

IEEE

GEOSCIENCE *and* REMOTE SENSING

Newsletter



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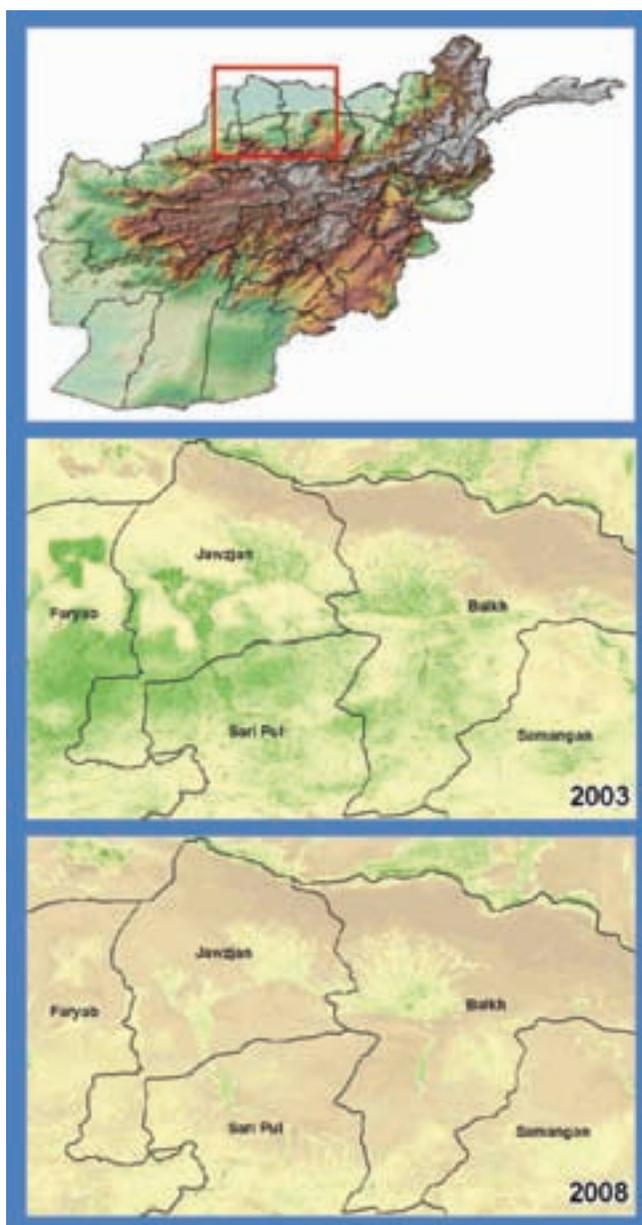


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Month	June	Sept	Dec	March
Input	April 15	July 15	Oct 15	Jan 15

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This month I am very excited to announce the launch of the GRSS on-line Newsletter. As my hope is that you recall everything that has been published in the GRSS Newsletter over the past few years, you may remember that a year ago a short column was presented by Adriano Camps in the March issue describing a two year strategic plan to make the GRSS website more central to the activities of GRSS. You may also refer to the December web corner that provided a preview of the new GRSS website which is now a reality in 2010. As part of the revised and upgraded website you can now view, on-line, a version of this Newsletter. The organization of the on-line version is intended to facilitate directed and timely access to the Newsletter content as well as to help address mailing delays encountered by recipients of the Newsletter

outside North America. We will also attempt to expand the content in areas such as current research and the calendar of events. Please also see the web corner for this issue on page 20. You can visit the on-line version at: <http://www.grss-ieee.org/category/newsletter/>

Considering the many aspects of the GRSS society and our remote sensing work overall, I am always struck by the diversity of techniques and methods that are represented and nurtured by GRSS through our refereed journals, conferences and symposia. One catalyst for this reflection is the cover of this month's issue related to the use of the Normalized Difference Vegetation Index (NDVI) a simple technique applied to multi-spectral measurements and used to identify as well as 'quantify' vegetated areas. The NDVI is the most well-known and utilized 'index' in remote sensing to detect green plant canopies and a number of NDVI derivatives have also been proposed to improve the value of the approach and circumvent limitations posed by surface and atmospheric properties. In this sense it is a natural progression of remote sensing techniques that evolve with understanding of the data available such as the crop models described in the feature article.

Building on this point, the development of analysis techniques and identification and use of multiple data sources has been a growing area within IGARSS and GRSS. We are focusing

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President's Message



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On behalf of the IEEE Geoscience and Remote Sensing Society, I would like to thank our Past President Tony Milne very much for his intensive dedication, hard work and great leadership over the past two years! Under Tony's leadership we have completed intensive strategic discussions and planning activities that have allowed the GRS Society to implement a

number of new initiatives. These have improved our portfolio and benchmarks in many areas. The exceptional review of the GRS Society last year, an outstanding IGARSS in Cape Town and strong growth in GRS-S Membership are just a few examples of our success!

The New Year starts with several new activities. We have just launched our new web site (www.grss-ieee.org). You are invited to visit it, and we would very much appreciate your feedback and suggestions. We hope to provide more information and continue to improve service to our members and to the international remote sensing community.

This year is a special year for the GRS Society: Our 30th IGARSS conference will be held on July 25–30, in Honolulu, Hawaii (www.igarss2010.com). You are cordially invited to join us for this special event to commemorate the 30th anniversary of IGARSS! With excellent planning underway by a highly dedicated organizing committee, we may expect

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Cover Information: Afghanistan winter wheat analysis. Comparison of MODIS 250m NDVI during the peak of the winter wheat season shows the poor 2008 conditions relative to the very good growing season of 2003. The primary irrigated wheat areas in Jawzjan and Balkh provinces are illustrative of this disparity. In addition to poor irrigated conditions, rainfed areas in eastern Faryab, southern Jawzjan and northern Sari Pul also show significant drought impacts on vegetative greenness. See feature article on beginning on page 10.



(Editor's Comments continued from page 3)

less on just one source to do a job or to create a remotely sensed 'data product'. Multi-sensor platforms, auxiliary and ancillary data and associated analysis techniques are at the center of much of the current research activities within remote sensing. Understanding the diversity of these data sources and their use and application is a critical aspect of our field and, in my opinion, one of the major contributions of GRSS and our flagship conference IGARSS.

The feature article for this issue is by Michael Budde, James Rowland and Chris Funk of the U.S. Geological Survey Earth Resources Observation and Science Center (EROS) and is reprinted and adopted from Earthzine (<http://www.earthzine.org>). The article emphasizes the importance remote sensing can have for providing timely, accurate and global information for decision making at a local or regional (country) level – not entirely coincidentally, a theme also reinforced within next year's IGARSS. Please see our feature article beginning on page 9. We are planning to continue to develop opportunities for collaboration between the GRSS Newsletter, Earthzine and the Private Sector Newsletter, for the future.

I would next like to congratulate Dr. Kiyomi Tomiyasu in his joining of the IEEE heritage circle. Dr. Tomiyasu was inducted into the IEEE Heritage Circle, the IEEE Foundation's donor recognition program in January. A summary of his involvement with IEEE and additional background on the IEEE Heritage Circle appear on page 7. Congratulations are also in order for the top five reviewers recognized by the Editors and Associate Editors of TGARS and GRSL and appearing on page 15.

We note that from Africa, preparations are underway for the 8th African Association of Remote Sensing of the Environment (AARSE) conference to be held in Addis Ababa, Ethiopia. Last year we reported on activities from the 7th conference held in Accra, Ghana in October 2008. The AARSE conference has been held every other year since 1996 and attracts 800 international participants. Some additional background on AARSE and a call for papers for the 8th conference is included in this issue on page 24.

Recently the GRSS Administrative Committee (AdCom) approved several changes to the GRSS Bylaws and Constitution. Following the accepted procedure, these changes are required to appear in the GRSS Newsletter and appear in this issue on page 21. The changes will go into effect unless ten percent of the Society members object within 30 days of publication. Please take this opportunity to read about the changes in your Society's governance and procedures.

And finally we are saddened to hear of the passing of Joanne Simpson, a giant in the field of meteorology. The first woman to earn a Ph.D. in meteorology and a past president of the American Meteorological Society (AMS), she explained

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GRS-S MEMBER HIGHLIGHTS

TOMIYASU JOINS IEEE HERITAGE CIRCLE

IEEE Life Fellow Kiyoo Tomiyasu's loyalty and commitment to IEEE spans nearly 70 years, from the time he joined the Institute of Radio Engineers, one of IEEE's predecessor societies, in 1941 as a student until today.

Tomiyasu donates annually to the IEEE Life Members and IEEE Foundation general funds. He helped establish two IEEE Foundation funds that recognize students: the Harold Sobol Student Grant, administered by the IEEE Microwave Theory and Techniques Society; and the Mikio Takagi Student Prize, administered by the IEEE Geoscience and Remote Sensing Society. He also set up and funded the IEEE Kiyoo Tomiyasu Award Fund, the technical field award named in his honor that recognizes outstanding early to mid-career contributions to technologies holding the promise of innovative applications.

To honor his lifetime of giving to IEEE, Tomiyasu, 90, is being inducted into the IEEE Heritage Circle, the IEEE Foundation's donor recognition program.¹ He is being recognized at the Thomas Alva Edison level. The third of five levels, it is reserved for donors whose cumulative gifts fall in the range of US \$100 000 to \$249 999. An induction ceremony is scheduled as part of the IEEE International Microwave Symposium, to be held from 23 to 28 May, in Anaheim, Calif.

"I believe strongly in the noble objectives of the IEEE Foundation," Tomiyasu says. "The most compelling benefit



of membership in IEEE is the integrity and commitment I witness through my association with similar professionals."

Tomiyasu graduated in 1940 with a bachelor's degree in electrical engineering from Caltech and went on to earn a master's degree in communications engineering from Columbia University in 1941 and a Ph.D. in engineering science and applied physics from Harvard in 1948.

He spent most of his career with General Electric Co. at its offices in California, New York, and Pennsylvania. His work involved lasers and microwave technology, including microwave remote sensing from satellites and the propagation aspects of satellite communication links.

Not only is Tomiyasu a generous donor to IEEE, he is also an active volunteer. He has been a member of the IEEE Board of Directors, the Awards Board, the Technical Activities Board, the Educational Activities Board, and the Publication Products and Services Board. At the society level, he has been a member of the administrative committees of the Microwave Theory and Techniques and the Geoscience and Remote Sensing societies.

Tomiyasu is retired and resides in Pomona, Calif.

*Karen Kaufman, IEEE
January 8, 2010*

<http://www.theinstitute.ieee.org/portal/site/tionline/>

¹see <http://www.theinstitute.ieee.org/portal/site/tionline/>

(Editor's Comments continued from page 4)

the driving mechanisms of tropical storms and hurricanes. For a more extensive biography please see: <http://earthobservatory.nasa.gov/Features/Simpson/>

As a graduate student in 1993, I participated in NASA's TOGA-COARE experiment based in Townsville Australia. As usual with field experiments, lab space at the hangar was at a premium, but I was allowed a small section in one of a few trailers that had been placed on the Tarmac at the Royal

Australian Air Force Base in order to provide extra space for the investigators. It was there that I met Dr. Joanne Simpson working tirelessly to preserve crystals collected as part of the cloud micro-physics experiments carried out during the intensive observation phase of the mission.

*Dave Kunkee
Editor, GRSS Newsletter*



IN MEMORIAM

Joanne Simpson, widely recognized as a leader in the field of meteorology, and the first woman to earn a doctorate in meteorology passed away on March 4, 2010. She was a member of the U.S. National Academy of Engineering, a recipient of the Carl-Gustaf Rossby Award (the highest honor bestowed by the American Meteorological Society), a Guggenheim Fellowship, and served as President of the American Meteorological Society.

After completing a course at the University of Chicago with Herbert Riehl on tropical meteorology, she decided to concentrate on tropical cumulus clouds earned a Ph.D. working with Riehl as her advisor. Upon earning her Ph.D., she became an Assistant Professor of Physics at the Illinois Institute of Technology. During the summers, Simpson (at that time Joanne Malkus) traveled to Woods Hole Oceanographic Institute with her family to work on an exciting project involving tropical clouds. Later, she left Chicago for a permanent position at Woods Hole. There she began to develop a model of cumulus clouds and to take the first steps in demonstrating how important these clouds were in driving tropical circulations. She eventually established a new understanding in meteorology and of hurricanes by showing that heat generated by the condensation of water within tall, anvil-shaped, cumulonimbus clouds called “hot towers” provided the energy needed to keep the storms running. Although some doubted the hypothesis, the Tropical Rainfall Measuring Mission (TRMM) provided dramatic confirmation of hot towers in hurricanes when it collected data of Hurricane Bonnie on August 22, 1998. A column of intense rainfall rose to the astonishing altitude of 18,000 meters (59,000 feet). The “hot-tower hypothesis” explained how hurricanes are driven until they hit land, run into colder water, or encounter one of the other “hurricane enemies” such as wind shear that tears the warm core apart.

