

**NASA CMS 2014 Science Team Meeting**  
**November 12-14, 2014**  
**Bethesda, MD**

**GOALS:**

1. Update on NASA perspective and goals
2. Presentation and assessment of CMS (2012 and 2013 projects) Science Team Results
3. Introduction of new CMS (2014 projects) team members and projects
4. Advance and share working group progress
5. Development and prioritization of science team goals and action items for 2014-2015

**AGENDA:**

**Wednesday November 12**

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Applications Workshop (see separate agenda document) – *Grand Ballroom C/D*

**Thursday November 13**

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*Plenary – Grand Ballroom C/D*

**8:30** Welcome – *Peter Griffith*

**8:35** HQ Perspective – *Diane Wickland, Ken Jucks*

**8:45** CMS Science Team – *George Hurtt*

**9:00** 2012 Project Reports (15 min each in 3 parallel sessions)  
*\*Projects in presentation order attached*

**10:30** Break

**10:45** Working Groups Progress Reports (10 min each)

Biomass-Flux – *Jim Collatz*

Algorithm Assessment/Inter-comparisons – *Cristina Milesi*

Uncertainties – *Robert Kennedy*

Atmospheric Validation – *Heather Graven*

MRV – *Richard Birdsey*

System Framework – *Kevin Bowman*

External Communications – *Molly Brown*

Data Management – *Kathy Hibbard*

**12:30** Lunch and Poster Session on 2012 Projects  
*Harmony Room*

**2:00** Working Group Breakout Session 1

Grand Ballroom C/D – Atmospheric Validation  
 Lavender Room – Uncertainties  
 Juniper Room – Biomass-Flux  
 Jasmine Room – Data Management

**3:30** Break**4:00** Working Group Breakout Session 2

Grand Ballroom C/D – System Framework  
 Lavender Room – External Communications  
 Juniper Room – MRV  
 Jasmine Room – Algorithm Assessment/Inter-comparisons

**5:30** Summary Discussion**6:00** Adjourn**Friday November 14**

*Plenary – Grand Ballroom C/D*

**8:30** Project Support – *Peter Griffith*

**9:00** 2013 Project Reports (15 min each in 3 parallel sessions)  
*\*Projects in presentation order attached*

**10:45** Break

**11:00** 2014 Project Reports (5 min each) – *Plenary*  
*\*Projects in presentation order attached*

**12:30** Lunch and Poster Session on 2013 and 2014 Projects  
*Harmony Room*

**2:00** Working Groups Plenary Report Back /Future Plans (10 min each)

Biomass-Flux – *Jim Collatz*  
 Algorithm Assessment/Inter-comparisons – *Cristina Milesi*  
 Uncertainties – *Robert Kennedy*  
 Atmospheric Validation – *Heather Graven*  
 MRV – *Richard Birdsey*  
 System Framework – *Kevin Bowman*  
 External Communications – *Molly Brown*  
 Data Management – *Kathy Hibbard*

**3:30** Break

**4:00** Summary Discussion

**5:30** Science Team Leader and HQ Reflection

**6:00** Adjourn

### **Guide to Presenters**

#### CMS-2012 and CMS-2013 Project Oral Presentations

CMS-2012 and CMS-2013 presentations will be each given in oral format. Each presentation will have a 15 min limit. Presentations must be submitted in PowerPoint or PDF format and loaded onto the CMS File share page by 9:00 PM Wednesday. Filename should be composed of presenter's last name and project award year (for example SMITH-2012.pdf). Sign in to your CMS website account to find the link to the file sharing page.

#### CMS-2014 Project Oral Presentations

CMS-2014 project presentations will be in speed-talk format. Each presentation will have a 5 minute, 3 chart limit. Presentations must be submitted in PowerPoint or PDF format and loaded onto the CMS File share page by 9:00 PM Thursday. Filename should be composed of presenter's last name and project award year (for example SMITH-2014.pdf). Sign in to your CMS website account to find the link to the file sharing page.

#### Working Group Progress Reports

Working group progress reports will each be given in oral format. Each presentation will have a 10 min. limit. Presentations must be submitted in PowerPoint or PDF format and loaded onto the CMS File share page by 9:00 PM Wednesday. Filename should be composed of presenter's last name and working group id (for example SMITH-GROUPNAME.pdf).

