

## **Code 923 Highlights for March – April 2002**

### **\*\* Appreciation of Goddard's role in the Grace mission**

Marc Imhoff (Code 923), the ESSP Project Scientist, helped prepare for and attended the pre-launch press conference for the Gravity Recovery and Climate Experiment (GRACE). GRACE was the first ESSP mission to launch (March 16; 4:20 AM EST) and as such is the flagship of the ESSP program.

Dr. Ghassem Asrar presided, with Dr. Byron Tapley (the University of Texas PI), Dr. Michael Watkins (the JPL Project Scientist), Ralf Huber (DLR representative) and Dr. John LaBrique (HQ program manager) on the panel. At the end of the conference M. Watkins and B. Tapley went out of their way to express to Dr. Asrar their appreciation of Goddard's role in the GRACE mission. They specifically complimented the Code 400 management team, the Code 900 ESSP Project Scientist, and the EOS Science Office. They expressed to Dr. Asrar that the interaction was so positive "they'd gladly do it again".

GRACE is very complex mission scientifically and even more so logistically as it involved a University, two NASA centers, French and German engineering contractors, and a Russian Launch vehicle. The fact that it went off so well and that the science outreach was completed before launch speaks well for the GSFC side of the program and this was explicitly expressed to Dr. Asrar.

### **\*\* Critical Design Review held for the Visible Infrared Imaging Radiometer Suite (VIIRS)**

A successful Critical Design Review (CDR) for the Visible Infrared Imaging Radiometer Suite (VIIRS), a MODIS-like sensor slated to fly on the NPOESS Preparatory Project (NPP; launch 2005) and the NPOESS operational satellite fleet (starting 2009), was held 4-8 March 2002 in Santa Barbara. The instrument is being developed by Raytheon's Santa Barbara Remote Sensing group, and will meet the operational requirements of the merged NOAA TIROS and Air Force DMSP systems as well as NASA's post-EOS global change product continuity needs. The 22-band instrument images at two primary resolutions, 371 m and 742 m, at nadir. The sample sizes grow at a restrained rate over the 3040 km scan swath. The CDR demonstrated that instrument design and component testing is largely proceeding on schedule. Some concerns remain on both the thermal and solar reflective calibration systems; however, SBRS is actively pursuing corrective options. Theoretical approaches and coding for Environmental Data Records, the VIIRS products, are also progressing, though work remains for lower level (1b) products. Scientific critical support at CDR was provided by several members (including Jeff Privette, Code 923) of the NPP Project Science

Group under the direction of Bob Murphy, NPP Project Scientist, Code 920. Engineering critical support was provided by the NPP Project, Code 429.

**\*\* Circulation Anomalies Explain Interannual Covariability in Northern Hemisphere Temperatures and Greenness**

A paper has been submitted entitled "Circulation Anomalies Explain Interannual Covariability in Northern Hemisphere Temperatures and Greenness" by Wolfgang Buermann, Bruce Anderson, Compton J. Tucker (Code 923), Robert. E. Dickinson, Wolfgang Lucht, Christopher S. Potter, and Ranga B. Myneni. The authors analyzed nearly 20 years of satellite-measured vegetation greenness, gridded surface temperatures and analyzed upper air patterns to determine whether interannual variability in spring greenness in the north is correlated with interannual variability in surface temperatures. Results indicate that there are at least two hemispheric-scale modes of co-variability, related to teleconnections associated with the El Niño Southern Oscillation (ENSO) and the Arctic Oscillation (AO). Both phenomena have displayed unusual behavior in the past 20 years; warm ENSO events were more frequent and the AO was mostly in its positive phase. The data suggest that these anomalous circulation patterns had a joint impact on Eurasian vegetation and an offsetting impact on North American vegetation. Possibly this explains why Eurasia, since the early 1980s, has been persistently greening, as recorded in the satellite data.

**\*\* Levine participates in planning meeting for a soil exhibit for display at the Smithsonian**

Dr. Elissa Levine attended the first planning meeting towards an exhibit on soils to be displayed at the Smithsonian Natural History Museum through an agreement between the Smithsonian, Soil Science Society of America, and the USDA. The exhibit will be part of a new "Global Links" exhibit which will also include a number of NASA Earth Science research topics and products. The focus of the soil exhibit will be to teach the importance of soils as an integral part of the Earth system using multimedia and hands on educational activities and materials. Future meetings to discuss specific content of the display have been planned, and the first parts of the exhibit are anticipated to be ready within a year.

**\*\* Landsat Data Continuity Mission (LDCM) proposal selection**

NASA has announced the selection of two proposals for the Landsat Data Continuity Mission (LDCM) formulation phase studies. The successful proposals were from Resource 21 and DigitalGlobe. Excerpts from a NASA press release can be found below. A link to the full press release can be found at <http://ldcm.nasa.gov/>.

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## NASA PICKS LANDSAT DATA PROPOSALS FOR FURTHER DEVELOPMENT

NASA, in partnership with the United States Geological Survey, has selected two proposals for further development in response to a solicitation to provide the government with Landsat-type data that will continue the rich 30-year heritage of the Landsat series of Earth-observing missions.