During the middle of her career Simpson became involved with “weather modification” experiments over the course of several years and this work continues to have an impact on meteorology today. After that period she came to NASA and



in 1986, Simpson led the “study” science team for the proposed Tropical Rainfall Measuring Mission (TRMM), which was to carry the first space-based rain radar. Between 1986 and launch in November 1997, She worked in close partnership with the project engineers, and recruited key scientists to develop the data system.

Today TRMM is recognized as being instrumental for showing how hurricanes start in the Atlantic Basin and in demonstrating how dust and smoke can drastically influence rainfall. But of all the results that came about from TRMM, the discovery that Simpson was most excited

about occurred in 2002, on the fifth anniversary of the satellite’s launch.

By that time, TRMM had met or exceeded nearly all of its important goals. One of its goals, however, still remained, which was to measure from orbit the profile of latent heating released by tropical cloud systems. The ability to measure latent heat profiles over wide areas has long been on the wish list of the meteorological community. The difficulty has always been that latent heat cannot be measured directly. Today, accurate estimates of latent heat in the tropics can be obtained using a model based on TRMM rain profiles. Professor Robert Houze and Courtney Shumaker showed that for several different areas, the TRMM profiles and those profiles directly observed were in good agreement. Simpson’s early groundbreaking work on latent heating of the atmosphere came full circle with TRMM’s successes.

Simpson felt lucky to get into meteorology when she did and recognized that she was in the profession during a time when some of the biggest discoveries were made. She also felt that being the first woman in meteorology she carried a responsibility for the fate of other, younger women who wanted to be meteorologists and this pushed her to do her best. Later in her career she continued her work at the Goddard Space Flight center and became a widely recognized role model for women in meteorology.

*Adopted for the GRSS Newsletter from
<http://earthobservatory.nasa.gov/Features/Simpson>*



GRS-S MEMBERS ELEVATED TO THE GRADE OF IEEE FELLOW FOR 2010

Prof. Lorenzo Bruzzone, “for contributions to pattern recognition and image processing for remote sensing”

Dr. Norman Chapman, “for contributions to geoacoustic characterization of ocean bottom environments”

Prof. Chein-I Chang, “for contributions to hyperspectral image processing”

Dr. David Daniels, “for contributions to Ground-Penetrating-Radar”

Dr. Diane Evans, “for leadership in understanding of the Earth system through observations from space”

Dr. Soren N. Madsen, “for leadership in the design and development of airborne and spaceborne remote sensing instruments”

Prof. Motoyuki Sato, “for contributions to radar remote sensing technologies in environmental and humanitarian applications”

Dr. Valery Zavorotny, “for contributions to ocean remote sensing and wave propagation in random media”

GRS-S MEMBERS ELEVATED TO THE GRADE OF SENIOR MEMBER DURING THE PERIOD DECEMBER 2009–FEBRUARY 2010

January:	Emmanuel Trouvé	France Section
February:	Jeffrey Arndt	Northern Virginia Section
	Lorenzo Crocco	Italy Section
	Madison Gray	Washington Section
	Gerhard Krieger	Germany Section
	Hui Lin	Hong Kong Section
	Andrey Osipov	Germany Section
	Andreas Reigber	Germany Section

Senior membership has the following distinct benefits:

- The professional recognition of your peers for technical and professional excellence.
- An attractive fine wood and bronze engraved Senior Member plaque to proudly display.
- Up to \$25.00 gift certificate toward one new Society membership.
- A letter of commendation to your employer on the achievement of Senior Member grade (upon the request of the newly elected Senior Member).
- Announcement of elevation in Section/Society and/or local newsletters, newspapers and notices.

- Eligibility to hold executive IEEE volunteer positions.
- Can serve as Reference for Senior Member applicants.
- Invited to be on the panel to review Senior Member applications.
- Eligible for election to be an IEEE Fellow

Applications for senior membership can be obtained from IEEE website: <http://www.ieee.org/web/membership/senior-members/index.html>

You can also visit the GRS-S website: <http://www.grss-ieee.org>



FEATURE

AGRICULTURE AND FOOD AVAILABILITY REMOTE SENSING OF AGRICULTURE FOR FOOD SECURITY MONITORING IN THE DEVELOPING WORLD

Michael E Budde¹, James Rowland² and Chris Funk¹

¹US Geological Survey Earth Resources Observation and Science (EROS) Center, Sioux Falls, SD.

²ASRC Research & Technology Solutions (ARTS), contractor to the US Geological Survey EROS Center. Work performed under USGS contract 08HQCN0007, Sioux Falls, SD.

Introduction

The recent global food crisis brought food security issues to the forefront of the world's consciousness. The impacts of the crisis have been felt most seriously in third world countries. According to the International Monetary Fund, food prices increased 43 percent between March 2007 and March 2008. While developed countries are often able to mitigate impacts of such crises, developing countries are most affected and take much longer to recover. The poorest populations spend a larger proportion of their income on basic food supplies, making them the most vulnerable to increased prices. A recent US Agency for International Development (USAID) report stated that nearly 1 billion people, approximately one sixth of the world's population, live on less than \$1 per day and, of these, 162 million survive on less than \$.50 per day.

In addition to market-driven impacts on food security, many of those at risk rely upon adequate weather conditions for subsistence agricultural activities. Subsistence agriculture, a form of farming where nearly all commodities produced are consumed by farmers and their families, persists in many parts of the world and is especially widespread in sub-Saharan Africa. The combination of high food prices and poor growing season conditions can be devastating for this segment of the world's population. Therefore, there is a profound need to accurately monitor growing season conditions that impact food security in the developing world.

Background

Scientists with the U.S. Geological Survey (USGS) are part of a network of both private and government institutions that monitor food security in many of the poorest nations in the world. The Famine Early Warning Systems Network (FEWS NET) is a USAID-funded activity that collaborates with international, regional, and national partners to provide timely and rigorous early warning and vulnerability information on emerging and evolving food security issues. Currently, FEWS NET professionals in Africa, Central America, Haiti, Afghanistan and the United States monitor

and analyze relevant data and information in terms of its impacts on livelihoods and markets to identify potential threats to food security.

FEWS NET uses a suite of communications and decision support products to help decision makers act to mitigate food insecurity. These products include monthly food security updates, regular food security outlooks and alerts, as well as briefings and support to contingency and response planning efforts.

Need for Remote Sensing

FEWS NET relies heavily upon its national and regional offices in sub-Saharan Africa to monitor aspects of food security. However, the broad scope of information that these offices are responsible for analyzing and the large areas which are being monitored drive the need for tools such as remote sensing to provide additional data for food security decision making.

Remote sensing provides the ability to monitor large areas on regular intervals. Satellite-based data and modeled derivatives are used in combination with ground-based information to better assess potential impacts to the food supply system. The USGS Earth Resources Observation and Science (EROS) Center, in collaboration with other FEWS NET implementing partners (NASA, NOAA, University of California, Santa Barbara), provides a number of remotely sensed inputs to the FEWS NET decision making process.

Agricultural Monitoring Products

Some of the most widely used remotely sensed products for agricultural monitoring are precipitation, crop water requirements, and vegetation indices. Precipitation is monitored primarily through the use of satellite-based rainfall estimates (RFEs) that augment the sparse observational network of rain gauge stations found in many FEWS NET countries. RFEs provide daily estimates at a gridded cell size where each cell represents a 0.1 by 0.1 degree area on the ground.



These data are useful for large area precipitation monitoring and are also used as inputs to crop performance models.

One such crop model, the water requirement satisfaction index (WRSI), is based on the water supply and demand a crop experiences during a growing season. It is a ratio of seasonal evapotranspiration to the seasonal crop water requirement. The water requirements of specific crops are adjusted for various growth stages and are compared to the available moisture (incoming precipitation and existing soil moisture). Output from this model is used extensively to monitor both cropland and pasture conditions, and to assess potential food security impacts.

The normalized difference vegetation index (NDVI) is one of the original remotely sensed data types used by FEWS NET more than 20 years ago, and still used today. NDVI, calculated by measuring the intensity of visible and near-infrared light reflected by the land surface and “sensed” by satellites, quantifies the amount and vigor of vegetation at the land surface. Daily NDVI measures are combined into multi-day composites that portray the Earth’s vegetation condition and identify areas where plants are flourishing and where they may be under stress.

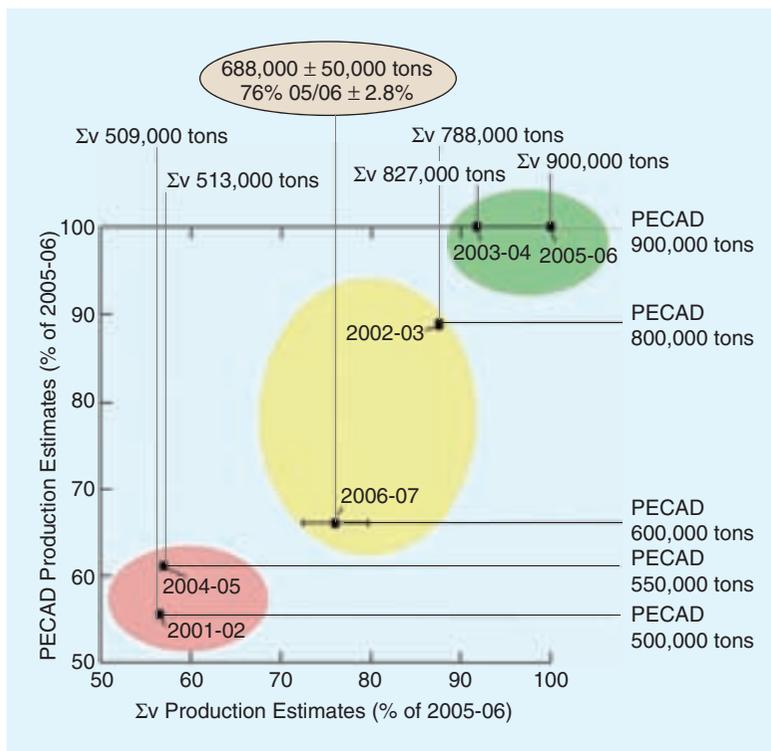


Figure 1. Relative production as a fraction of the high 2005/06 production year in Zimbabwe. Actual Σv production estimates (tons) for each production year are shown on top and PECAD production figures are shown at right. The 2006/07 production estimate is shown with an error estimate included.

Case Studies

These agricultural monitoring products are used on a routine basis for operational monitoring of near-term factors that may impact food security. On occasion there is a need to go beyond our operational monitoring efforts and address specific questions that respond to specific food security questions. In the remainder of this article, we highlight two case studies that illustrate the use of NDVI data for analyzing both maize production and winter wheat yields. Each of these targeted analyses provided timely information that had a significant impact on food security decision making.

Zimbabwe

Introduction

Responding to a request by USAID, we analyzed remote sensing data that helped assess maize harvest prospects for Zimbabwe. Maize is the most widely grown cereal crop in Zimbabwe with lesser amounts of wheat, sorghum, and millet also being grown. We used an NDVI-based metric, sum v (Σv), that relies on measures of vegetation condition throughout the growing season to assess the likely production outcome. The initial analysis, for the 2006/07 growing season, has been replicated each year since.

