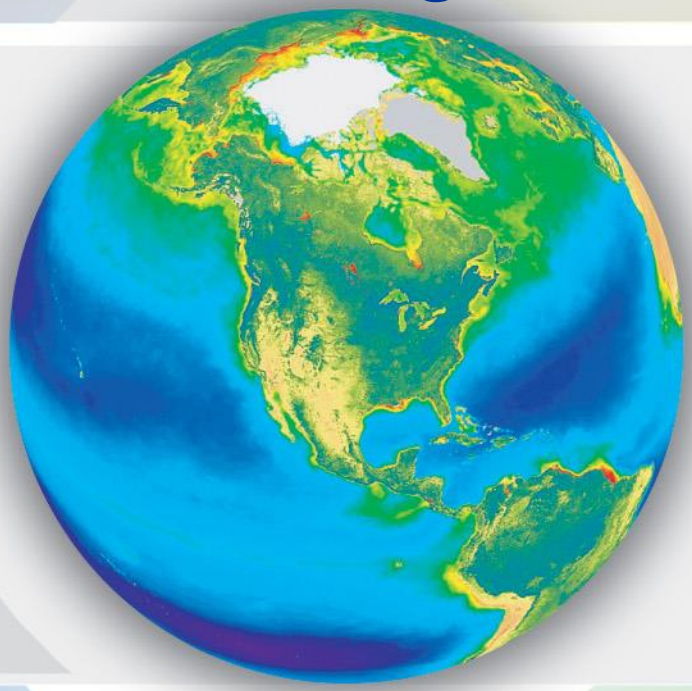
Wrap Up of 2014 NASA Ocean Color Research Team Meeting



Paula Bontempi and Kathy Tedesco
NASA Headquarters
NASA Ocean Color Research Team Meeting
5-7 May 2014
Washington, DC

Announcements

- **Speakers –** talks will be posted on the ocean color website, so please submit a copy in the folder on the Desktop (NASA OCRT 2014). Please remember to remove any material you do not want posted.

- HICO Science Team Meeting 7-8 May – Cedar Room beginning at 1300 today

- Biodiversity and Ecological Forecasting Team Meeting 7-9 May – beginning at 1330 today in Cypress Ballroom (here)

- Thank you to all speakers, poster presenters, and attendees

PACE Mission – ESD Path Forward

- Federal budget guidance urged NASA to work to a launch date as early as 2018
- NASA will complete and announce the agency implementation plan for PACE
  - Will include the approach for the mission, the instruments, the mission science, the calibration and validation elements
  - As a general rule within the SMD competition is preferred

- In FY2014 NASA will accomplish the following:
  - Risk reduction and formulation studies to support the **earliest possible launch date**
  - Release of an ocean color vicarious calibration approach and instrumentation competition through ROSES
  - Complete the PACE mission Science Team (ST) selection
  - Finalize the mission acquisition approach, including defining the baseline mission science objectives
  - Initiate the PACE project line, including release of all necessary solicitations – Target date for a PACE AO in Q2 FY2015 (Jan – Mar 2015) on the SMD solicitation calendar that appears on the NASA website

Field Campaign Planning – How to Participate

- Impacts of Climate on the Eco-Systems and Chemistry of the Arctic Pacific Environment (ICESCAPE) Synthesis – in synthesis phase, one special issue of DSR in press, another planned for this year

- EXport Processes in the Ocean from Remote Sensing (EXPORTS) - Introducing a Science Plan for a NASA Field Campaign on the Ocean's Biological Pump – D. Siegel/ Univ. of California – Santa Barbara– delivery of Strategic Plan in June, to be posted on the CC&E web site and open for public comments for 60d
  - Peer review panel, competed SDT for an Implementation Plan (TBD)

- Two field campaign scoping proposals selected in ROSES 2013 A.3 OBB:
  - Scoping for Interdisciplinary Coordinated Experiment of the Southern Ocean Carbon Cycle (ICESOCC) – G. Mitchell/University of California – San Diego – SIO
  - Arctic COastal Land Ocean InteRactions Scoping Study (Arctic-COLORS) – A. Mannino, NASA GSFC

  - Both of these will be 18-months to delivery of a draft Strategic Plan

Ocean Biology and Biogeochemistry Science and Mission Advanced Planning

- **Beyond PACE: Advanced Planning for Ocean Biology and Biogeochemistry (led by Carlos DelCastillo)**
  - **Evolution of the Science in the 2007 NASA OBB Advance Plan**
  - **Preparation for the next NRC Decadal Survey (to be delivered in 2017)**

- **http://oceancolor.gsfc.nasa.gov/DOCS/OBB_Report_5.12.2008.pdf**

Emerging Science Questions (2007):

- **How are ocean ecosystems and the biodiversity they support influenced by climate and environmental variability and change, and how will these changes occur over time?**

- **How do carbon and other elements transition between ocean pools and pass through the Earth System, and how do biogeochemical fluxes impact the ocean and Earth's climate over time?**

