

BIOSPHERIC SCIENCES BRANCH HIGHLIGHTS
November - December 2008

- SCIENCE POLICY AND TEAM MEETINGS, WORKSHOPS

**** Branch members serve on HypsIRI Steering Committee and Science Study Group**

HypsIRI is a hyperspectral satellite mission concept with both VSWIR and TIR sensors now in the Tier 2 group (as defined in the 2007 NRC Decadal Survey). As lead center, JPL hosted the first HypsIRI Workshop (Oct 21-23) in Monrovia, California to address the scientific justification for the mission and to obtain broad community support with ~150 attendees. Betsy Middleton and Bob Knox are serving on the NASA HQ-sponsored HypsIRI Steering Committee and HypsIRI Science Study Group, and Betsy is the GSFC lead for HypsIRI science tasks. Branch members attending the workshop included Betsy, Bob Knox and Kurt Thome. In addition, several branch associates also attended, including Steve Ungar, Fred Huemmrich, Petya Campbell, Lawrence Ong, Larry Corp, and Ben Cheng. Several other GSFC folks were there, including Jim Irons, Tom Flatley, Dan Mandl, Janice Buckner, and Pete Shu. Good progress was made toward refining the science questions for the VSWIR and TIR instruments, and toward editing the draft Science Traceability Matrices for each question. A second HypsIRI Workshop is targeted for late August or September 2009.

**** Masek hosts with Headquarters a NASA Investigators Meeting**

On October 28-29 Jeffrey Masek (Code 614.4) and Garik Gutman (NASA HQ) hosted a meeting in Crystal City for NASA investigators performing large-area land cover analyses using the Landsat Global Land Survey (GLS) data sets. The majority of the meeting focused on PI reports, and ideas for synthesis projects that could produce global assessments of land-cover and forest-cover change. Strategies for promoting international involvement in the GLS2010 data set were also discussed.

**** Landsat Calibration Working Group Meeting Report**

The Landsat Calibration Working Group held their most recent semi-annual meeting at the USGS EROS facility in Sioux Falls, SD on December 3 and 4, 2008. USGS/EROS Image Assessment System (IAS), NASA/GSFC LPSO, South Dakota State University, Rochester Institute of Technology (RIT), University of Arizona and Ball Aerospace OLI calibration personnel attended the meeting. Significant progress in a number of areas of Landsat calibration was reported at the meeting.

**** Middleton represents NASA on Subcommittee of the Federal Geospatial Data Committee**

As the NASA agency representative, Dr. Betsy Middleton attended the 2-day twice-yearly Face-to-Face meeting of the Vegetation Subcommittee of the Federal Geospatial

Data Committee (FGDC), held in Arlington, VA on December 16-17, 2008. This FGDC sub-committee is led by the US Forest Service, with significant participation by several operational federal agencies, including the USGS, US Park Service, and the Bureau of Land Management. The sub-committee successfully developed a National Vegetation Classification (NVC) standard that was approved by FGDC early this year. The NVC is a classification structure based on physiognomy and floristics, but not on spatial distribution. The effort has now moved from development of the NVC to the Implementation Phase. The primary sponsor is the Ecological Society of America, and the contractor is NatureServe, which is building the vegetation database, VegBank, and user tools. The database defines and archives vegetation types, intensive plot-level vegetation characterization data, and enables user interface. NASA representation will continue to push for output products that can be combined with geospatial data so that vegetation classification maps can be obtained at the mid-level of the classification hierarchy, drawing on the ground plots and defined vegetation types they describe.

**** Xiong attends Workshop on AVHRR&HIRS Long-term Climate Data Records**

Jack Xiong attended the Workshop on AVHRR&HIRS Long-term Climate Data Records (17-19 November, 2008) at NOAA Science Center, Camp Spring, MD.

- FUNDED RESEARCH

**** Published research:**

Sensitivity of June near-surface temperatures and precipitation in the eastern United States to historical land cover changes since European settlement, John E. Strack, Roger A. Pielke Sr., **Louis T. Steyaert**, and **Robert G. Knox**. Received 23 September 2007; revised 11 April 2008; accepted 29 July 2008; published 1 November 2008.

Land cover changes alter the near surface weather and climate. Changes in land surface properties such as albedo, roughness length, stomatal resistance, and leaf area index alter the surface energy balance, leading to differences in near surface temperatures. This study utilized a newly developed land cover data set for the eastern United States to examine the influence of historical land cover change on June temperatures and precipitation.

**** Collatz co-author of Science report**

The November 14th issue of Science includes a report on the results of multi-agency funded (including NASA) study that demonstrates a new approach for partitioning the gross fluxes of CO₂ into their component fluxes GPP and respiration. The study shows that in addition to measuring atmospheric CO₂ which reflects the net flux, additional measurements of atmospheric carbonyl sulfide allow estimation of gross uptake of CO₂ by photosynthesis. Knowledge of net and gross uptake of CO₂ provides new capability to understand how terrestrial ecosystems influence atmospheric CO₂.

Campbell JE, Carmichael GR, Chai T, Mena-Carrasco M, Tang Y, Blake DR, Blake NJ, Vay SA, Collatz GJ, Baker I, Berry JA, Montzka SA, Sweeney C, Schnoor JL, Stanier CO.

Photosynthetic control of atmospheric carbonyl sulfide during the growing season. Science 322, 1085-1088, 2008.

- SIGNIFICANT ACTIVITIES

**** Jon Ranson interviewed by Earth & Sky for radio podcast**

Jon Ranson was interviewed by Earth & Sky for a radio podcast about the carbon cycle. The podcast was released on November 10 and can be found on-line at:
<http://www.earthsky.org/clear-voices/52851/jon-ranson-calculates-earths-carb-on-budget-in-a-warmer-world>

Lindsay Patterson, the Producer for Earth and Sky, wrote that on the day of its release the show went out to Earth and Sky's global network of 1,600 radio outlets, and that over the next couple of months the show will be heard 12 million times across the globe.