

Introduction

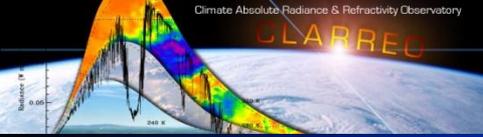
David Young – CLARREO Project Scientist

CLARREO

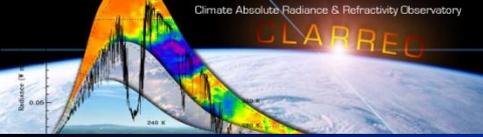


1st CLARREO SDT
Team Meeting

May 17-19, 2011
NIA, Hampton, VA

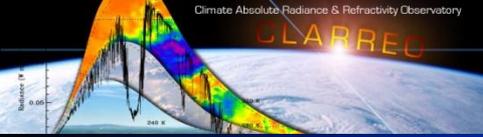


Welcome



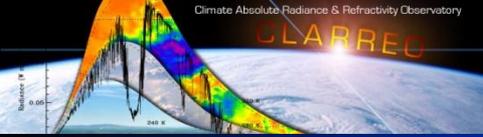
Meeting Goals

- **Introduction of Team**
 - Reach agreement on team roles and guidelines for interactions
- **Presentation of recent results and planned research**
 - Identify opportunities for future collaboration
- **Collectively develop the path forward**
 - SDT coordination
 - Identification of critical science studies
 - Strategic planning
 - Future opportunities
 - Planning for next Decadal Survey
 - Communicating CLARREO externally



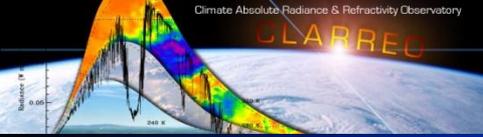
CLARREO Science Team Composition

- **Leadership Team**
 - Wielicki, Young, Mlynczak, Thome
- **Science Definition Team**
 - JPL
 - Imperial College
 - University of California – Berkeley
 - Harvard University
 - University of Michigan
 - University of Colorado / LASP
 - University of Wisconsin – Madison
 - University of Miami
 - UMBC
 - NASA GSFC
- **LaRC and GSFC Team Members**



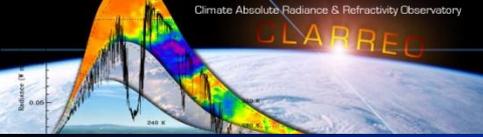
Mission Status

- **The CLARREO Project held a successful Mission Concept Review in November, 2010 and was prepared to begin Phase A**
- **The Science Definition Team was selected in January 2011**
- **In February 2010, the Administration's FY12 budget removed \$1.2B from the proposed Climate Initiative in the years FY12-15**
 - NASA was directed to not proceed to Phase A for CLARREO
 - Funding for the CLARREO mission from FY2012 through FY2016 was deleted from NASA's budget
- **The CLARREO project was directed to develop a plan for extended Pre-Phase A for FY12 – FY16**
 - This plan is described in the White Paper distributed to the team in March
 - Includes continued support for the Science Team and studies of alternative methods of achieving the CLARREO science goals
 - The plan has been briefed to NASA HQ and we are awaiting a decision on the funding level for FY12 and beyond



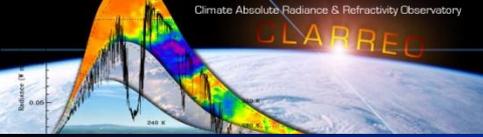
The Importance of Continuity: Why have a CLARREO SDT?

- **The current direction regarding CLARREO is clear**
- **However, CLARREO science objectives remain a high priority for Earth Science according to the NRC:**
 - Improving the accuracy of the climate observing system remains a central goal of CEOS, GCOS, GSICS
- **Preserving the SDT is crucial to maintaining readiness for future opportunities**
- **NASA Earth Science Division leadership is very supportive of the continuation of this team**
 - Mike Freilich referred to the competitive selection process as a “covenant” with the science community
 - We need to deliver on our proposed research to retain this support



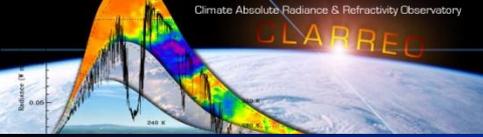
CLARREO SDT Goals

- **Continue to advance the science related to CLARREO**
- **Publication of science work to date**
- **Publication of a report for input to the next Earth Science Decadal Survey**
- **Serve as the primary link to the external community on efforts to find alternative means of achieving some portion of the CLARREO science objectives in a cost-effective manner**



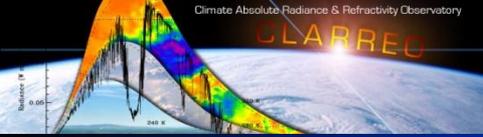
SDT Structure and Team Guidelines

- **CLARREO working group structure will be disbanded and the team will operate as a single group as it did in previous pre-phase A work**
 - There is no longer a focus on a specific mission architecture
 - There is a need for integration of CLARREO-related science studies
- **Proposed Team Guidelines**
 - Members will work collaboratively on advancing CLARREO science
 - We will continue the Pre Phase A policy of sharing all SDT-funded science results publicly
 - Members are free to pursue flights of opportunity either independently or collectively
 - We may find ways to include some of our science goals in future solicitations
 - Suggestions for other guidelines?