Methods

The Σv method relies on the finding that late season NDVI correlated well with US Department of Agriculture (USDA) Production Estimates and Crop Assessment Division (PECAD) production estimates for those years prior to the 2006/07 season. Therefore we could use measurements of late season NDVI for a given year to estimate production numbers. We used Moderate Resolution Imaging Spectroradiometer (MODIS) NDVI data for the years 2000 through 2007. In order to minimize the influence of non-agricultural lands on Σv , we applied a mask to the NDVI time series using a cultivated lands map. We were not able to specifically isolate maize within the agricultural zone, but the fact that maize is the major cereal crop gives confidence that monitoring these areas will be a good surrogate for assessing overall food security. The NDVI time series for agricultural lands were adjusted based on varied onset of season times determined from rainfall inputs. The onset-adjusted NDVI values were set to zero to represent the beginning of the growing season. Once adjusted, we ignore the first ten 16-day periods of the time series, then accumulate NDVI over the next two 16-day periods. It is this sum of late season NDVI, or Σv , that can be used to estimate production at the national level. The onset of season or planting date is a critical component of this analysis; therefore we have recently incorporated

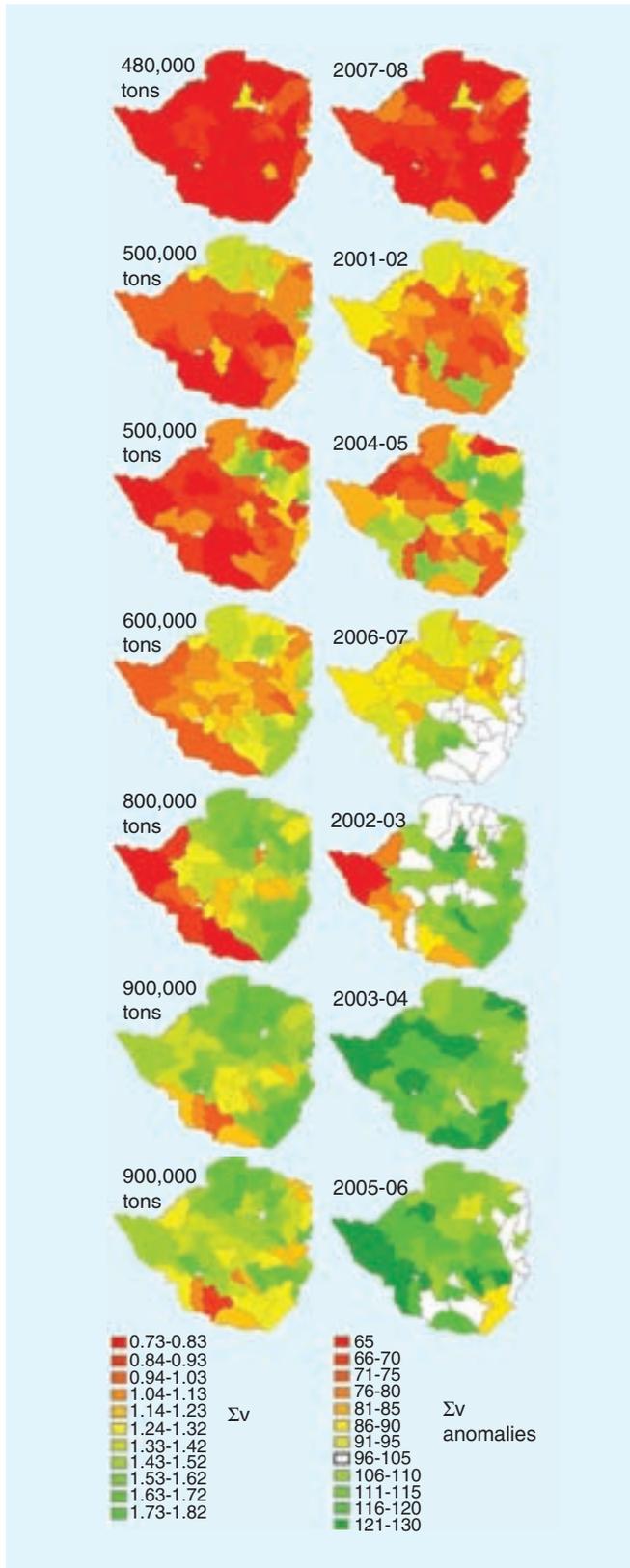


Figure 2. Σv (left column) and Σv anomalies (right column) for seven growing seasons, 2001/02 through 2007/08, ranked from worst to best based on PECAD production estimates for Zimbabwe.

more ground-based information for this parameter. FEWS NET field staff in southern Africa have been instrumental in making these improvements to the modeling effort and have provided extensive input to final results.

Afghanistan

Introduction

Accurate and timely assessments of winter wheat production are important elements of food security decision making for Afghanistan. Approximately 80 percent of Afghanistan's wheat production is supplied by irrigated winter wheat that relies heavily upon spring snowmelt. The 2007/08 winter wheat season was characterized by below average snowpack, abnormally high spring temperatures, early snowmelt, and poor rainfall, which created drought conditions throughout most of the country. USAID food security analysts wanted to characterize the impact of these conditions on probable outcomes of the winter wheat season. We were asked to assess how drought conditions would impact the 2007/08 winter wheat season and frame the severity of the drought in the context of recent years as a guide to decision making.

Methods

Investigators used MODIS 16-day composite NDVI time series and historical yield data to evaluate the 2007/08 wheat season in comparison to the previous 8 years. Seasonal maximum NDVI has been shown to correlate well with historical wheat yields. MODIS time series data for the period 2000 to 2008 were temporally smoothed to remove cloud and other atmospheric contamination, and then stratified by irrigated areas. The time series data were spatially averaged at the provincial level and then analyzed to derive the time of annual maximum, which was consistently found to be during late April – mid May. Annual maximum NDVI values were correlated with wheat yield statistics at both the national level and for an aggregation of northern provinces, which supply the majority of the country's wheat production. Yield statistics were obtained from Crop and Food Supply Assessment Mission (CFSAM) results supported by the Food and Agriculture Organization (FAO) and the World Food Program from 2000 to 2007. Results showed good correlations for the national level ($R^2 = 0.92$) and the northern provinces ($R^2 = 0.76$). We used this relationship with annual maximum NDVI as a basis for ranking the 2007/08 winter wheat yield.

Results

Nationally, the 2007/08 maximum NDVI ranked as the worst in recent years. An estimated 1.14 tons per hectare was the expected yield for 2007/08 using the regression-based yield figures (Figure 3). This ranked as second worst yield on



Nationally, 2008 ranks as worst year since 2000

Irrigated Areas

Year	Maximum NDVI	Yield (t/ha)
2003	0.381	2.85
2007	0.373	2.69
2005	0.364	2.51
2006	0.357	2.58
2002	0.355	2.02
2004	0.335	1.93
2000	0.320	1.12
2001	0.317	1.31
2008	0.313	1.14*

*Estimated based on regression of maximum NDVI and historical yield figures

Figure 3. Annual maximum NDVI and CFSAM yield figures ranked from best to worst for irrigated areas of Afghanistan. The 2008 maximum NDVI ranks worst in the series. The yield estimate for 2008 is based on the regression of maximum NDVI and historical yield figures.

record and less than half the yield of the most productive year (2002/03). Since the majority of Afghanistan's production comes from the northern irrigated provinces, these are of particular interest to the food security community. A ranking of provincial-level results for the north showed a situation

similar to that at the national level. When considered in aggregate, 2007/08 ranked as the worst year on record for the northern provinces as well. The lack of productivity was graphically portrayed by comparing the difference in maximum NDVI between the 2007/08 season and the productive 2002/03 season (Figure 4). While this analysis focused on irrigated winter wheat, the findings strongly suggest failure of the rainfed wheat crop as well.

This method provided a very quantifiable procedure for assessing relative crop performance using the relationship of maximum NDVI and wheat yield statistics. The analysis provided timely information that, according to the USAID FEWS NET program manager, had an enormous impact on food security decisions being made for the country of Afghanistan.

Conclusion

In Zimbabwe and Afghanistan, years of political upheaval and intermittent drought have contributed to the prospects of widespread hunger. In Zimbabwe, during February of 2009, an estimated 7 million people faced serious food shortages, many surviving on just one meal per day. Zimbabwe's once-thriving agricultural production had fallen significantly and changes in the agricultural system made it difficult to get

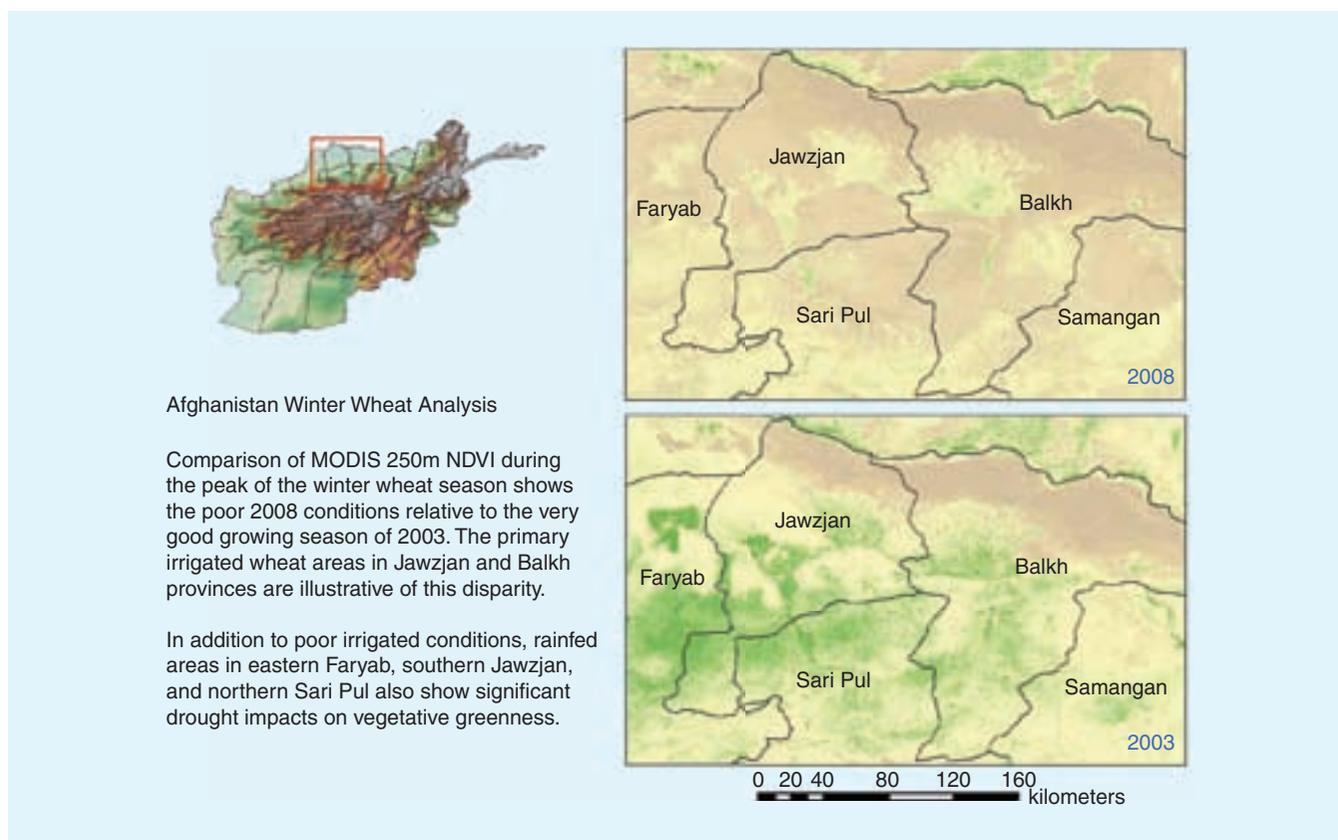


Figure 4. The dramatically reduced productivity in 2008 is evident in this comparison with the high production year of 2003.



In Afghanistan, snowcapped peaks loom above agricultural fields with a network of irrigation channels. Photo courtesy of Bob Bohannon.

good estimates of crop production. In Afghanistan, the 2008 spring snow pack appeared to be well below normal. This could mean a reduced wheat harvest due to inadequate water for irrigation, but crop production reports would not be

available until many months later. In the meantime, many people could endure serious hardship.

Clear and early answers were needed by organizations poised to send famine-mitigating food aid. Remotely sensed satellite observations were able to provide non-political, objective and timely production estimates. In both cases, we were able to use historically observed relationships between NDVI and crop production/yield to develop MODIS-based crop production/yield estimates, well before conventional statistics were available. In Afghanistan, this meant that anecdotal reports of widespread crop failure could be substantiated. In Zimbabwe, remote sensing showed improved crop production over the previous year, with the number of food insecure people likely falling to a relatively low number, compared to recent history. In both cases, strategic decisions for food aid programs could be made in a timely fashion, helping to keep costs down and increase their effectiveness in staving off widespread hunger.

Reprinted from Earthzine: <http://www.earthzine.org/> and <http://www.earthzine.org/2010/02/08/agriculture-and-food-availabilityremote-sensing-of-agriculture-for-food-security-monitoring-in-the-developing-world/>

CALL FOR NOMINATIONS FOR THE GRSS ADMINISTRATIVE COMMITTEE

The Nominations Committee calls upon our membership to nominate members to serve on the GRSS Administrative Committee (AdCom). The GRSS AdCom consists of 18 elected persons, each of whom serves for three years. Their terms are overlapping to ensure continuity. Additional information on the society and the AdCom is available at <http://www.grss-ieee.org/>.

In nomination petitions, the following procedure described below is to be followed. Such nominations petitions must be made by May 25, 2010.

- (i) A nominating petition carrying a minimum of 2% of the names of eligible Society members (~50), excluding students, shall automatically place that nominee on the slate.
- (ii) Prior to submission of a nomination petition, the petitioner shall have determined that the nominee named in the petition is willing to serve if elected; and evidence of such willingness to serve shall be submitted with the petition.
- (iii) Candidates must be current members of the IEEE and the GRSS.
- (iv) Petition signatures can be submitted electronically through the Society website, or by signing and mailing a paper petition. The name of each member signing the paper petition shall be clearly printed or typed. For identification purposes of signatures on paper

petitions, membership numbers or addresses as listed in the official IEEE membership records shall be included. Only signatures submitted electronically through the Society website or original signatures on paper petitions shall be accepted.

- (v) A brief biography of the nominee, similar to that used for TGARS authors, but not to exceed one page, will be required.
- (vi) The nominating petition is to be submitted to the GRSS Nominations Committee, c/o Prof. Leung Tsang, IEEE GRSS Nominations Chair, Box 352500, Department of Electrical Engineering, University of Washington, Seattle, WA 98195, USA. E-mail: tsang@ee.washington.edu.