The companies selected for further proposal development are Resource 21, Englewood, Colo., and DigitalGlobe, Longmont, Colo.

During the first phase of this full and open competition, proposers will have approximately nine months to further develop their technical and business plans, as well as a preliminary design of their system for providing future Landsat-quality data. During this formulation phase, proposers will conduct activities such as trade studies and analyses.

At the end of this formulation phase other proposals that meet the formulation requirements and provide a business plan and system-level preliminary design review acceptable to the government may also be submitted to NASA for consideration. NASA will announce a second solicitation for all qualified proposers late in the first phase.

### **\*\* Biospheric Sciences Branch papers among top ten for 2001**

Remote Sensing of Environment announced that journal articles authored by Code 923 scientists were among the top 10 most downloaded papers during 2001. The article: Northern Forest Ecosystem Dynamics Using Coupled Models and Remote Sensing, 75 (2) (2001) pp. 291-30 by K.J. Ranson (923), G. Sun (923/UMCP), E. Levine (923) and R. Knox (923), J. Weishampel (UCF) and S. Fifer was 6th, while the article: Landsat-30 Years and Counting, 78 (1-2) (2001) pp. 1-2 by S. Goward (UMCP) and J. Masek (923) was 8th.

Online access to full text articles for Remote Sensing of the Environment is available to those readers whose library has subscribed to Remote Sensing of the Environment via ScienceDirect Digital Collections, <http://www.sciencedirect.com>, or has a current print subscription to Remote Sensing of the Environment and has registered for ScienceDirect Web Editions.

## **\*\* Earth's City Lights on cover of Physics Today**

The cover of the April issue of Physics Today displayed a view of Earth's city lights. These data came from a joint effort between Marc Imhoff of NASA's Goddard Space Flight Center (Code 923) and Christopher Elvidge of NOAA's National Geophysical Data Center. The image was produced by Craig Mayhew and Robert Simmon of NASA/GSFC.

More than 400 separate satellite images acquired between 1 October 1994 and 31 March 1995 were used. These images were acquired on low moonlight, cloud-free nights by the Defense Meteorological Satellite Program. Nonlinear scaling and other image processing techniques were used to enhance the contrast.

## **\*\* EO-1 satellite captures damage of La Plata tornado**

The EO-1 acquisition of the La Plata Tornado Scar on May 3 has generated a great deal of public interest. Following the NASA press release on Thursday, May 4, the story was picked up by NBC news and an EO-1/ALI image was shown on Channel 4 that evening. Coverage, including images, continued throughout Friday morning on both Channels 4 and 7. Two sections of the Sunday Washington Post (Outlook and Metro) featured an explanation and EO-1 images of the scar, giving accreditation to GSFC. The image also appeared in the NY Times.

The Channel 4 Morning News showed the EO-1 La Plata image on its weathercast, explained the types of damage observed in the image, and gave lots of credit for the 'spectacular NASA' image.

The GSFC press release follows. Images can be viewed at <http://www.gsfc.nasa.gov/topstory/20020502laplata.html>

### **"New NASA Satellite Zooms in on Tornado Swath"**

A number of severe thunderstorms swept through the mid-Atlantic states on April 28, bringing high winds, hailstones, and heavy rains to many areas. The intense storms spawned at least two tornadoes, one of which was classified as an F5 funnel cloud--the most severe category, with winds in excess of 260 miles per hour (425 km per hour). The powerful tornado touched down in southern Maryland and ripped through the town of La Plata, destroying most of the historic downtown. The twister--the strongest ever recorded to hit the state and perhaps the strongest ever recorded in the eastern U.S.--flattened everything in its path along a 24-mile (39 km) swath running west to east through the state.

The tornado's path can be seen clearly in this panchromatic image acquired on May 1 by the Advanced Land Imager (ALI), flying aboard NASA's EO-1 satellite. La Plata is

situated toward the left hand side of this scene and the twister's swath is the bright stripe passing through the town and running eastward 6 miles (10 km) toward the Patuxent River beyond the right-hand side of the image. This stripe is the result of the vegetation flattened by the storm. The flattened vegetation reflects more light than untouched vegetation.

EO-1 is the first Earth observing satellite launched as part of NASA's New Millennium Program. This program is designed to spearhead development and testing of a new generation of satellite remote sensing technologies for future Earth and space science missions. The ALI is designed to improve upon and extend the measurement heritage begun by the Landsat series of satellites well into the 21st Century.

**\*\* Levine gives interview re: Baltimore Children's Asthma Project**

Dr. Elissa Levine (Code 923) was interviewed for an article that appeared in the Baltimore Sun, Maryland Section, on May 1, 2002 entitled "Hoping to Pull Answers out of the Air". The article discussed the Baltimore Children's Asthma Project that Dr. Levine and others from the Biospheric Sciences Branch are working on in collaboration with Dr. Carol Blaisdell and others from the University of Maryland Medical System. The project involves identifying environmental trends and triggers that may cause children's asthma using ground based and remotely sensed data in combination with clinical data. The asthma project is part of NASA GSFC's Healthy Planet: Earth Science and Public Health program.