- **How (and why) is the diversity and geographical distribution of coastal marine habitats changing, and what are the implications for the well-being of human society?**

- **How do hazards and pollutants impact the hydrography and biology of the coastal zone? How do they affect us, and can we mitigate their effects?**

Timeline / Mission Themes	Immediate (1 – 5 Years)	Near-Term (5 - 10 Years)	Long-Term (10 - 25 Years)	Ecosystems	Biogeochemistry	Habitats	Hazards
Global Separation of In-water Constituents & Advanced Atmospheric correction	**Advanced radiometer & scattering lidar** • 5nm resolution from UV through visible • Ozone & extended NIR atmosphere bands • Atmosphere & subsurface particle scattering profiles	**Ocean radiance and atmosphere aerosols** • Advanced radiometer • Scattering lidar for aerosol speciation • Polarimeter for global aerosol coverage •500 m passive resolution	**Radiometry, aerosols, and physiology lidar** • Global radiometry system • Aerosol height & species • Midnight/noon obs of variable stimulated fluorescence				
High Spatial & Temporal Resolution Coastal	**GEO partnership** **Support analysis of current satellite data** **Landsat DCM partnership** **Development of suborbital sensor systems**	**High-res coastal imager** • 20 bands from UV - NIR • 10 m res – 100 km swath **GEO carbon mission** **Deployment of suborbital systems**	**Constellation of imaging spectrometers** • High temporal res • LEO, MEO or GEO • Include SAR **Continued deployment of suborbital systems**				
Plant Physiology & Functional Composition	**Support analysis of global passive data** • Assess functional groups using hyperspectral data • Estimate algal carbon & chlorophyll to characterize physiology	**Support analysis of global & GEO data**	**Variable fluorescence lidar constellation** •Map physiological provinces at different times of day • Dawn/dusk variable fluorescence lidar • Noon/midnight lidar				
Mixed Layer Depth	**Synthesis/analysis of observational forecast fields & on orbit remote sensing** **Mixed layer model development**	**Prototype mixed layer sensor development** • field testing of novel approaches for remote detection of mixed layer depth & light availability	**Mixed layer depth mission** •Space-borne proof-of-concept mission for global mixed layer depth mapping				

Bold Green Text Represents Satellite Missions
Bold Blue Text Represents Development Activities leading to Missions
Cross-hatch indicates secondary contribution to Mission Theme

Mission Themes/Science Requirements

- Global separation of in-water constituents and advanced atmospheric corrections
- High temporal and spatial resolution coastal measurements
- Active assessments of plant physiology and functional composition
- Mixed layer depth

Science Requirements Lead to Observational Strategies

- Global Hyperspectral Imaging Radiometer
- Geostationary Hyperspectral Imaging Radiometer(s)
- Multi-Spectral High Spatial Resolution Imager
- Portable Sensors from Suborbital Platforms
- Variable Fluorescence Lidar
- Mixed Layer Depth and Illumination Sensor
- Ocean Particle Profiler and Aerosol Column Distributions

Science Requirements Lead to Observational Strategies

- Global Hyperspectral Imaging Radiometer
  - Aerosol-Ocean-Cloud (polarimeter, lidar, ocean radiometer, radar)
- Geostationary Hyperspectral Imaging Radiometer(s)
- Multi-Spectral High Spatial Resolution Imager
  - Plant Physiology and Functional Types
- Portable Sensors from Suborbital Platforms
- Variable Fluorescence Lidar
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- **Evolution of IMBER and Planning for FutureEarth (E. Hofmann)**

- **A Planning Workshop for an International Research Program on the Coupled North Atlantic-Arctic System (E. Hofmann)**

- **Surface Ocean Lower Atmosphere Study (SOLAS) Update – B. Miller**

- **Arctic Productivity Round Robin – P. Matrai /Bigelow Laboratory for Ocean Sciences**

- **North American Carbon Program Coastal CARbon Synthesis (CCARS) Community Workshop – M. Friedrichs/VIMS (via US-OCB web site)**

NASA OB&B Research – Research Opportunities in Space and Earth Sciences

- **ROSES 2013 - http://nspires.nasaprs.com/ - Released 14 February 2013**
  - **NASA Data for Operation and Assessment – Competed every two years, is there a need for the ecological forecasting portion?**
  - **The Science of Terra and Aqua & Terra and Aqua – Algorithms – Existing Data Products – front-loaded selection**
  - **Carbon Cycle Science – expect new awards on Terra and Aqua and Carbon Cycle to begin negotiations this month**
  - **Suomi National Polar-orbiting Partnership (NPP) Science Team and Science Investigator-led Processing Systems for Earth System Data Records From Suomi NPP Products ~ Science Team; SIPS – 119 proposals – review underway (July/Aug decisions)**
  - **Pre-Aerosol, Cloud, ocean Ecosystem Science Team - 49 proposals – review underway (target June/July decisions) – likely to start w/FY15 funds**

