

BIOSPHERIC SCIENCES BRANCH HIGHLIGHTS

May – June 2011

Funded Proposals

Dr. Lahouari Bounoua (618), Mark Imhoff (618), Ping Zhang (618-ERT), and collaborators in Morocco, Jordan, and Israel were funded to develop “A Satellite Supported Inverse Biophysical Modeling Approach for the Detection of Irrigated Agricultural Land and the Determination of the Amount of Irrigation in Arid and Semi Arid Regions.” The proposal was selected under the ROSES 2010 Land Cover Land Use Change (LCLUC) announcement. The primary goals of the funded project are to develop a new approach for detecting irrigated agricultural lands in arid and semi-arid regions and quantify the amount of irrigation water required for agricultural production as influenced by climate, crop type, soil characteristics, and irrigation efficiencies. The project will also explore future water needs for agriculture in the region under scenarios with varying demand for agricultural products, population demographics, and climate conditions to explore climate change adaptation measures.

Dr. Eric Brown de Colstoun (618, Co-I) and Dr. Jeffrey Dilks’ (PI, National Commission on Teaching and America’s Future) proposal “Climate Change Learning Studios: Teaming up for Global Climate Change Literacy” was selected for funding under the Innovations in Global Climate Change Education (IGCCE) program element of NASA’s Education Opportunities in NASA STEM (EONS), where STEM stands for Science, Technology, Engineering, and Mathematics.

External Interactions

Dr. Elizabeth Middleton (618), the Earth Observing (EO-1) Mission Scientist, gave the 45 minute presentation to address the ten questions about the EO-1 mission posed by the NASA Senior Review Panel for Earth Sciences Orbital Missions on May 3 near NASA HQ in Washington DC. Several team members were also on hand to assist with interactive questions from panel members: Mission Manager, Dan Mandl (581); Mission Engineer, Stu Frye (470); former Mission Scientist, Dr. Steve Ungar (618 emeritus); and Mission Science Office personnel, Drs. Lawrence Ong (618-SSAI) and Petya Campbell (614.4-UMBC).

NASA’s Carbon Cycle & Ecosystems Office, which is hosted by Code 618, provides scientific and program coordination to the North American Carbon Program (NACP), an interagency research effort that is a core element of the US Global Change Research Program. Peter Griffith (618-SigmaSpace) and Jim Collatz (618) were involved in the organization of the recent NACP Science Steering Group meeting with the USGCRP Carbon Cycle Interagency Working Group (CCIWG), held in Washington, DC, on April 27-28. The CCIWG is made up of government managers associated with US Federal Agencies that fund carbon cycle research (i.e. NASA, DOE, NSF, NOAA, USDA, USGS). The SSG provides scientific leadership for the NACP, and assists the CCIWG and NACP

Coordinator in implementing the NACP Science Plan, to assure that scientific returns are maximized.

Molly Brown (618) was invited to participate in a Workshop entitled 'Mapping and Modeling Climate Security Vulnerability' at the University of Texas at Austin's Robert S. Strauss Center for International Security and Law from May 16-17, 2011. The workshop focused on identifying regions in Africa that are vulnerable to climate change. Dr. Brown participated as a panel member for the session 'Social Sources of Vulnerability' that explored a range of additional sources of vulnerability outside of biophysical impacts of climate change.

Molly Brown (618) participated in the 'Colorado Conference on Earth System Governance: Crossing Boundaries and Building Bridges', from May 17-20, 2011. The conference was held on Colorado State University's Fort Collins campus and brought together more than 300 people to discuss international institutions and new collaborations across scales and sectors. Dr. Brown presented a paper entitled 'The use of environmental and socio-economic indicators of food security in early warning assessments for Africa' with co-author Elizabeth Brickley.

Marc Imhoff (618) gave two invited lectures on the use of satellite observations, in combination with food and agriculture data, to project future trends in global food security, carbon accounting, and energy demand. Dr. Imhoff presented to the Planetary Exploration Group and the Defense Analysis Group at Johns Hopkins Applied Physics Laboratory on May 18, 2011 and to the Princeton Institute for Advanced Study on June 2, 2011.

Drs. Betsy Middleton (618), Chris Neigh (618), Fred Huemmrich (618-JCET), and Thomas Hilker (618-USRA) participated in the FluxNet-SpecNet Workshop in Berkeley, CA on June 7-9th. The workshop was the first joint meeting of scientists in the global FluxNet and hyperspectral remote sensing communities.

Major Events

The GSFC HypsIRI and EO-1/Hyperion team, led by Dr. Betsy Middleton (618), organized and conducted a two day HypsIRI Symposium on Higher Level Products for Ecosystems and Environment. The symposium was held at the GSFC Visitor Center and attracted more than 80 participants. The symposium included presentations on 1) "lessons learned" from MODIS (Robert Wolfe, 619), Landsat (Jeff Masek, 618), and Data Systems (Ed Masuoka 619); 2) examples of science topics that will benefit from hyperspectral and thermal measurements (e.g., coral reefs, volcanoes, urban areas, agriculture); 3) summaries of past hyperspectral research and two previous HypsIRI meetings within the past year (1st GSFC HypsIRI Symposium, Ecosystem Modeling); 4) prototyping for HypsIRI with existing data (EO=1 Hyperion, ASTER, MASTER, AVIRIS); and 5) a break-out discussion on priority data products.

Notable Achievements

The 2010 publication “Characterizing urban heat islands of global settlements using MODIS and nighttime lights products” by Drs. Ping Zhang (618-ERT), Robert Wolfe (619), and Lahouri Buonuoaa (618) was selected as the second best paper in the Canadian Journal of Remote Sensing last year. The announcement was made during the Canadian Remote Sensing Symposium (CRSS) in Sherbrooke, Quebec on June 14th.