In addition to the candidates of nomination petitions, the Nominations Committee may choose to include a name on the slate regardless of the number of names generated by the nominating petition process. The slate derived by the Nominations Committee shall be presented to the Society membership at large via mail ballot, and the three candidates receiving the greatest number of votes shall be elected. The Administrative Committee shall hold an Annual Meeting in November, 2010 after results of this vote are known, at which time elections will be held to fill the remaining three regular vacancies in the Administrative Committee, with all successful candidates to start on January 1, 2011.



REPORTS

IGARSS 2009 CAPE TOWN, SOUTH AFRICA

*Harold Annegarn, Mike Inggs,
Roger King, Michael Sears and Judy Mackintosh*

Introduction

IGARSS 2009 was held in Cape Town, South Africa, July 12–17, 2009. The planning for this event started at IGARSS 2002 in Sydney, when Charles Luther approached Mike Inggs and Harold Annegarn, to explore the possibility of hosting IGARSS in Africa. A local organizing committee was set up, and the rest is history. In the report below, we reflect on the event.

Statistics

It was at first assumed that the perception of Africa being far away, and the uncertainty of the politics and social situation of Africa, would make it a small event. Planning conservatively, which included low estimates of attendance related to budgeting, we were exceedingly pleased to see the numbers grow and grow and to report that the final tally included 1200 registrations. From the oral and poster presentations nearly one thousand full papers will appear in the published conference proceedings. The program also included six short courses, attended by 93 participants, and a scholars' outreach which included about 180 participants. And finally we would like to note that the conference benefitted from the volunteer efforts of over 40 students from the local Cape Town area.

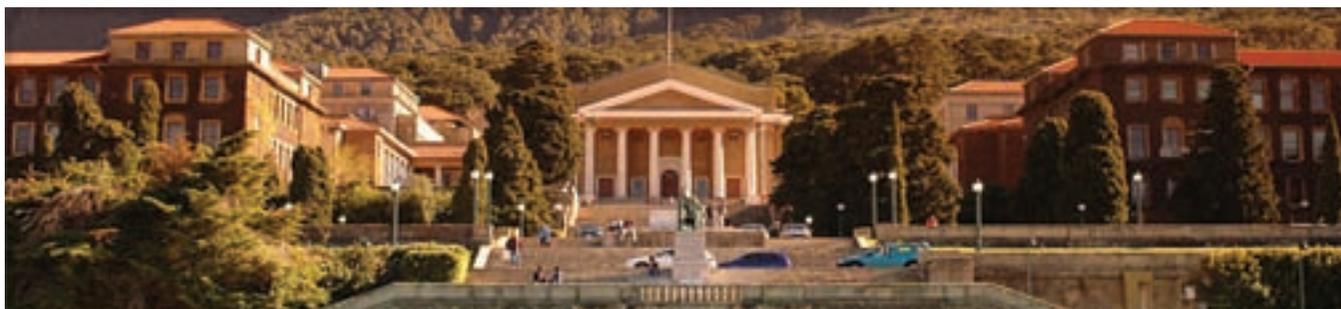
Plenary Session

The Plenary Session was held in the Jameson Hall, the centerpiece of the 1928 campus buildings of the University of Cape Town (UCT) on Monday July 13, 2009.

The plenary session was opened by the Minister of Science and Technology of South Africa, the Hon. Naledi Pandor and the Vice Chancellor of the University of Cape Town Dr. Max Price. A welcome address was provided by IEEE Geoscience and Remote Sensing Society President Prof. Tony Milne and President of the African Association for Remote Sensing of the Environment, Prof. Tsehaie Woldai. The session continued with three invited speakers including Dr. José Achache, Secretariat Director, of the Group on Earth Observation. Next to speak was Dr. Wilbur Ottichilo, a Member of the Parliament of Kenya, a former Director General of the Regional Centre for Mapping of Resources for Development, Nairobi, and former Vice-President of the African Association for Remote Sensing of the Environment (AARSE) for the East African Region. Last to speak during the Monday plenary was Dr. Masami Hato, Project manager for the ASTER GDS Project from ERSDAC, Japan. The opening plenary session was followed in the afternoon by a special session on the Global Earth Observation System of Systems (GEOSS).

Technical Program

The technical program was handled jointly, as now is common for IGARSS, by Profs. Michael Inggs of UCT and Roger King, University of Mississippi. A number of innovations were made for this meeting. First, the technical program was opened up to a broader range of invited special sessions and an excellent response was had to our request for invited session proposals. A total of 13 parallel sessions was created and still many applications had to be turned down. The large number of parallel sessions was luckily accommodated by the academic location



New campus of the University of Cape Town, the move being in 1928. The university started as part of the South African College in 1829, based in central Cape Town. The new campus was built on land made available by the trust of Cecil John Rhodes, a powerful figure in southern Africa.



of the conference, where a large number of lecture theatres were available. Second, a large number of potential reviewers for each abstract were invited. All abstracts were reviewed by more than three reviewers, and sometimes up to six reviews were collected and the Technical Program Committee moderated the selections where necessary. As a result, we are pleased to note that participants broadly commented on the excellent technical content of the program. The poster sessions were run during an extended two hour lunch period Tuesday through Thursday and were generally well attended with catering service points located adjacent to the poster venue.

Educational Activities

The local organizers were very keen to utilize the opportunity of having so many remote sensing experts in southern Africa to provide training for local remote sensing specialists. This was realized not only by means of the traditional tutorials (half or full day on the Sunday before the conference), but also by offering short courses of multi-day duration.

The overall level of activity and results were impressive including six comprehensive training workshops of between 3 to 5 days duration in the weeks prior to conference. Presenters from the United States, Canada, the UK, Netherlands, Switzerland, Italy and South Africa combined to make these courses an outstanding success. We are very grateful to Andiswa Mlisa, Jeanine Engelbrecht and members of the educational subcommittee for coordinating the short courses and tutorials so efficiently.

Additionally, an important link was made between the UCT Student organization, SHAWCO, and Linda Hayden, in order to mobilize a strong outreach program involving high school students from the underprivileged parts of Cape Town. The outreach program, organized by Prof. Hayden of the Eastern North Carolina University (US) and Nina Jackson of NOAA (US) attracted 180 participants from disadvantaged communities, a substantial increase from past similar events. We would also like to note that the activities were supported by South African Department of Science and Technology with a substantial grant.

Finances

The exchange rate between South Africa and the world's major economies ensured excellent value for attendees.



Commercial stands in Leslie Hall during the technical sessions.

Using UCT, together with the academic discount, reduced the venue cost by almost a factor of ten compared to other commercial alternatives that also could only provide a reduced number of lecture venues. As a result we were able to offer a reduced registration charge while still including full lunch time catering, tea time snacks, and a free evening on the town: IGARSS-by-Night, for all delegates.

Sponsorships & Income

While even the relatively large economy of South Africa was not able to provide industrial sponsorship, the usual IGARSS sponsors provided an interesting set of stands, fully integrated to nearly all the lecture venues. We note that all of the available exhibition stands were fully subscribed and the exhibitors were satisfied with the level of interaction with delegates. The multi-tier layout also provided an interesting dynamic at times! However, the limited number of delegates originating from Africa was surprising and a disappointment that was expressed by some attendees. Management of the exhibition was well handled by CMS (thanks to Bryan Stewart) along with a local exhibition company. We would also like to acknowledge the continued support from several sustaining sponsors (NASA, NOAA and JAXA) and the role of our GRS-S VP of Conferences and Symposia, Prof. Melba Crawford, who was crucial in the success of their sponsorship.

African Engagement

African involvement was a prime objective of IGARSS 2009 and we are pleased to report that over 150 attendees from Africa joined in the conference. Although short of expectations, we still consider this level of participation to be an achievement for IGARSS. Accordingly, we note that IGARSS 2009 was co-hosted with AARSE and along with TIC Netherlands, provided extensive support with lectures and student sponsorships related to the pre-IGARSS workshops.

Social Program

For any IGARSS, the social programs are points that are remembered by many attendees for years afterwards and the Cape Town IGARSS had many unique events worth highlighting. As standard procedure, the meeting kicked off with an ice breaker in the Leslie Building foyer on UCT Campus that was well attended Sunday evening. The Tuesday evening



Attendees at the Wednesday evening wine tasting event enjoy a wide selection of hors d'oeuvres.



Conference Technical Co-Chair Roger King at the Thursday evening banquet.



Conference Chairman Harold Annegarn (right) and Technical Co-Chair Michael Inggs (left) at the Thursday evening banquet.

dinner event was divided between seven Cape Town restaurants that each provided a unique African experience for their attendees. The evening was a resounding success as was the process of allocating 1300 participants from more than five major hotels to buses for transport to seven different venues which proved to be an interesting logistical challenge. On



Conference attendees at the poster session in Jameson Hall on Thursday.



Jameson Steps: a favorite place for generations of UCT students, now occupied by IGARSS 2009 attendees enjoying the first of the winter sun.

Wednesday, approximately 80 guests enjoyed an evening wine tasting social held at Cape Town Castle. Rounding out the social program, a formal gala dinner and awards ceremony was held at the Mount Nelson Hotel. The Top Table was piped in by Mike Inggs and Roger King in traditional Scottish attire – a great hit to say the least. Attendance at the banquet was 150 including several invited guests.

Tours

A flexible program of day tours was arranged by a designated travel agent – Prime Time Tours. Although advanced bookings were sparse, bookings during the symposium at the on-site reservations desk were brisk and delegates appreciated the personal service, advice and flexibility to arrange their activities at will rather than long in advance.

Out and About at IGARSS 2009

Some of the heaviest rainfall in Cape Town for many decades descended on the first few days of the conference: the cynical among us thought that this increased the session attendance

enormously! The last few days, however, were more typical Cape winter days.

Conclusions

The Local Organizing committee of IGARSS 2009 is very grateful to the GRSS for the opportunity to host IGARSS in Africa. We hope that this function has given the international community a valuable peek into Africa, to show that that there is more than meets the eye, and there is enormous potential for growth and development. We all had a great deal to learn and really appreciate the support we received from our international and university colleagues, and the huge number of subcontractors that worked so diligently to make it a success. We hope that everyone had a memorable visit, and hope that you will use your new contacts and experience to engage with us in Africa. Maybe we will see you all back in 2019? This time perhaps with the lions and elephants roaming around the lecture venues? Enkosi (“thank you”, in isiXhosa) and hamba kahle (“good bye”, in isiZulu) until next time. There are another 9 languages, but we must stop somewhere.



TOP REVIEWERS FROM TGARS AND GRSL RECOGNIZED

The Editorial Boards of the IEEE Transactions on Geoscience and Remote Sensing (TGARS) and IEEE Geoscience and Remote Sensing Letters (GRSL) have decided to resurrect a custom practiced in the past of annually recognizing their best anonymous peer reviewers. Recently, all Associate Editors of the respective editorial boards were invited to nominate candidates for this recognition based on the reviews they have managed over the past year. From that list of nominees, five finalists were selected to be recognized as the 2009 Best TGARS Reviewers and five finalists were selected to be recognized as the 2009 Best GRSL Reviewers. Congratulations!

*Christopher Ruf, Editor
IEEE Transactions on Geoscience and Remote Sensing*
*Paolo Gamba, Editor
IEEE Geoscience and Remote Sensing Letters*

2009 TGARS Best Reviewers



Steven A. Arcone
U.S. Army ERDC Cold Regions Research
and Engineering Laboratory
Signature Physics Branch
72 Lyme Road
Hanover, NH USA



Shane R. Cloude
Director, AEL Consultants, Scotland, UK
Honorary Fellow, School of Geosciences,
University of Edinburgh, Scotland, UK



Paco López-Dekker
Head of SAR Missions Group
Microwaves and Radar Institute,
Dept. Radar Concepts
German Aerospace Center (DLR)
82230 Wessling, GERMANY



Francesc Rocadenbosch
Remote Sensing Lab
Dep. of Signal Theory and Communications
Universitat Politècnica de Catalunya
Barcelona, SPAIN



Valery U. Zavorotny
Physicist, Earth System Research Laboratory
Physical Sciences Division
NOAA
Boulder, CO USA

2009 GRSL Best Reviewers



Bjoern Menze
Postdoctoral Fellow, Computer Vision Group,
Computer Science and Artificial Intelligence
Laboratory (CSAIL), Massachusetts Institute of
Technology, Cambridge, MA, USA and
INRIA Sophia-Antipolis, France



Hagit Messer-Yaron
Professor of Electrical Engineering, on leave
from Tel Aviv University and President, The
Open University of Israel, Israel



Antonio Plaza
Associate Professor
Department of Technology of Computers and
Communications
University of Extremadura, Caceres, Spain



Dr.-Ing. Jens Rosebrock
Senior Scientist, Fraunhofer Institute for High
Frequency Physics and Radar Techniques
FHR, Department of Radar for Space
Observation, Germany



Devis Tuia
Postdoctoral researcher, Swiss National
Foundation, Image Processing Laboratory,
University of València (Spain) and
Institute of Geomatics and Analysis of Risk,
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March issue, in an attempt to reduce the publication and mailing delays (especially overseas). We believe that this more dynamic Newsletter will be an excellent means to provide new, fresh and – eventually – animated contents, while the printed version will also be available for download, and you will keep receiving your printed version for your records.