#### Poster Presentations

Each project is encouraged to prepare and present one project poster. Posters should be printed and formatted 48" x 48". Posters should be hung any time on Wednesday morning in the Harmony Room on the second level.

## **2012 Project Reports**

### ***Session 1 – Grand Ballroom C/D***

**9:00** North American Regional-Scale Flux Estimation and Observing System Design for the NASA Carbon Monitoring System – *Arlyn Andrews*

**9:15** High Resolution Carbon Monitoring and Modeling: A CMS Phase 2 Study  
– *Ralph Dubayah*

**9:30** Use of GOSAT, TES, and Suborbital Observations to Constrain North American Methane Emissions in the Carbon Monitoring System – *Daniel Jacob*

**9:45** Development of Observational Products and Coupled Models of Land-Ocean-Atmospheric Fluxes in the Mississippi River Watershed and Gulf of Mexico in Support of Carbon Monitoring – *Steve Lohrenz*

**10:00** Estimating Global Inventory-Based Net Carbon Exchange from Agricultural Lands for Use in the NASA Flux Pilot Study – *Julie Wolf*

**10:15** In Situ CO<sub>2</sub>-Based Evaluation of the Carbon Monitoring System Flux Product  
– *John Miller*

### ***Session 2 – Lavender Room***

**9:00** Continuation of the Carbon Monitoring System Flux Pilot Project – *Kevin Bowman*

**9:15** Integrating and Expanding a Regional Carbon Monitoring System into the NASA CMS –  
*Robert Kennedy*

**9:30** GEOS-CARB: A Framework for Monitoring Carbon Concentrations and Fluxes – *Lesley Ott*

**9:45** Towards a 4Dp Var Approach for Estimation of Airp Sea Carbon Dioxide Fluxes –  
*Dimitris Menemenlis*

**10:00** Reduction in Bottom-Up Land Surface CO<sub>2</sub> Flux Uncertainty in NASA's Carbon Monitoring System Flux Project through Systematic Multi-Model Evaluation and Infrastructure Development – *Kevin Bowman*

### ***Session 3 – Jasmine Room***

**9:00** Development of Regional Fire Emissions Products for NASA's Carbon Monitoring System using the Wildland Fire Emissions Information System – *Michael Billmire*

**9:15** Spatially Explicit Sources and Sinks of Carbon from Deforestation, Reforestation, Growth and Degradation in the Tropics: Development of a Method and a 10 Year Data Set 2000-2010 – *Alessandro Baccini*

**9:30** Prototyping MRV Systems Based on Systematic and Spatial Estimates of Carbon Stock and Stock Changes of Forestlands – *Steve Hagen*

**9:45** A Global Forest Biomass Inventory Based upon GLAS Lidar Data – *Chris Woodall*

**10:00** The Forest Disturbance Carbon Tracking System -- A CMS Pilot Project – *Tatiana Loboda*

### **2013 Project Reports**

#### ***Session 1 – Grand Ballroom C/D***

**9:00** Applications of the NASA Carbon Monitoring System: Engagement, Use, and Evaluation – *Molly Brown*

**9:15** Improving and extending CMS land surface carbon flux products including estimates of uncertainties in fluxes and biomass – *Jim Collatz*

**9:30** Understanding user needs for carbon monitoring information – *Riley Duren*

**9:45** Carbon Monitoring of Agricultural Lands: Developing a Globally Consistent Estimate of Carbon Stocks and Fluxes – *Julie Wolf*

**10:00** Quantification of the sensitivity of NASA CMS Flux inversions to uncertainty in atmospheric transport – *Thomas Lauvaux*

### ***Session 2 – Lavender Room***

**9:00** Filling a Critical Gap in Indonesia's National Carbon Monitoring, Reporting, and Verification Capabilities for Supporting REDD+ Activities: Incorporating, Quantifying and Locating Fire Emissions from Within Tropical Peat-swamp Forests – *Mark Cochrane*

**9:15** Development of a Prototype MRV System to Support Carbon Ecomarket Infrastructure in Sonoma County – *Ralph Dubayah*

