified

Process Optimization Effort

- Proposed in 2009 CERES Senior Review
 - Migrate off SGI to AMI (DPO)
 - Optimize CERES production software
 - Communicate Production Requests
- Production Request Database
 - Automate PRs (Currently via .pdf)
 - Run scripts can read required input
 - Online for real time review by subsystem teams

Computing Platform Migration

Warlock (SGI)	Magneto (P4)	AMI-P (P6 & x86)
<ul style="list-style-type: none">• Instrument• ERBElike• Clouds/Inversion (Ed2 Terra)	<ul style="list-style-type: none">• Clouds/Inversion Ed2 (Aqua)• Inversion Ed3• TISA Gridding Ed2 & Ed3• Inst. SARB Ed2• Synoptic SARB Ed2• TISA Averaging (Ed2)• GGEO• MOA	<ul style="list-style-type: none">• Instrument• Synoptic SARB (Ed3)• TISA Averaging (Ed3)• ISCCP-D2like

Production Request Database

- PR requests a specified range of data dates be processed for a CERES PGE in the production environment
- Provides data dates, input/output file names, configuration code, target platform, PGE, etc
- Used for operational testing and production

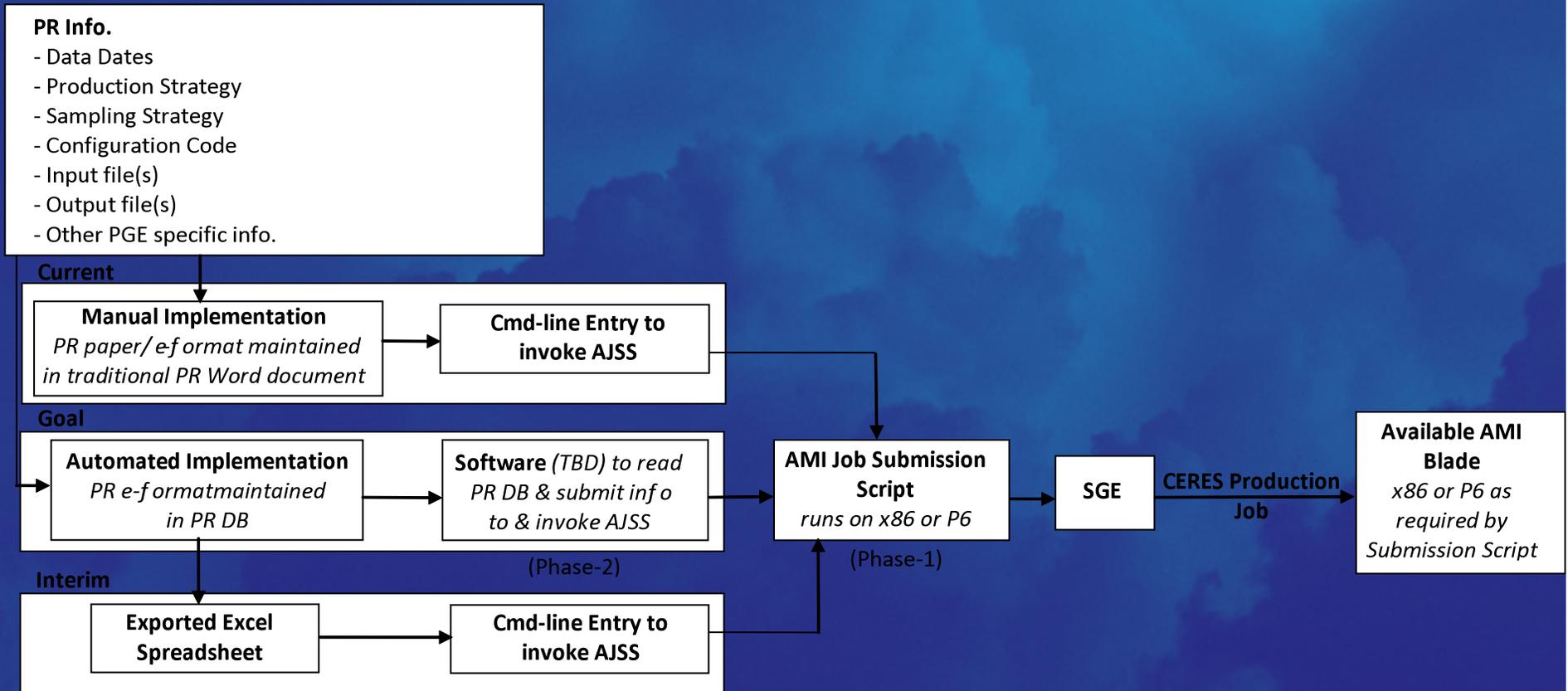
Example PR

PR Year & Item_#	PGEs	Instrument (INST)	Input Production Strategy	Output Production Strategy	Begin Datadate to process	End Datadate to process	DAAC Verification (If no CC # provided, use most recent)
<p>6/22/10 – Process Surface Albedo History maps for Edition3 Synoptic SARB Processing (SCCR 794)</p> <p>See note prior to PR 88-10 regarding the Edition3 CC number strategy</p> <p>Computing Platform: magneto P4</p> <p>Environment/runtime variables: SS5_MATCH = C4 (dates up through June 2006) SS5_MATCH = C5 (dates beginning with July 2006 and forward)</p>							
104-10	5.0P2	FM1, FM2	PS12=DAO-GEOS4 PS4_5=Edition3A	PS5=Edition3A	7/2/02	2/28/06	CC4_5=300300 CC12= 016023 = 016024 (2/04) = 016025 (4/04) = 016026 (12/04) = 017027 (1/05) = 017028 (12/05) = 018029 (2/06) CC5=300300
103-10	5.0P2	FM1	PS12= DAO-GEOS4 PS4_5=Edition3A	PS5= Edition3A	3/1/2006	6/30/2006	cc4_5=300300 cc12= 018029 cc5=300300
102-10	5.0P2	FM1	PS12=DAO-GEOS4 PS4_5=Edition3A	PS5=Edition3A	7/1/2006	12/31/2007	cc4_5=301300 cc12=018029 =018030 (2/07) cc5=301300