Our next steps before the summer will focus on making the web site available from portable devices, and providing a simple web-based application to have technical presentations (remote lectures or even conference sessions).

Best wishes and enjoy it,

On line GRSS Newsletter ready for launch!

Dear GRSS members,
As you may have already noticed, in the past months we have been working on our new web site, which features a new design, better accessibility, and upgraded software platform. In this transition year, we are already proud to announce the launch of the on line version of the GRSS Newsletter with the

Adriano Camps
VP for Information Services and Web Master
Professor, Universitat Politècnica de Catalunya, Spain
March 15th, 2010

Publications

- Transactions
- Letters
- JSTARS
- Newsletter Editorial Info
- Newsletter**
- Community News
- Research Highlights
- Spotlight on Organizations
- Private Sector Newsletter
- Manuscript Central

Submit A Story

Share our great work, stories from the field, or an announcement with us. It's a great opportunity.

Full Name _____

Organization _____

Current Featured Topic

Soil Moisture and Ocean Salinity (SMOS) Mission Underway

The Soil Moisture and Ocean Salinity (SMOS) mission, also known as ESA's Water Mission, is the second one of the European Space Agency's Earth Explorer series. It was launched on November 2nd into a low Earth orbit at ~760 km altitude. The SMOS satellite was developed by ESA through cooperation between Centre National d'Études Spatiales (CNES) and the Centre para el Desenvolup Tecnològic Industrial (CDTI) [1]. The payload for SMOS...
[CONTINUE READING](#)

Organization Spotlight

WHISPERS 2009 The Workshop on Hyperspectral Image and Signal Processing – Evolution in Remote Sensing
[MORE SPOTLIGHT STORIES >](#)

Community News

2009 Certificates of Recognition
[MORE NEWS >](#)

Research Highlights

Study Calls for Improved Spectrum Management to Protect Earth Observations
[MORE HIGHLIGHTS >](#)



PRIVATE SECTOR NEWS

REMOTE SENSING NEWS FOR AND ABOUT THE PRIVATE SECTOR



William B. Gail
Director of Corporate Relations
IEEE GRSS
Microsoft Corporation
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Boulder, CO 80301
Phone: 303-513-5474
E-mail: bgail@microsoft.com

The Quarterly Newsletter of the IEEE Geoscience and Remote Sensing Society (GRSS) Private Sector Liaison Group, Bill Gail Editor. Visit the GRSS website or join a GRSS technical committee. Read past issue of the GRS Newsletter or contribute to it.

In This Issue – March 1, 2010 – Issue #13

1. PRIVATE SECTOR'S ROLE IN 2030 – brief editorial
2. IGARSS 2010 – Honolulu!
3. REMOTE SENSING HISTORY 1990–2010 – the evolving private sector role
4. APPLICATIONS IN 2030 – the ‘scale gap’
5. CENTRALIZED REMOTE SENSING IN 2030 – our struggling institutional systems
6. DISTRIBUTED REMOTE SENSING IN 2030 – augmenting the institutional systems
7. COMPANY NEWS – what companies are up to
8. EVENTS – upcoming conferences, meetings, and events
9. PROFESSIONAL ORGANIZATIONS – more information, by organization

1. Private Sector's Role In 2030 – Brief Editorial

What role will the private sector play in remote sensing two decades hence? Over the last twenty years, the private sector's traditional role as a contractor for government-led projects has evolved markedly. We have witnessed a rapid growth of purely private-sector offerings, from commercial satellites to internet mapping. How will this play out in the future, and what new trends are emerging? These are key questions for the private sector as well as for the government, business, and public communities that increasingly depend on remotely sensed information from the private sector for everyday functions. If the past is evidence, the private sector

will be a critical source of innovation, both in technology and business methods. Innovation will allow us to do more for less, making existing systems work more efficiently and introducing new ways to solve society's toughest problems. This edition of the newsletter is dedicated to exploring the private sector's future.

2. IGARSS 2010 In Honolulu

First, *IGARSS 2010* (the 30th anniversary of the conference) is approaching rapidly. The theme this year is ‘Remote Sensing: Global Vision for Local Action’. For those who have attended previously, you know that *IGARSS* is the premier remote sensing conference for bringing together government, academia, and industry. Historic attendance has been running about 1500. A variety of tutorial sessions are planned with interest to the private sector. A highlight for 2010 is the plenary session (keynoted by the White House Office of Science and Technology Policy) and associated year-long *participatory project focused on the emerging topic of ‘community remote sensing’* – this is of particular interest to the private sector with its potential for reaching large consumer groups (for more information on participating, contact Plenary Chair *Bill Gail*). For additional information on the conference and opportunities to exhibit, contact Bryan Stewart (*bstewart@cmsworldwide.com*). Future symposia include *Sendai (2011)*, *Munich (2012)*, and *Melbourne (2013)*.

3. Remote Sensing History 1990–2010 – The Evolving Private Sector Role

Two decades ago, remote sensing was largely a government-led activity. The private sector provided most aerial photogrammetry, but otherwise supported government programs mainly by building spacecraft and developing applications under government contracts. The first big change occurred with the emergence of commercial remote sensing satellites (such as *DigitalGlobe* and *GeoEye*) in the mid 1990's. A second big change was driven by consumer adoption of online mapping (such as *Mapquest*, *Google Maps*, *Yahoo Maps*, and *Bing Maps*), its appetite for high-resolution imagery through consumer-centric websites such as *Zillow*, and the emergence of personal navigation devices and location-based mobile apps such as *Loopt*. During this time, new technologies such as digital aerial cameras/lidars and a trend toward government outsourcing also propelled the private



sector. Along the way even traditional government-led space system contracts evolved toward a stronger private sector role (*NPOESS*) and then back again (the recent *breakup of NPOESS into the Joint Polar Satellite System*). Even the intelligence community has followed this route, with programs such as ClearView, NextView, and *EnhancedView*. Local government sources of remotely-sensed information have grown (e.g., traffic sensors, including private sector offerings such as *Traffic.com*), analytical/GIS tools (e.g., *ESRI*) are increasingly available to the casual user, non-government sources have emerged, and internet sharing mechanisms have proliferated (e.g., *WikiMapia*, *YouTube*, *Flickr*). The number of consumer-focused use cases for remote sensing now probably exceeds those focused on government-driven needs.

4. Applications In 2030 – The ‘Scale Gap’

Technology evolution will have an enormous impact on what we do by 2030, but demand-driven changes are probably even more important. The ability of governments and businesses to improve efficiency and grow productivity requires increasingly sophisticated information about the world they work in – implying greater use of remote sensing. Most interesting over the next twenty years will be demand for filling in what can be called the ‘scale gap’. No longer is moderate spatial resolution with regional coverage at low refresh rates sufficient. Tomorrow’s applications will require us to work at a wide range of scales – global coverage with low refresh, high-resolution hyper-local, and more. We are faced with a seemingly impossible challenge: understanding the Earth simultaneously at scales ranging from hyperfine to global. Moreover, the need to integrate across multiple scales is growing as well. Energy is a great example – accurate knowledge of both long-term climate and near-term weather are needed to optimize power generation, particularly in the rapidly growing renewable energy sector. Much of this will be driven by the needs of individuals and communities (both consumer and business) rather than centralized governments. It all illustrates remote sensing’s fundamental ‘scale gap’: society’s demand for information at diverse space and time scales is growing exponentially, while the ability of our traditional sources to supply the information grows linearly.

5. Centralized Remote Sensing In 2030 – Our Struggling Institutional Systems

The centralized satellite and aircraft observing systems we have historically used to understand the environment are struggling to address this ‘scale gap’. Such systems are increasingly limited by their cost and complexity; society’s growing need for knowledge that spans global to local is simply outpacing the ability of centralized observing systems to accomplish this. The needs are clear: climate, energy, food supplies, transportation, nuclear proliferation, and even basic

trade. But limited budgets constrain the deployment of new capabilities, so governments’ focus has shifted to making existing capabilities more efficient through international collaborations (such as *GEOSS*) and commercial partnerships (such as *EnhancedView*). The private sector has stepped up to help fill the scale gap with centralized remote sensing capabilities of its own. For example, *Google Maps Street View* and *Bing Maps Streetside* are creating rich databases of street-level imagery throughout the world. These trends will continue, but centralized systems alone cannot solve the ‘scale gap’.

6. Distributed Remote Sensing In 2030 – Augmenting The Institutional Systems

An emerging solution to the ‘scale gap’ is to call on the capabilities of community (citizens and non-professionals) to ‘augment’ centralized remote sensing systems. Centralized systems will remain critical to our knowledge base, but community remote sensing (CRS) may be the only means to bridge our environmental knowledge from global to local scales. Work similar to CRS has been done in the related areas of citizen science, citizen mapping, e-science, and more. But CRS itself is new, with new techniques and skills that differ from those of such related community-based disciplines. It is not just citizens taking pictures – the community can participate through calibration, validation, analysis, and many other means that greatly enhance our centralized systems. Applied in conjunction with centralized systems, CRS can be a powerful tool for addressing environmental issues and responding to events such as natural disasters. IGARSS 2010 builds on the CRS theme, highlighting projects and perspectives in this area – see the *CRS section of the IGARSS 2010 website* for more.

7. Company News - To Advertise At No Cost, Please Submit Short Requests To The Editor

VI Magazine promotes spatial design for a sustainable tomorrow. Our aim is to push the advancement of the geospatial toolset through our coverage, with greater analysis and visualization capabilities for increasingly better stewardship of our planet. Sign up for our free weekly VI Newsletter at <http://www.vectorlmedia.com>.

Donor2Deed has launched its award winning online geospatial fundraising tool with the Dublin Simon community (www.dubsimon.ie/d2d/). The tool is embedded into Dublin Simons website and uses geospatial technologies to connect donors to projects to address their two main questions: ‘Where does my money go?’ and ‘Have I made a difference?’ Donors can browse various Simon projects through the interactive medium of Google Maps/Earth. Staff and volunteers remotely upload project updates to Donor2Deed and can simultaneously push those updates to donors and stakeholders through email, the website (www.donor2deed.com and www.dubsimon.ie) or a range of social media networks including



FaceBook, Twitter and YouTube. “For us it means that we can connect with our donors through a range of internet mediums effortlessly and keep them updated regularly on the impact of their donation. In addition, donors can choose how and when they want to be communicated with in relation to their donations to Dublin Simon projects,” according to Glenda Wright.

8. Events

- 1–4 Mar Microrad, Washington, DC
- 3–5 Mar *Intl Lidar Mapping Forum*, Denver, CO
- 16–17 Mar *3D Forum Lindau*, Lindau, Germany
- 30–1 Mar *Where 2.0*, San Jose, CA
- 5–9 Apr *SPIE Defense, Security, and Sensing*, Orlando, FL
- 6–7 Apr *AMS Public-Private Partnership Forum*, Washington, DC
- 12–15 Apr *National Space Symposium*, Colorado Springs, CO
- 25–29 Apr *Geospatial Infrastructure Solutions*, Phoenix, AZ
- 26–30 Apr *ASPRS Annual Conference*, San Diego, CA
- 19–21 May *Intergeo East*, Istanbul, Turkey
- 12–14 Jun *Digital Earth Summit*, Nessebar, Bulgaria
- 14–16 Jun *WHISPERS (hyperspectral)*, Reykjavik, Iceland
- 25–30 Jul *IGARSS 2010*, Honolulu, HI
- 26–30 Jul *Geoweb*, Vancouver, CA
- 29–2 Jul *MAPPS Summer Conference*, Incline Village, NV
- 8–13 Aug *AGU Mtg of the Americas*, Foz do Iguacu, Brazil
- 31–2 Aug *AIAA Space*, Anaheim, CA
- 15–17 Sep *Intl Conf on Indoor Positioning & Nav*, Zurich, Switzerland
- 20–23 Sep *SPIE Remote Sensing*, Toulouse, France
- 27–1 Sep *AMS Conf on Satellite Meteorology*, Annapolis, MD
- 10–15 Oct *SPIE Asia Pacific Remote Sensing*, Incheon, Korea
- 25–29 Oct *African Assn Rem Sens Environ*, Addis Ababa, Ethiopia
- 31–3 Oct *Geological Society of America*, Denver, CO

9. Professional Organizations – Public, Private, Academia

- Institute of Electrical and Electronic Engineers (IEEE)*
- Aerospace Industries Association (AIA)*
- American Astronautical Society (AAS)*
- American Geophysical Union (AGU)*
- American Institute of Aeronautics and Astronautics (AIAA)*
- American Meteorological Society (AMS)*
- American Society for Photogrammetry and Remote Sensing (ASPRS)*
- Geological Society of America (GSA)*
- Geospatial Information and Technology Association (GITA)*
- International Society for Photogrammetry and Remote Sensing (ISPRS)*
- International Union of Radio Science (URSI)*
- The International Society for Optical Engineering (SPIE)*
- Management Association for Private Photogrammetric Surveyors (MAPPS)*
- Space Foundation*
- United States Geospatial Intelligence Foundation (USGIF)*
- Urban and Regional Information Systems Association (URISA)*
- Women in Aerospace (WIA)*

The IEEE Geoscience and Remote Sensing Society (GRSS) Private Sector Liaison Group was formed in 2002 to increase collaboration between the private sector, academia, and government in the remote sensing field. The readership of this newsletter now exceeds 2000 people from companies associated with remote sensing, as well as government agencies, international space agencies, professional organizations, non-government organizations, OMB, and Congressional staff. We in the private sector want to help keep our colleagues informed of the activities and capabilities of the private sector – and the role that GRSS plays in supporting and promoting these activities. Should you need further information about the Private Sector Group, require that contact information for you or your organization be updated, or request to be removed from the list, please contact Bill Gail (bgail@microsoft.com).



