

Biospheric Sciences Branch Highlights  
Code 614.4  
May – June 2007

- SCIENCE POLICY AND TEAM MEETINGS, WORKSHOPS

**\*\* Biospheric Sciences Branch personnel participate in GOES-R Workshop**

Jack Xiong (614.4) attended the GOES-R Cal/Val Workshop and AWG (Algorithm Working Group) meeting at the National Conference Center, VA, May 15-16 and gave an invited talk on Lessons Learned from MODIS Calibration and Characterization.

Dr. Lyapustin participated in the GOES-R science team meeting. He gave an oral presentation "Multi-Angle Implementation of Atmospheric Correction (MAIAC) for GOES-R" on May 17, 2007.

**\*\* Jon Ranson (Code 614.4) serves on Workshop Steering Committee for the NRC Decadal Survey ICESat-2 Workshop**

Biospheric Sciences Branch personnel attended the recent HQ-sponsored NRC Decadal Survey ICESat-2 Workshop near Baltimore. The workshop was held to inform and interact with the ice, vegetation and solid earth science communities about an ICESat II mission. Jon Ranson served on the Workshop Steering Committee and chaired break out sessions. Dan Kimes (Code 614.4) served as recorder for the break out sessions. Ross Nelson (Code 614.4) presented recent results on the use of ICESat I data for regional carbon stock inventory. Also in attendance were Bob Knox (Code 614.4) and Code 614.4's UMBC-affiliated scientists Forrest Hall, Fred Huemrich, Qingyuan Zhang and Hank Margolis.

**\*\* Jeannie Allen (SSAI, Code 614.4) and Ken Bailey (DOI, Code 614.4) present at InterTribal Timber Council**

Jeannie Allen (SSAI) and Ken Bailey (Dept. of the Interior, Office of the Assistant Secretary for Indian Affairs, on detail to GSFC) gave presentations on using remote sensing for Tribal timbering and natural resources management at the 31st Annual Intertribal Timber Council (ITC) National Indian Timber Symposium in Polson, Montana on June 7. The invitation to present at the Symposium came as a result of Landsat science team presentations to ITC leadership in February, 2007. The ITC has submitted a letter to the Department of the Interior requesting the establishment of a remote sensing program for Tribal timbering. The Indian land trust is the largest land trust in the United States.

- FUNDED RESEARCH

Papers:

\*\* Tarnavsky, E., **S. Garrigues**, and **M.E. Brown** (2007) 'Multiscale Geostatistical Analysis of AVHRR, SPOT-VGT, and MODIS Global NDVI Records'. Remote Sensing of Environment. (in press).

\*\* **Peter Griffith** (SSAI, Code 614.4), Coordinator of the US North American Carbon Program, and **Jeff Masek** (Code 614.4) were co-authors on a meeting report published in the June 12th, 2007, issue of AGU EOS: Birdsey, R. A., et al. (2007), "Investigators share improved understanding of the North American carbon cycle", Eos Trans. AGU, 88(24), 255.

- SIGNIFICANT ACTIVITIES

**\*\* Bounoua (Code 614.4) addresses the American Meteorological Society Fellowship winners**

Dr. Lahouari Bounoua (Code 614.4) addressed the American Meteorological Society Fellowship winners on June 5th 2007 when they visited GSFC. He presented a talk in which he highlighted the role of satellite data in improving the modeling of climate and increasing the skill in climate predictability.

**\*\* Imhoff gives invited talk at the Library of Congress**

Marc Imhoff gave an invited talk to a packed house at the Library of Congress Wednesday June 27 entitled, "City Lights, spy satellites, and urban sprawl". His presentation featured the latest developments in using NASA EO assets to study the impact of urbanization on climate, food security, and urban heating. Imhoff featured the work of colleagues at MSFC as well as his own and discussed potential amelioration techniques for urban heat using "green" technologies. The talk was very well received and attended by Congressional Staffers who expressed interest in knowing more about what NASA is doing in this area of research.

## **\*\* Anyamba's research work featured in the current State Department's USINFO Publication**

Assaf Anyamba (Code 614.4) participated in some interviews with the State Department that are featured in the current State Department's USINFO Publication. Check out the website:

<http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2007&m=May&x=20070522123149lcnirellep3.213137e-02>

### **MONITORING DISEASE FROM SPACE**

For about 10 years, through the GEIS program, NASA scientists have been using satellite climate observations -- near-real-time vegetation measurements, sea-surface temperatures and more -- to monitor rainfall conditions in East Africa that are associated with the outbreak of diseases, including Rift Valley fever.

"These are areas that undergo frequent droughts and flood events," said Assaf Anyamba, a research scientist with the Goddard Earth Sciences and Technology Center, in a recent USINFO interview. "For example, two years ago there was a huge drought in eastern Africa. This year there are huge floods. These changes in climate are resulting in the emergence of various types of diseases."

Every month, Anyamba and his colleagues submit disease risk maps based on satellite observations of rainfall and vegetation. Last year, the U.S. National Oceanic and Atmospheric Administration issued an unscheduled advisory about an El Niño weather pattern, indicating that warmer-than-normal sea surface temperatures across the equator could affect global tropical rain patterns.

"When we first saw the El Niño emerging from the Pacific and the Indian Ocean beginning to warm," Anyamba said, "we issued an early warning. As we began to see the rain, we issued another early warning, showing that the rainfall was on the scale of [a Rift Valley fever outbreak there in] 1997-1998. As the land began to green up, because these areas were very dry, you had conditions that were conducive to the emergence of mosquito vectors [virus carriers] and their propagation."

In that series of warnings, Anyamba and his colleagues provided the forecast that helped Kenya, Somalia and Tanzania prepare for the Rift Valley fever outbreak that is occurring now, and allowed international partners -- WHO, the U.N. Food and Agriculture Organization and others -- to help mitigate the outbreak by arriving with personal protective equipment, such as gloves, masks and mosquito nets, to protect against the spike in malaria cases that occurs during flooding rains.

December is a month of sacrifice for Muslim populations in the region, and because blood and tissues from sick animals can infect people who handle them, the government temporarily banned the slaughter of camels, sheep, goats and cattle, saving potentially thousands of lives.

Ten years earlier, during the 1997-1998 outbreak, WHO estimated that there were 89,000 human cases of Rift Valley fever and up to 250 resulting deaths in eastern Kenya and southern Somalia, one of the largest outbreaks of the fever in recorded history.

"The advantage we had this year," Anyamba said, "is the mechanism in place to do observations. It has lessened the impact in terms of the loss of human lives because we have an early-warning system in place."

**\*\* Imhoff participates in international and NAS activities**

Marc Imhoff (Code 614.4) went to La Paz, Mexico and supported an National Academy of Sciences (NAS)-sponsored workshop on Climate Change in the Americas (June 6-14).

He supported the HQ-POP/PPBE for Terra.

The week of June 19-21 he supported the NSF as a speaker and breakout session chair for a workshop on "Ensuring the Climate Record from NPOESS and Recovering HES Capabilities on GOES-R".