Production Request Database

- Production Request Database Tool (PRDBT)
 - PRs submitted, reviewed, updated and approved via web interface
 - Public view and Restricted write
 - Capability for scripting to automate production
- Preliminary design planning meeting and Requirements document
- Planned PRDBT Completion December 2010

PR Retrieval Automation On AMI



Operational Process Improvement Kaizen

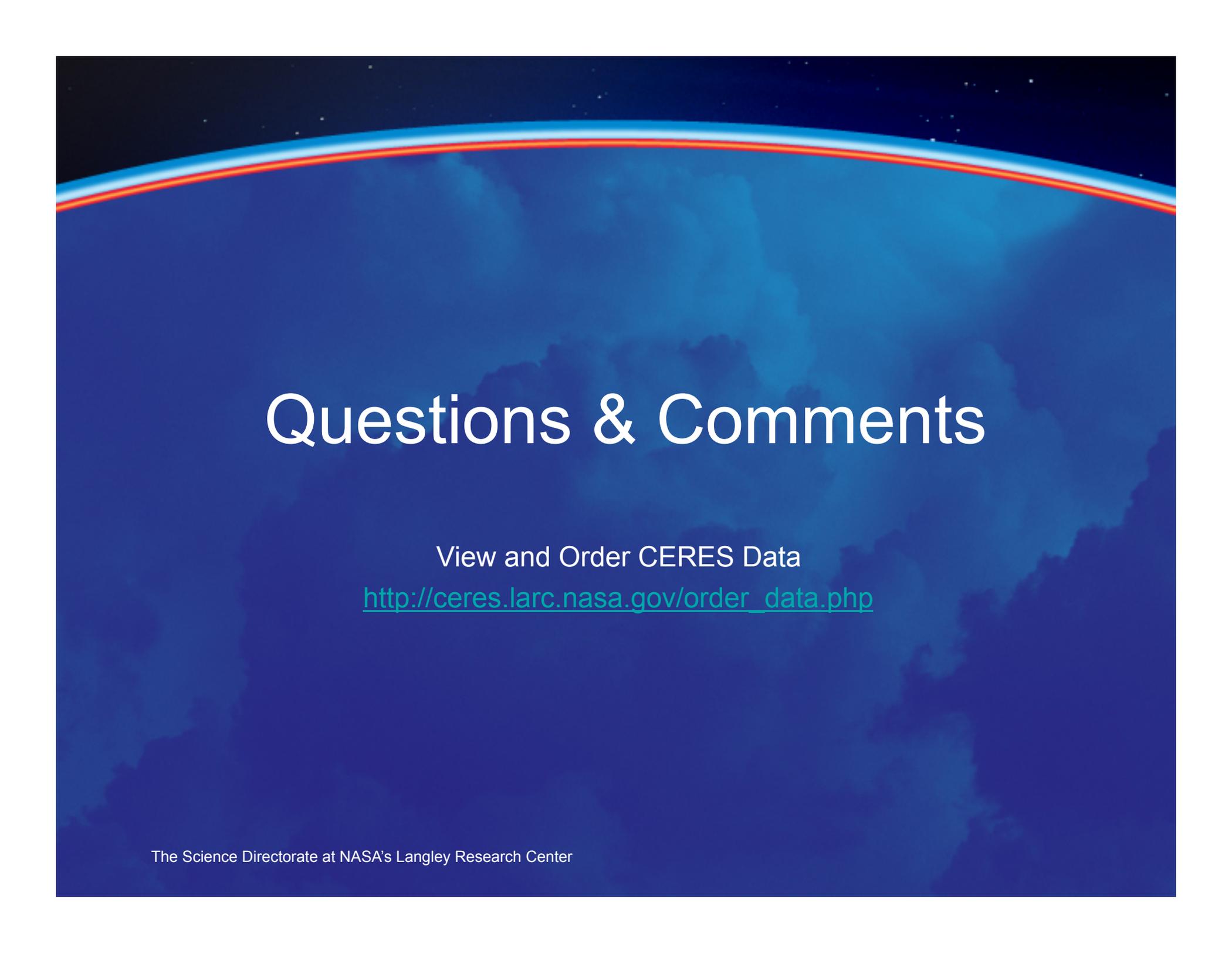
- ASDC and CERES DMT
- Current State
- Ideal State
- Future State
- First of Four

Operational Process Improvement Kaizen



Recommendations

- Need requirements freeze “handshake”
 - Minimize rework in testing and delivery
- Verification testing to DMT
 - Identify robust testing per PGE
 - Much currently done at ASDC
- Pre Production Environment (PPE) testing at ASDC
 - In Place of ValRx
 - SCCR remains open (code fixes easier)
- PR, Control Func. and Error tracking Kaizens



Questions & Comments

View and Order CERES Data

http://ceres.larc.nasa.gov/order_data.php

CERES Processing Software

April 2010

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Edition 3 Processing Approach