AMENDMENTS TO THE GRS-S BYLAWS AND CONSTITUTION

The changes to the GRS-S Bylaws and Constitution detailed below were approved by the Administrative Committee (AdCom) on 31st December, 2009 by electronic voting. These changes will go into effect within 30 days of publication unless ten percent of Society members object. Copies of the GRS-S Constitution and Bylaws documents are available on the GRS-S website. In addition, GRS-S AdCom has approved in the last November 2009 meeting the implementation of a Vice-President of Publications as well as other changes in its organizational structure. These changes will be published – after approval by the GRS-S AdCom – in the GRS-S Newsletter.

Changes to the GRS-S Bylaws and Constitution for ensuring consistency with the organizational structure of the Administrative Committee (inclusions are in blue color, deletions are with the strikethrough in red, and comments are in brackets and italic style):

GRS-S BYLAWS

II. Elections and Officer Duties

3. Secretary (from page 5 of the GRS-S Bylaws)

The Executive Vice-President ~~Elect~~ upon receiving notice of his/her election as President, shall submit to the members of the Administrative Committee the name of a proposed Secretary for appointment. If a majority of the members...

7. Vice-President of Professional Activities (from page 7 of the GRS-S Bylaws)

The Vice-President of Professional Activities is an elected member of AdCom appointed by the President. Reporting to the Vice-President of Professional Activities are the Newsletter Editor, the Chair of the Awards Committee, the Chapters and Speakers Committee Chair, the Membership Committee Chair, the Distinguished Lecturers Chair, the Chair of the Fellows Evaluation Committee, the Chair of the Fellows and Senior Members Search Committee, ~~Professional Activities Committee for Engineers (PACE)~~; the Book Series Editor and all Regional Liaison Officers. The Vice-President of Professional Activities will provide regular reports to the AdCom on the satisfaction of the members with respect to the AdCom meeting their needs.

8. Vice-President of Operations and Finance (from page 7 of the GRS-S Bylaws)

The Vice-President of Operations and Finance is an elected member of AdCom appointed by the President. Reporting to

the Vice-President of Operations and Finance are the Editor of the Transactions, the Geoscience and Remote Sensing Letters (GRSL), and the Journal of Selected Topics in Applied Earth Observation and Remote Sensing (JSTARS), the Chair of the Nominations Committee, ~~the Chair of the Publicity and Public Relations Committee~~, and the Director of Finance. ~~The Publicity and Public Relations Committee plans, prepares, and implements publicity and public relations for the Society.~~ The Vice-President of Operations and Finance will prepare draft budgets for review and approval by the President and the AdCom. These budgets will be submitted prior to TAB's approval of budgets and page rates. The Vice-President of Operations and Finance will also provide regular reports on the investments by the Society and its reserves. The Vice-President of Operations and Finance will provide regular reports to the AdCom on the Transactions, [GRS Letters](#) and [J-STARS](#). The President may assign other duties.

10. Vice-President of Technical Activities (from page 8 of the GRS-S Bylaws)

The Vice-President of Technical Activities is an elected member of AdCom appointed by the President. Reporting to the Vice-President of Technical Activities are the [Chairmen Chairs and Co-Chairs](#) of ~~various~~ the Society's Technical Committees, ~~the Society's representative to the IEEE United States Activities Board (IEEE-USAB)~~, the Society's ~~representative~~ liaisons to the following IEEE-USA Government Relations Policy Committees: [Committee on Communications Policy](#), [Committee on Transportation and Aerospace Policy](#), [Energy Policy Committee](#) and ~~Aerospace Research and Development~~ [Policy Committee](#), the Society's representative to the [IEEE Standards Committee](#), ~~and~~ any applicable Standards Development Committee, ~~and to the International Organization for Standardization, Technical Committee 211 (ISO TC-211)~~ ~~New Technology Directions Committee~~. The Vice-President of Technical Activities will provide regular reports to the AdCom on these committees, including their accomplishments, their membership, and their recommendations to the AdCom. The President may assign other duties.

11. Vice-President of Information [ServicesResources](#) (from page 8 of the GRS-S Bylaws)

The Vice-President of Information [ServicesResources](#) is an elected member of AdCom appointed by the President. Reporting to the Vice-President of Information [ServicesResources](#) are the society representative for the [IEEE Professional Activities Committee for Engineers \(PACE\)](#), the Director of Corporate Relations, the Education Director, the Web Editor, the Newsletter Editor and the Chair



of the Publicity and Public Relations Committee. [The Publicity and Public Relations Committee plans, prepares, and implements publicity and public relations for the Society.](#) The Vice-President of Information [ServicesResources](#) will provide regular reports to AdCom on website development and initiatives implemented to support member services and designed to increase society visibility and public outreach. The Vice-President of Information [ServicesResources](#) will also provide recommendations to AdCom on how the Society can more effectively engage with industry and contribute to educational programs.

13 Director of Corporate Relations (from page 9 of the GRS-S Bylaws)

The Director of Corporate Relations, if not an elected Member of the AdCom, shall be an Ex-Officio Member of the AdCom without voting privileges. He/She shall be nominated by the Vice-President of Information [ServicesResources](#), appointed by the President, and ratified by the Administrative Committee. He/She shall normally serve a three-year term, which may be renewed at the discretion of the AdCom. In the event that the Director of Corporate Relations cannot fulfill his/her duties, the Vice-President of Information [ServicesResources](#) shall appoint an Acting Director of Corporate Relations until a replacement is found. The Director of Corporate Relations will report to the Vice-President of Information [ServicesResources](#). The Director of Corporate Relations is responsible for identifying and pursuing...

14. Education Director (from page 9 of the GRS-S Bylaws)

The Education Director, if not an Elected Member of the AdCom, shall be an Ex-Officio member of AdCom without vote, is a Society member appointed by the President and reporting to the Vice-President of Information [ServicesResources](#). [He/She shall normally serve a three-year term, which may be renewed at the discretion of the President.](#) ~~The Director shall be appointed annually and can be reappointed for a three year term.~~ The Education Director is responsible for overseeing the creation...

17. Newsletter Editor (from page 10 of the GRS-S Bylaws)

The Newsletter Editor shall be an Ex-Officio member without vote, of the Administrative Committee, unless the editor is an Elected Member and shall be nominated by the Vice-President of Information [ServicesResources](#), appointed by the President and ratified by the Administrative Committee. He/She shall normally serve a three year term, which may be renewed at the discretion of the AdCom. In the event that the Editor cannot fulfill his/her duties, the Vice-President of Information [ServicesResources](#) shall appoint an Acting Editor until a replacement is found. The Editor shall appoint or remove technical area Associate Editors as required, subject to ratification by the Administrative Committee. The Newsletter

Editor must be a member of the Society. The Editor is expected to attend AdCom meetings. The Editor will provide regular reports to the Vice-President of Information [ServicesResources](#) on the pages published, delays incurred, and letters of praise or complaints received.

22. Senior Council (from page 12 of the GRS-S Bylaws)

The [Senior Council](#) serves the AdCom, GRS Society and its membership by providing corporate memory, addressing controversial issues with lack of bias, and organizes and executes open discussion on strategic opportunities. The [Senior Council](#) reports to the AdCom through the President. The members of the senior council shall be nominated and appointed by the President and ratified by the Administrative Committee during the AdCom Fall meeting. The [Senior Council](#) shall consist of up to 6 past presidents, each with a term of **35** years, which may be renewed at the discretion of the AdCom. The past presidents shall not be members of the senior council during their 3-year terms as member-at-large of the AdCom.

III. Meetings

1. AdCom Meetings (from page 13 of the GRS-S Bylaws)

The Administrative Committee shall hold at least two face-to-face meetings a year, one an Annual Meeting, normally held in the Fall to conduct the Administrative Committee elections. Meetings of the Administrative Committee may be called by the President of the Society at his/her own discretion, or upon request by two other members of the Committee. Between these meetings, the President may call meetings of the Executive Committee, consisting of the President, the Executive Vice-President, the Secretary, the Vice-President of Professional Activities, the Vice-President of Operations and Finance, the Vice-President of Meetings and Symposia, and the Vice-President of Technical Activities and the Vice-President of Information [ServicesResources](#). The Executive Committee may conduct business as if the full AdCom were meeting, with the exception of elections and approval of the Society's budget. Any AdCom member may attend a meeting of the Executive Committee.

3. Awards Committee

F. Student Prize Paper Award (from page 17 of the GRS-S Bylaws)

A certificate and honorarium may be presented to a student who is the first author of an oral paper and who presents the said paper at the current year's IGARSS Symposium in the student paper competition, if the paper is judged to be among the best three of all student papers entering the competition. The prizes that will be awarded are the First, Second, and Third Prizes. [The First Student Prize Paper Award is the Mikio Takagi Student Prize.](#)



G. Education Award (from page 17 of the GRS-S Bylaws)

...
The Awards Committee shall review all nominations and select a candidate to be recommended for each of the awards to the Administrative Committee. The date shall be the year of presentation. The award recipients shall be featured in the Society Transactions and Newsletter.

10. Conference Advisory Coordination Committee (from page 19 of the GRS-S Bylaws)

This committee shall report to the Vice-President of Meetings and Symposia and have the following duties...

V. Definitions

2. The Executive Committee (from page 20 of the GRS-S Bylaws)

The Executive Committee consists of 8 of the AdCom members. The Executive Committee includes: the President, the Executive Vice-President, the Secretary, the Vice-President of Professional Activities, the Vice-President of Operations and Finance, the Vice-President of Meetings and Symposia, the Vice-President of Technical Activities and the Vice-President of Information ~~Services~~Resources.

VI. Amendments

1. Amendment Procedure (from page 20 of the GRS-S Bylaws)

Amendments to these Bylaws may be made by a two-thirds vote of the Administrative Committee in meeting assembled, provided that notice of the proposed change has been sent to each member of the Administrative Committee at least a week prior to such a meeting; or a Bylaw, or amendment may be adopted by a two-thirds mail vote of the members of the Administrative Committee provided a 30-day period is provided for such responses. In either event, the proposed Bylaw or amendment shall be published to the Society Transactions or Newsletter. No Bylaw, or amendment, shall take effect until it has been published and has been approved by mailed to the Technical Activities Board (TAB) Secretary of the IEEE., and she/he has obtained approval of the General Manager

GRS-S CONSTITUTION

V. Financial Support

4. Other Means of Revenue (from page 4 of the GRS-S Constitution)

The Society may raise revenues by other means, such as advertising, shows, requests for contributions, and charges for

sending out notices to non-Society members, provided such means are consistent with applicable IEEE rules and regulations, and do not encroach on revenue fields of prior established Societies or Sections. Any new revenue means not explicitly covered by IEEE rules and regulations must be approved by the Executive Director General Manager before being adopted by the Society.

VI. Management and Offices

3. Election of AdCom Officers and Appointments (from page 5 of the GRS-S Constitution)

The Administrative Committee shall elect one of its members as President and another as Executive Vice-President, each for a term of one year. The President and/or Executive Vice-President may be re-elected to a second one-year term, but the President may not serve more than two years in succession. The newly elected President shall appoint for a one-year term the following officers who must be members of the Administrative Committee: Secretary, Vice-President of Professional Activities, Vice-President of Operations and Finance, Vice-President of Meetings and Symposia, Vice-President of Technical Activities and the Vice President Information Resources Services. The newly elected President shall also appoint for one-year terms Directors as provided in the Bylaws. The elective officers shall be of at least Member rank.

4. Executive Committee (from page 5 of the GRS-S Constitution)

The Executive Committee consists of 8 of the AdCom members. The Executive Committee includes: the President, the Executive Vice-President, the Secretary, the Vice-President for Professional Activities, the Vice-President for Operations and Finance, the Vice-President for Meetings and Symposia, the Vice-President of Technical Activities, and the Vice President Information ServicesResources.