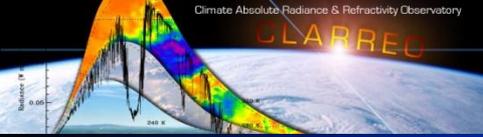
May 2011 CLARREO STM Agenda

Tuesday, May 17	
Start	Topic
8:30 AM	Introduction
10:10 AM	MCR Mission Recap
11:40 AM	<i>Lunch</i>
1:00 PM	PI Presentations
5:10 PM	<i>Adjourn</i>
6:30 PM	<i>Team Dinner at Terra Restaurant and Bar</i>
Wednesday, May 18	
Start	Topic
8:30 AM	PI Presentations (cont.)
12:00 PM	<i>Lunch</i>
1:15 PM	PI Presentations (cont.)
4:45 PM	TRUTHS and FORUM updates
5:15 PM	<i>Adjourn</i>
Thursday, May 19	
Start	Topic
8:30 AM	NIST and ESTO Presentations
10:30 AM	Path Forward
12:10 PM	<i>Adjourn</i>



Agenda (Day 1)

Tuesday, May 17				
Start	End	Duration	Topic	Speaker
			Introduction	
8:30 AM	8:40 AM	0:10	Welcome/Introduction to the NIA	Science Directorate/NIA Representative
8:40 AM	9:10 AM	0:30	Project Status, SDT Charter, Meeting Goals	D. Young
9:10 AM	9:40 AM	0:30	CLARREG White Paper	B. Wielicki
9:40 AM	10:10 AM	0:30	Break	
			MCR Mission Recap	
10:10 AM	10:30 AM	0:20	Science Overview	B. Wielicki
10:30 AM	10:50 AM	0:20	IR/GNSS RO Science & Instruments	M. Mlynczak
10:50 AM	11:10 AM	0:20	RS Science & Instruments	K. Thome
11:10 AM	11:40 AM	0:30	Mission Architecture	J. Corliss
11:40 AM	1:00 PM	1:20	Lunch	
			PI Presentations	
1:00 PM	1:30 PM	0:30	Shortwave and Pan-Spectral Observing System Simulation Experiments in Support of the CLARREG Science Definition Team	B. Collins / D. Feldman
1:30 PM	2:00 PM	0:30	Feedback Analyses using Radiative Kernels in Support of the CLARREG Science Definition Team	B. Soden
2:00 PM	2:30 PM	0:30	Using measurements of scattered spectral shortwave radiation to define requirements, and to develop methods for trend detection and attribution	P. Pilewskie
2:30 PM	3:00 PM	0:30	Break	
3:00 PM	3:30 PM	0:30	RS spectral radiative kernel and fingerprinting for CLARREG	Z. Jin
3:30 PM	4:10 PM	0:40	Uncertainty Estimates for Reference Inter-Calibration of CLARREG and Imaging Radiometers	C. Lukashin
4:10 PM	4:40 PM	0:30	Modeling polarized radiation for CLARREG inter-calibration applications	W. Sun
4:40 PM	5:10 PM	0:30	Science Definition Support for the CLARREG Reflected Solar Instrument and Measurements	J. Xiong
5:10 PM	5:10 PM	0:00	Adjourn	
6:30 PM	8:30 PM	2:00	Team Dinner at Terra Restaurant and Bar	



Logistics

- **Wireless Capabilities (NIA_Public_137)**

- Wireless internet is available via any of the NIA networks, no password needed to login

- **Lunch**

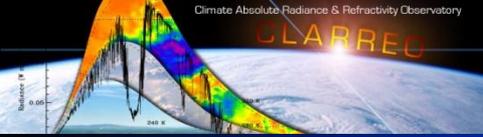
- We have approx. an hour and 15 mins. for lunch each day
- Orders have been placed through Panera for those who ordered lunch
- Cost: \$12 cash due at the start of the day

- **Breaks**

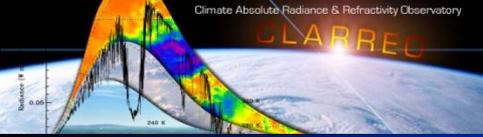
- We will have mid morning and mid afternoon breaks (30 mins. each) in addition to lunch
- Monetary donations accepted for snacks

- **Tuesday Night Team Dinner**

- Terra Restaurant and Bar in Peninsula City Center
- Printed directions and menu available on table outside main room
- ***Please sign up if you plan on attending***