**9:30** Quantifying fossil and biospheric CO<sub>2</sub> fluxes in California using ground-based and satellite observations – *Heather Graven*

**9:45** A data assimilation approach to quantify uncertainty for estimates of biomass stocks and changes in Amazon forests – *Michael Keller*

**10:00** A Joint USFS-NASA Pilot Project to Estimate Forest Carbon Stocks in Interior Alaska by Integrating Field, Airborne and Satellite Data – *Doug Morton*

**10:15** A framework for carbon monitoring and upscaling in forests across Mexico to support implementation of REDD+ – *Richard Birdsey*

### ***Session 3 – Jasmine Room***

**9:00** An Historically Consistent and Broadly Applicable MRV System Based on Lidar Sampling and Landsat Time-series (Tested in the US, and applied to the US NGHGI reporting system) – *Warren Cohen*

**9:15** Off-the-shelf Commercial Compact Solar FTS for CO<sub>2</sub> and CH<sub>4</sub> Observations for MRV – *Manvendra Dubey*

**9:30** Operational multi-sensor design for national scale forest carbon monitoring to support REDD+ MRV systems – *Steve Hagen*

**9:45** Time Series Fusion of Optical and Radar Imagery for Improved Monitoring of Activity Data, and Uncertainty Analysis of Emission Factors for Estimation of Forest Carbon Flux – *Josef Kellndorfer*

**10:00** Prototype Monitoring, Reporting and Verification System for the Regional Scale: The Boston-DC Corridor – *Thomas Nehr Korn*

**10:15** Developing Statistically Rigorous Sampling Design and Analysis Methods to Reduce and Quantify Uncertainties Associated with Carbon Monitoring Systems – *Steve Stehman*

**2014 Project Reports**  
***Grand Ballroom C/D***

- 11:00** Regional Inverse Modeling in North and South America for the NASA Carbon Monitoring System – *Arlyn Andrews*
- 11:05** A Global High-Resolution Atmospheric Data Assimilation System for Carbon Flux Monitoring and Verification – *David Baker*
- 11:10** Continuation of the CMS-Flux Pilot Project – *Kevin Bowman*
- 11:15** Total Carbon Estimation in African Mangroves and Coastal Wetlands in Preparation for REDD and Blue Carbon Credits – *Lola Fatoyinbo*
- 11:20** Reducing Uncertainties in Satellite-Derived Forest Aboveground Biomass Estimates Using a High Resolution Forest Cover Map – *Cristina Milesi*
- 11:25** Reducing Uncertainties in Estimating California's Forest Carbon Stocks – *Jonathan Greenberg*
- 11:30** Prototyping A Methodology To Develop Regional-Scale Forest Aboveground Biomass Carbon Maps Predicted From Landsat Time Series, Trained From Field and Lidar Data Collections, And Independently Validated With FIA Data – *Robert Kennedy*
- 11:35** High-Resolution Carbon Monitoring and Modeling: Continuing Prototype Development and Deployment – *George Hurtt*
- 11:40** High-Resolution Constraints on North American and Global Methane Sources Using Satellites – *Daniel Jacob*
- 11:45** An Integrated Terrestrial-Coastal Ocean Observation and Modeling Framework for Carbon Management Decision Support – *Steve Lohrenz*
- 11:50** Long-Term Carbon Consequences of Amazon Forest Degradation – *Doug Morton*
- 11:55** GEOS-Carb II: Delivering Carbon Flux and Concentration Products Based on the GEOS Modeling System – *Lesley Ott*
- 12:00** Direct Measurement of Aboveground Carbon Dynamics in Support of Large-Area CMS Development – *Wayne Walker*
- 12:05** Translating Forest Change to Carbon Emissions/Removals Linking Disturbance Products, Biomass Maps, and Carbon Cycle Modeling in a Comprehensive Carbon Monitoring Framework – *Christopher Williams*
- 12:10** Linking Satellite and Soil Data to Validate Coastal Wetland 'Blue Carbon' Inventories: Upscaled Support for Developing MRV and REDD+ Protocols – *Lisamarie Windham-Myers*