5. President's and Executive Vice-President's Powers and Duties (from pages 5-6 of the GRS-S Constitution)

The President, under direction of the Administrative Committee, shall have general supervision of the affairs of the Society. He/She shall prepare the agenda and preside at meetings of the Administrative Committee, at general meetings of the Society, and at the Annual Meeting of the Society, and have such other powers and perform such other duties as may be provided in the Bylaws, or as may be delegated to him/her by vote of the Administrative Committee. In his/her absence or incapacity, his/her duties shall be performed by the Executive Vice-President. The President will oversee inter-societal committees and international liaison. The Executive Vice-President will have report to him/her the Chairs of Committees specified in the Bylaws. The President, as soon as expedient after election and installation, shall appoint the



other Vice-Presidents. ~~Other Committees may be authorized by vote of the Administrative Committee and shall be appointed by the President. Members appointed shall serve until their successors are appointed or the Committee is dissolved by the Society Administrative Committee.~~ (this text was already included under § VII.8 – Appointment of Committees)

VIII. Meetings

2. Bylaws

(from pages 7-8 of the GRS-S Constitution)

Bylaws to this Constitution may be adopted or amended by two-thirds vote of the Administrative Committee in the meeting assembled, provided that notice of the proposed change has been sent to each member of the Administrative Committee at least a week prior to such meeting, or a Bylaw or amendment may be adopted by two-thirds vote of the members of the Administrative Committee by written communication from the Chairman to each member and vote received by such means. The proposed Bylaws or amendment shall be published in the Society Transactions or Newsletter. No Bylaw or amendment shall take effect until it has been published and it has been approved by the Technical Activities Board of the IEEE. ~~mailed to the Executive Secretary of the IEEE.~~

1. Amendments to Constitution

(from page 8 of the GRS-S Constitution)

Amendments to this Constitution may be initiated by petition submitted by twenty-five Society members, or by action of the Administrative Committee, such petition being submitted to the Technical Activities Board ~~and to the Executive Committee~~ of the IEEE for approval. After

such approval, the proposed amendment shall be publicized in the Society Transactions or Newsletter, with notice that it goes into effect unless ten percent of the Society members object within 30 days of publication. If such objections are received, a copy of the proposed amendment shall be mailed for return of the ballot and the ballots shall carry a statement of the time-limit for their return to the IEEE office. Approval of the amendment by at least two-thirds of those voting shall be necessary for its enactment.

2. Amendments to Bylaws

(from page 8 of the GRS-S Constitution)

Suitable Bylaws to this Constitution may be adopted or amended by two-thirds vote of the Administrative Committee in meeting assembled provided that notice of the proposed change has been sent to each member of the Administrative Committee at least a week prior to such meeting, or a Bylaw or amendment may be adopted by two-thirds vote of the members of the Administrative Committee by written communication from the President to each member and vote received by such means. The proposed Bylaw or amendment shall be published in the Society Transactions or Newsletter. Approval of the amendment by at least two-thirds of those voting shall be necessary for its enactment. No Bylaw or amendment shall take effect until it has been published and has been approved by the Technical Activities Board (TAB) ~~mailed to the Executive Secretary~~ of the IEEE.

*Alberto Moreira
President
February 15, 2010*

(President's Message continued from page 3)

this symposium to become the best IGARSS that we have ever had!

During the past few months two new GRS-S Chapters have been formed, one in Brazil (Student Branch Chapter) and the other in South Africa (Joint Chapter). Other chapter formation initiatives are in process in the diverse locations of China, India, Turkey, Australia and Denver. GRS-S has now a total of 32 chapters, including two student chapters. The chapters provide an excellent opportunity to network with colleagues and experts in the local member community. Please check our web site for the GRS-S Chapter point of contact nearest to your home city.

One of the goals during my term as President of the IEEE Geoscience and Remote Sensing Society (GRS-S) is to achieve a high level of involvement of our members and of the international remote sensing community in our Society. The GRS

Society is one of 38 technical societies that are part of the world's largest professional society, and that is the IEEE. The vision of the GRS Society is to be the leading organization in the science, engineering, application and education of remote sensing. We are a transnational society due to the global nature of our activities and a premier organization in the field of remote sensing. The GRS Society is third fastest-growing society of IEEE. You can make a larger impact on Remote Sensing through the GRS Society. With the Earth Observing System (EOS) satellites in orbit, the upcoming Global Monitoring for Environmental and Security (GMES) satellites, the National Polar Orbiting Operational Environmental Satellite System (NPOESS), the EOS follow-on program (as outlined by the U.S. Earth Science Decadal Survey), Global Earth Observation System of Systems (GEOSS) initiative, etc., remote



sensing plays an increasingly important role in solutions to environmental problems, the study of global climate change and the monitoring of natural disasters. We are seeing great strides in remote sensing instrumentation, data processing, and applications. The Society strives to address remote sensing techniques, applications and policies, as well as new research directions. By being a member of GRS-S, you can be a part of this important voice. You can make a larger impact on these issues. In the following, I enumerate some of the advantages and benefits of being a member of the IEEE GRS-S.

- 1) You can readily access our three premier journals: the IEEE Transactions on Geoscience and Remote Sensing (TGRS), IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (J-STARS) and the IEEE Geoscience and Remote Sensing Letters (GRSL). Our Society's archival publications represent the forefront of remote sensing science, technology and applications. The Transactions are among the premier journals in IEEE as well as among all remote sensing journals in terms of citation index and impact factor. Members can access the latest issues either on-line or via hard copies in the mail. J-STARS on-line access will become a part of GRS-S Membership in 2011.
- 2) You can participate in our five Technical Committees: Instrumentation and Future Technologies (IFT-TC), Data Archiving and Distribution (DAD-TC), Data Fusion (DF-TC), Frequency Allocations in Remote Sensing (FARS) and International Spaceborne Imaging Spectroscopy (ISIS). The technical committees work together to review the state of the art of remote sensing in these research areas. The Technical Committees make important impacts on the future directions of remote sensing science and technology. You can be a member and participate in this process.
- 3) You can attend IGARSS, our premier conference, at a reduced rate and also participate in the planning of IGARSS. Our annual international symposium, IGARSS, reports on the recent advances in remote sensing. IGARSS attendance continues to increase. More than 1700 people attended IGARSS 2007 in Barcelona and IGARSS 2008 in Boston. Upcoming IGARSS will be held in Hawaii (2010), Sendai (2011), Munich (2012) and Melbourne (2013). If you are an expert in the technical topics of Applications of Remote Sensing (Land, Ocean, Atmosphere and Cryosphere), Sensors, Missions and Programs, Instrumentation and Techniques, Modeling and Processing, Electromagnetic and Radiation transfer, Data Processing and Algorithms, Image Analysis Techniques as well as Remote Sensing Education and Policy, you may serve as volunteer on the Technical Program Committee. You can also volunteer to organize special sessions. We not only organize IGARSS every year, but we also support and co-sponsor a large number of specialty symposia.
- 4) You can utilize the resources provided by the Society, such as our quarterly Newsletter, educational programs, industrial relations newsletter and current state-of-the-art information of the IEEE GRS-S (www.grss-ieee.org). The Society expends a lot of effort in remote sensing education initiatives, development and collection of educational resources for K-12, undergraduate / graduate education as well as continuing education for professionals. Members can access these resources. We are currently strengthening our industrial relations program. As a member, you can connect to our industrial partners via this initiative.
- 5) Other benefits to IEEE GRS-S Members include a subscription to IEEE Spectrum magazine, access to the IEEE Xplore data base, IEEE e-mail alias, networking with others in the local member community (Sections and Chapters), career and employment resources, etc.
- 6) You can also invite speakers of our distinguished speakers program, submit proposals to our book series, join the GOLD (Graduates of the Last Decade) program and GOLD conferences, as well as take advantage of other educational services such as tutorials and on-line lectures.
- 7) GRS-S recognizes outstanding achievements of its members with a number of awards and recognitions: Distinguished Achievement Award, Outstanding Service Award, Education Award, Transactions Prize Paper Award, Letters Prize Paper Award, J-STARS Prize Paper Award (in implementation), Symposium Prize Paper Award, Symposium Interactive Prize Paper Award, three Student Prize Paper Awards (First Place is the Mikio Takagi Student Prize), Chapter Excellence Award and the GRS-S GOLD Early Career Award (in the approval process). In addition, GRS-S provides financial support for the IEEE Kiyo Tomiyasu Field Award and the IEEE Electromagnetics Field Award.
- 8) We have established a number of cooperative relationships with other international organizations in order to provide a better service to our members. GRS-S has become a member of the Joint Board of the Geospatial Information Societies (JB-GIS) in 2009 and is actively involved in their activities. In addition, GRS-S has signed an MoU with the African Association of Remote Sensing and Environment (AARSE) and has started several activities in South Africa (including educational activities). Several other collaborations have been formed in terms of technical co-sponsorship of conferences and in terms of our five technical committees' activities (e.g. technical committee workshop hosted by the European Space Agency, ESA, in 2009).
- 9) We are working on globalization initiatives to increase GRS-S Membership in South America, South Africa and in the Asia-Pacific region, student travel support for attending IGARSS as well as a minority program.



Last year was the third consecutive year that our society has maintained a membership growth above 6% on average (with peaks up to 11%). This has been achieved by intensive membership promotion activities, formation of several new chapters in the past few years, regional liaisons and a globalization task force.

- 10) GRS-S recognizes and supports new technologies and applications by means of its five technical committees, organization of special sessions in conferences, technical co-sponsorship and/or organization of specialty symposia, organization of TGRS Special Issues dedicated to new technologies and J-STARS Special Issues devoted to new applications, participation in global initiatives (GEOSS) and through new initiatives.

If you have suggestions concerning the GRS Society, please do not hesitate to let me know. We are looking forward to increase our member services and thereby to increase the value of GRS-S Membership.

Finally, I would like to congratulate our six new IEEE Fellow members (Class of 2010): Lorenzo Bruzzone, Chang Chein-I, Diane Evans, Soren Madsen, Motoyuki Sato, and Valery Zavorotny. In addition, two other GRS-S members were also elected to IEEE Fellow through a nomination submitted by another IEEE society: Norman Chapman (Oceanic Engineering Society) and David Daniels (Aerospace and Electronic Systems Society). Congratulations to all new IEEE Fellow members for this most distinguished recognition!

Together we are looking forward to an exciting year 2010 with many challenges and achievements in Geoscience and Remote Sensing research and applications!

Sincerely

Alberto Moreira

President

IEEE GRS-S

alberto.moreira@dlr.de

IEEE Geoscience and Remote Sensing South Italy Chapter

Italian Naval Academy

2010 IEEE GOLD REMOTE SENSING CONFERENCE

29, 30 April 2010
Naval Academy, Livorno, Italy

The fourth biannual IEEE GOLD remote sensing conference will be held during the 27th "Trofeo Accademia Navale e Città di Livorno". It offers a great opportunity to young graduates and professionals to be on stage showing their progresses in the field. The GOLD (Graduate Of the Last Decade) are invited to present their work in all aspects of remote sensing. Presenters must have graduated before 2000, be first authors and present their papers at the conference. No admission charge is required whereas IEEE GRS Student Membership is requested.

The deadline for abstracts (1 page A4 format) is on March, 15 2010 by e-mail at ieeegold.conf@gmail.com. Final papers (3 pages A4 two columns IGARSS format) must be submitted at the conference. See also <http://ieee.uniparthenope.it/>

<http://www.trofeoaccademianavale.eu/>



AARSE

AFRICAN ASSOCIATION OF REMOTE SENSING OF THE ENVIRONMENT

THE AFRICAN ASSOCIATION OF REMOTE SENSING OF THE ENVIRONMENT (AARSE)¹

Call for Papers

<http://www.aarse2010.org/>

8th AARSE CONFERENCE - UN-ECA, Addis Ababa, Ethiopia

25-29 October, 2010

On:

“Earth Observation for Africa’s Development Agenda”

Bringing the Geoinformation community under one umbrella

“Addis 2010” is one of the biennial conferences organised under the auspices of the African Association of Remote Sensing of the Environment (AARSE). The latter was formed in 1992, and is a non-Governmental organization (NGO) incorporated under Section 21 of the South African Companies ACT, 1973 (Act 61 of 1973), with the primary objective of increasing the awareness of African governments and their institutions, the private sector and the society at large, about the empowering and enhancing benefits of developing, applying and utilizing responsibly, the products and services of Space and Geo-information Technologies. It is a registered Regional Member of the International Society for Photogrammetry and Remote Sensing (ISPRS), IEEE-GRSS and an organizational member of GEO. AARSE is also the umbrella organization for all activities in remote sensing and GIS in Africa.

The AARSE Conference is the largest gathering of remote sensing and GIS experts and users in Africa organized by Africans. The conference is a premier forum in Africa which brings together scientists, practitioners, educators, developers and vendors and policy and decision makers to discuss advancements (latest developments), applications, capacity building and promotion of geo-information technologies in sustainable development of Africa. It is a forum in which participants learn and exchange ideas on the latest advancements in the technologies and their applications in different fields.