NASA OB&B Research – Research Opportunities in Space and Earth Sciences

- ROSES 2014 - http://nspires.nasaprs.com/ - Released 19 February 2014
  - A.3 Ocean Biology and Biogeochemistry Ocean Color Remote Sensing Vicarious (*In Situ*) Calibration Instruments - $5.0M/yr for YR1, $5M/Yrs 2+3 combined
    - NOIs STRONGLY ENCOURAGED – due 5.16.2014, [19 June 2014] (target August decisions) – FY14 funds to start – front-loaded selection
  - New (Early Career) Investigator Program In Earth Science (NIP) [every 1-2 yrs, not in ROSES 2014]
    - Outstanding scientific research and career development of scientists and engineers at the early stage of their professional careers
  - NASA EARTH AND SPACE SCIENCE FELLOWSHIP (NESSF) PROGRAM 2014/2015 ACADEMIC YEAR – each fellowship ~$30K/yr [try to do annually]
    - Currently under review
  - Topical Workshops, Symposia, Conferences – E.2 – (Max Bernstein, POC) – [rolling deadline]
    - Proposals for topical workshops, symposia, conferences, other scientific/technical meetings that advance the goals and objectives of Earth Science
  - Remote Sensing Theory for Earth Science – A.30 – ~$2.0M/yr– [3 November 2014]
    - Theoretical algorithm advances
    - Data Fusion
    - Advanced Corrections
  - USPI

NASA OB&B Research – Research Opportunities in Space and Earth Sciences

- ROSES 2014 - http://nspires.nasaprs.com/ - Released 19 February 2014
  - Rapid Response and Novel Research in Earth Science – A.26 – (Diane Wickland, POC 2013, Tom Wagner POC 2014) [rolling deadline] - ROSES 2013, 17 proposals received, 4 selected; ROSES 2014 - 5 received, 1 selected - No budget for this –funded out of Core
    - immediate research activity to take advantage of a target of opportunity due to an unforeseen event in the Earth system, and
    - exceptionally novel and innovative ideas to advance Earth remote sensing that do not fit within ESD's current slate of solicitations and or programs.
    - 2.1 Targets of Opportunity: Rapid Response to Earth System Events and Opportunities to Collaborate (Rapid Response) - Research proposals having great urgency for action 1) involving quick-response research on natural or anthropogenic extreme events, disasters, and/or similar unanticipated or unpredictable events, and 2) requiring a quick funding decision to take advantage of an opportunity for research collaboration that is only available for a short time.
    - 2.2 First-Time Development of Innovative, Novel Ideas in Earth Remote Sensing (Novel Earth Science) - proposals to conduct highly novel scientific research that cannot be considered as relevant under any other NASA solicitations. Research that is new and different: initial exploration of a novel idea or a first demonstration of new scientific use of remote sensing data or technology
    - If there was an opportunity in the last three years that your work could have fit, do not bother submitting
    - MUST talk with RRNES POC and program officer ahead of submission

International Ocean Color Science Team Meeting 2015

- Lessons learned from IOCST 2013 - http://iocs.ioccg.org/
  - Format?
  - Topics?
  - Splinter Sessions:
    - NASA Ocean Colour Research Team (OCRT) Meeting
    - Advances in Atmospheric Correction of Satellite Ocean-Color Imagery
    - Geostationary Ocean Colour Radiometry
    - Multi-Agency Data Sharing (Satellite and In Situ Data)
    - Operational Ocean Colour Data in Support of Research, Applications and Services
    - *In situ* Measurement Protocol Revision for Cal/Val
    - International Training and Outreach
    - System Vicarious Calibration
    - Climate Variables and Long Term Trends
    - Phytoplankton Community Structure from Ocean Colour
    - Satellite Data File Formats and Tools for Easy Science Exploitation
    - Satellite Instrument Pre-and Post-Launch Calibration
  - Reports and recommendations useful?
  - Workshops to come out of the splinter session reports?
  - CC&E Focus Area Meeting 20-24 April – DC area, venue search underway

Programmatic Last Thoughts

- Costing and Obligation – timely obligation and costing of funded projects (we lose funds due to uncosted carryover!)
- Reporting our accomplishments both within and outside the agency.
  - Copies of publications, ideally with an accompanying ppt slide(s) and narrative explaining the result(s) and scientific/societal significance
- Thank you to all who participate in science requirement development on missions (Decadal Survey and Climate Initiative)
  - ACE - SWG workshop 9-11 June in Washington, DC
  - HyspIRI-ASG Forum/Telecon planned for 6 June at GSFC HyspIRI Symposium to participate please contact kevin.r.turpie@nasa.gov

- Next OCRT Meeting is likely to be with CC&E Focus Area Meeting in week of 20 April 2014, but there will be an update at IOCST – 2015 in US
- Feedback on IOCST is needed and welcome
- PACE AO
- Future field campaigns and solicitations – look for posting of EXPORTS plan on CC&E web site, open public comment period