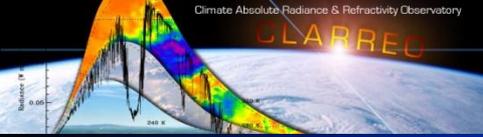


Backups



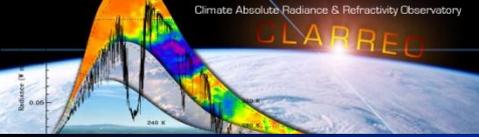
Agenda (Day 2)

Wednesday, May 18				
Start	End	Duration	Topic	Speaker
			PI Presentations (cont.)	
8:30 AM	9:00 AM	0:30	Making Sense of SI Traceability Claims	J. Dykema
9:00 AM	9:20 AM	0:20	CLARREO Science Definition Team Memberships	H. Revercomb /D. Tobin/B. Smith/R. Knuteson
9:20 AM	9:40 AM	0:20		
9:40 AM	10:00 AM	0:20		
10:00 AM	10:30 AM	0:30	Break	
10:30 AM	11:00 AM	0:30	CLARREO: Development Guided by Existing Hyperspectral Satellite Knowledge Base	L. Strow
11:00 AM	11:30 AM	0:30	Potential of CLARREO measurements for improving model ensemble based multi-decadal climate prediction: a statistical perspective	Y. Huang
11:30 AM	12:00 PM	0:30	Some thoughts on the linearity of spectral radiances averaged over large spatial domain and long timescale	X. Huang
12:00 PM	1:15 PM	1:15	Lunch	
1:15 PM	1:45 PM	0:30	Assessing the Effects of Uncertainty in the IR Measurements on Derivation of Spectral Fingerprints Temperatures	Nipa P.
1:45 PM	2:15 PM	0:30	Toward detection of atmospheric changes in spatially and temporally averaged infrared spectra observed by CLARREO	S. Kato
2:15 PM	2:45 PM	0:30	Explore information content from CLARREO hyperspectral data	X. Liu
2:45 PM	3:15 PM	0:30	Feasibility and Sensitivity Studies for CLARREO	H. Brindley
3:15 PM	3:45 PM	0:30	Break	
3:45 PM	4:15 PM	0:30	Sampling and Analysis for GNSS Radio Occultation	S. Leroy
4:15 PM	4:45 PM	0:30	GNSS RO Analysis for CLARREO	C. Ao
4:45 PM	5:15 PM	0:30	TRUTHS and FORUM updates	K. Thome/ H. Brindley
5:15 PM	5:15 PM	0:00	Adjourn	



Agenda (Day 3)

Thursday, May 19					
Start	End	Duration	Topic	Speaker	
Special Topics					
8:30 AM	9:00 AM	0:30	Sampling Studies	D. Doelling	
9:00 AM	9:30 AM	0:30	NIST capabilities related to CLARREO	E. Shirley	
9:30 AM	10:00 AM	0:30	ESTO investment in CLARREO	K. Murray	
10:00 AM	10:30 AM	0:30	Break		
Path Forward					
10:30 AM	12:00 PM	1:30	General Discussion of Strategy - SDT coordination - Mission opportunities - ROSES opportunities - Partnering opportunities - Planning for next Decadal Survey - Communicating CLARREO externally	All	
12:00 PM	12:10 PM	0:10	Wrap Up	Young	
12:10 PM	12:10 PM	0:00	Adjourn		



Science Definition Team

PI Last Name	PI First Name	Title	Company
Ao	Chi	GNSS RO Analyses for CLARREO	Jet Propulsion Laboratory
Brindley	Helen	Feasibility and Sensitivity Studies for CLARREO: A new opportunity for climate monitoring from space	Imperial College London
Collins	William	Shortwave and Pan-Spectral Observing System Simulation Experiments in Support of the CLARREO Science Definition Team	UC Berkeley
Dykema	John	Providing Advice on Issues of Infrared SI Traceability to the Science Definition Team for the CLARREO Mission	Harvard University
Huang	Xianglei	Proposal for participation in the science definition team for the CLARREO mission	University of Michigan
Leroy	Stephen	Advising GNSS Radio Occultation and Climate Modeling Studies for the CLARREO Science Definition Team	Harvard University
Pilewskie	Peter	LASP CLARREO Science Definition Team Studies: Using measurements of scattered spectral shortwave radiation to define requirements, and to develop methods for trend detection and attribution	University of Colorado
Revercomb	Henry	CLARREO Science Definition Team Memberships	University of Wisconsin-Madison
Soden	Brian	Feedback Analyses using Radiative Kernels in Support of the CLARREO Science Definition Team	Univ. of Miami
Strow	Lawrence	CLARREO: Development Guided by Existing Hyperspectral Satellite Knowledge Base	University of Maryland Baltimore County
Xiong	Xiaoxiong	Science Definition Support for the CLARREO Reflected Solar Instrument and Measurements	NASA GSFC