AARSE’s past Conferences:

- 1996 – Harare, Zimbabwe
- 1998 – Abidjan, Côte d’Ivoire
- 2000 – Cape Town, South Africa
- 2002 – Abuja, Nigeria
- 2004 – Nairobi, Kenya
- 2006 – Cairo, Egypt
- 2008 – Accra, Ghana

AARSE is also a major co-organizer of all biennial AFRICAGIS Conferences since 1995. In consistent with its aims, the Association also co-organised other remote sensing activities in Africa and abroad some of which are in cooperation with:

- ISPRS in 1999 in Cotonou, Benin
- ISPRS in 2002 in Dar-es Salaam, Tanzania
- GEOS Workshop with ISPRS, IEEE, OGC and the University of Johannesburg in South Africa and Burkina Faso in 2005 and 2007
- AGIT Conference in 2006 at University of Salzburg, Austria
- UNESCO-African Union-AARSE in 2007, UNESCO Headquarter, Paris, France
- IEEE GRSS in IGARSS2009, Cape Town, South Africa

The average number of participants in AARSE Conferences is 500

For information concerning AARSE and conference, please visit our web site:

<http://www.itc.nl/aarse/> <http://www.aarse2010.org/>



Call for Papers
IEEE Signal Processing Society
IEEE Journal of Selected Topics in Signal Processing

Special Issue on Advances in Remote Sensing Image Processing

Our planet is continuously observed by airborne and satellite sensors that acquire tons of data to be processed and analyzed daily. Different problems are posed from a signal processing and machine learning points of view: the acquired signals have to be processed in a timely manner, transmitted, further corrected from different distortions, eventually compressed, and ultimately analyzed to extract valuable information from them with, for instance, advanced classification or regression methods. Recently, new learning paradigms have been introduced and latest advances in signal and image processing tools have been incorporated to the current toolbox of remote sensing data users.

The goal of this special issue is to summarize the recent advances in the remote sensing signal/image processing field in a comprehensive manner. The topics of interest include, but are not limited to:

1. Image coding
2. Image classification and target detection
3. Image denoising and restoration
4. Model inversion and function approximation of bio-geo-physical variables
5. Source separation and signal unmixing
6. Feature selection/extraction
7. Manifold characterization and data visualization
8. Data fusion, pansharpener, downscaling

Prospective authors should visit <http://www.signalprocessingsociety.org/publications/periodicals/jstsp/> for information on paper submission. Manuscripts should be submitted using the Manuscript Central system at <http://mc.manuscriptcentral.com/jstsp-ieee>. Manuscripts will be peer reviewed according to the standard IEEE process.

Manuscript submission due: **Apr 20, 2010**
First review completed: Jul 15, 2010
Revised manuscript due: Aug 31, 2010
Second review completed: Oct 30, 2010
Final manuscript due: Nov 30, 2010

Lead guest editor:

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CIRES - Boulder, CO (USA)



URSI Commission F Microwave Signatures 2010

Microwave Specialist Symposium on Microwave Remote Sensing of the Earth, Oceans, and Atmosphere

&

VI CeTeM-AIT Italian National Workshop on Microwave Remote Sensing

Florence, Italy
4-8 October 2010

organised by



Centro di Telerilevamento a Microonde



Istituto di Fisica Applicata (IFAC-CNR)

and



Associazione Italiana di Telerilevamento

The microwave community is invited to participate in this meeting and present new research results and instrument designs in the field of microwave remote sensing of land, ocean and atmosphere. Suggested topics are listed below but consideration will be given to papers on other related subjects.

- Theory and physical principles and models of emission, scattering and absorption from the Earth's atmosphere and surface
- Inversion of microwave data and retrieval of atmospheric and surface parameters
- Microwave observations of the atmosphere (temperature, water vapor, clouds, rain, pollutants) and the surface (soil and vegetation, ocean, ice, snow)
- Polarimetry and applications
- SAR techniques and applications
- Observation from advanced satellite systems
- Potential new applications for climate and global change
- New technological development (receivers, antennas, calibration)
- Anticipated missions (field campaigns and spacecraft)

Meeting venue:

Grand Hotel Baglioni

www.hotelbaglioniflorence.com

deadline for abstracts

April 30, 2010

For further information please contact:

info@ursif2010.org



Details for abstract submission will be available soon on
www.ursif2010.org



Call for papers

IEEE Transactions on Geoscience and Remote Sensing *Special Issue on Spectral Unmixing of Remotely Sensed Data*

Submission deadline: 30 September 2010

A Special Issue of the *IEEE Transactions on Geoscience and Remote Sensing* on the topic of *Spectral Unmixing of Remotely Sensed Data* has been recently approved by the *IEEE Geoscience and Remote Sensing Society* (GRSS). Spectral unmixing has been an alluring exploitation goal since the earliest days of remote sensing. Due to limited spatial resolution, the spectral signatures collected in natural environments are invariably a mixture of the signatures of the various materials found within the spatial extent of the ground instantaneous field view of the imaging instrument. In recent years, the availability of instruments with a number of spectral bands that exceeds the number of spectral mixture components has fostered active research efforts in this area.

This *Special Issue on Spectral Unmixing of Remotely Sensed Data* is intended to present the state-of-the-art and the most recent developments in spectral unmixing from a remote sensing perspective. The *Special Issue* is expected to bring together experts from different institutions to provide a sample of latest-generation techniques in this active research area. The focus will be on recent developments in techniques and applications of spectral unmixing for data sets collected by hyperspectral imagers, which have substantially increased their spectral resolution (imagers with hundreds of narrow spectral channels are currently available, and instruments with thousands of spectral bands are under development), thus producing a nearly-continual stream of high-dimensional image data which demands effective techniques for data interpretation with sub-pixel precision.

Although analysis of hyperspectral data will be an important component of the *Special Issue*, contributions on spectral unmixing for other types of remotely sensed data are also welcome. Particular attention will be given to the possibility of applying spectral unmixing concepts to scenes with moderate spectral resolution (multispectral), and to the use of spectral unmixing for data compression purposes. High-quality contributions are solicited with emphasis placed on (but not limited to) the following topic areas:

- Linear and nonlinear mixture models for analysis of remotely sensed data
- Incorporation of spectral similarity measures in spectral mixture modeling
- Data dimensionality issues for spectral mixture analysis
- Automatic and semi-automatic endmember extraction in remotely sensed data
- Supervised endmember extraction and pure class modeling
- Adaptive endmember selection and multiple endmember spectral mixture analysis
- Unconstrained versus constrained fractional abundance estimation in remotely sensed data
- Blind source separation and its relation with spectral unmixing of remotely sensed data
- Incorporation of sparsity and spatial information in spectral unmixing of remotely sensed data
- Quantitative assessment of spectral unmixing
- Statistical validation of spectral mixture analysis models
- Extension of spectral unmixing to multispectral scenes
- Applications of spectral mixture analysis of remotely sensed data
- Analysis of intimate mixtures in remotely sensed data: soil, vegetation and other application-specific studies
- Spectral unmixing in planetary exploration
- High performance computing implementations of spectral unmixing techniques

Inquiries about the *Special Issue* may be directed to the Guest Editors listed below. Papers can be submitted using the manuscript central web link: <http://mc.manuscriptcentral.com/tgrs> and selecting *Spectral Unmixing Special Issue* from the 'Manuscript type' pull-down menu.

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Geoinformatics2010:
The 18th International Conference on Geoinformatics
June 18–20, 2010
 Beijing, China

Organized by: Peking University,
 Capital Normal University, CPGIS



Sponsored by: IEEE GRSS, GSC



Geoinformatics 2010 Co-Chairs:

Liu Yu, Peking University
 Aijun Chen, George Mason University

Abstract submission:

Before/on January 30, 2010
 Please use conference website to submit

Register:

Before/on April 20, 2010

Registration fees:

Please refer to following conference website

Web Address:

<http://cn.geoinformatics2010.org/>

**GPR2010 - XIII International Conference
 on Ground Penetrating Radar**

June 21–25 2010, Lecce (Italy)

www.ibam.cnr.it/gpr2010



100 words abstract : before October 15, 2009
 Full paper : before January 15, 2010
 Notification of acceptance: February 28, 2010

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General Chair: Raffaele Persico, IBAM-CNR

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**Young Scientist Award to the best paper presented by a
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The Conference proceedings will be included in the
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**6th IAPR Workshop on
 Pattern Recognition in Remote Sensing
 (PRRS 2010)**

August 22, 2010

Istanbul, Turkey



Chairs:

S. Aksoy, Bilkent University (Turkey)
 N. H. Younan, Mississippi State University (USA)
 W. Förstner, University of Bonn (Germany)

Important dates:

Paper submission: April 5, 2010 (4-page paper;
 peer-review)
 Notification of acceptance: May 7, 2010
 Early registration deadline: May 14, 2010
 Final papers due: June 14, 2010

Host: IAPR Technical Committee 7 – Remote Sensing

In conjunction with: ICPR 2010

Co-sponsors: IAPR and IEEE GRSS

For workshop and submission details:

<http://www.iapr-tc7.org/prrs10/>

**32nd Review of Atmospheric
 Transmission Models Conference**

14-15 June 2010

National Heritage Museum • Lexington, Massachusetts

CALL FOR PAPERS

The conference will provide scientists, engineers, and technical managers from academia, industry, government, and the military with a forum to present their research and exchange ideas on all aspects of atmospheric science as it effects radiative transfer and the retrieval of atmospheric and surface properties. Papers on phenomenologies associated with diverse aspects of earth-atmospheric radiative transfer, including cloud and aerosol effects, surface characterization, solar illumination, littoral interfaces, and polarization, are especially welcome. This will be an unclassified meeting featuring renowned keynote speakers and technical program sessions. For program consideration, abstracts should be submitted to ieeegrss@ieee.org by the indicated deadline.

Abstract Deadline: 01 May 2010

For more information, visit <http://www.grss-ieee.org>.





*IGARSS 2010
Honolulu
July 25 – 30*

*Remote Sensing: Global Vision
for Local Action*

General Co-Chairs' Welcome

On behalf of the IEEE Geoscience and Remote Sensing Society and the IGARSS 2010 Organizing Committee, we are pleased to invite you to Honolulu for IGARSS 2010. We are thrilled to be returning to Hawaii to host IGARSS on its 30th anniversary! In the true spirit of an international event, we will continue our tradition of gathering world-class scientists, engineers, and educators engaged in the fields of geosciences and remote sensing from around the world. We anticipate well over one thousand participants to enjoy a week of technical sessions, tutorials, exhibits and social activities.

For this 30th anniversary IGARSS we will celebrate our accomplishments over three decades of leadership in remote sensing instrumentation, techniques, and applications development. But perhaps more importantly we will look ahead to the future of our field with some fresh approaches and perspectives through our conference theme: Remote Sensing: Global Vision for Local Action. One such activity will be embodied in our plenary session, which will focus on the emerging field of Community Remote Sensing. We hope this plenary session, along with special tutorials and technical sessions, will inspire and excite our community for what is possible in the coming decade. We look forward to seeing you in Honolulu in July 2010!

Karen St.Germain and Paul Smits
General Co-Chairs



IEEE





UPCOMING CONFERENCES

See also <http://www.techexpo.com/events> or <http://www.papersinvited.com>

Name:	11th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment (μ Rad 2010)	Name:	The 18th International Conference on Geoinformatics
Dates:	March 1–4, 2010	Dates:	June 18–20, 2010
Location:	Washington, DC	Location:	Beijing, China
URL:	http://www.MicroRad2010.org	URL:	http://cn.geoinformatics2010.org/
Name:	ASPRS Annual Conference	Name:	GPR2010 - XIII International Conference on Ground Penetrating Radar
Dates:	April 26–30, 2010	Dates:	June 21–25
Location:	San Diego, CA	Location:	Lecce, Italy
URL:	http://www.asprs.org/SanDiego2010/index.html	URL:	http://www.ibam.cnr.it/gpr2010
Name:	IEEE 2010 IEEE Gold Remote Sensing Conference	Name:	International Geoscience and Remote Sensing Symposium, IGARSS 2010
Dates:	April 29–30, 2010	Dates:	July 25–30, 2010
Location:	Naval Academy, Livorno, Italy	Location:	Honolulu, HI USA
URL:	http://www.trofeoaccademianavale.eu/	URL:	http://www.IGARSS2010.org
Name:	32nd Review of Atmospheric Transmission Models Conference	Name:	IPIN 2010 International Conference on Indoor Positioning and Indoor Navigation
Dates:	June 14–15, 2010	Dates:	September 15–17, 2010
Location:	National Heritage Museum, Lexington, Massachusetts	Location:	ETH Zurich Campus Science City, Switzerland
URL:	http://www.grss-ieee.org	URL:	http://www.ipin.ethz.ch
Name:	Whispers 2010 Hyperspectral Image and Signal Processing	Name:	8th International Conference of the African Association of Remote Sensing and the Environment (AARSE 2010)
Dates:	June 14–16, 2010	Dates:	October 25–29, 2010
Location:	Reykjavik, Iceland	Location:	Addis Ababa, Ethiopia
URL:	http://www.ieee-whispers.com/	URL:	http://www.aarse2010.org