



**GRSG Newsletter**  
**Issue 71**  
**December 2014**



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The Geological Remote Sensing Group (GRSG) is a Special Interest Group affiliated jointly with The Geological Society of London and the Remote Sensing and Photogrammetry Society. It was founded in 1989 to raise awareness and encourage the use of remote sensing technologies in the geoscientific and related communities. The GRSG seeks to represent the views of industry, government and academic individuals and organisations - resulting in a balanced scientific, technological and commercial viewpoint.

## Front Cover

WorldView 2 image of the Sutlej Canyon in Tibet, May 2014. Copyright: Digital Globe

# GRSG Committee



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## Committee



# Chairman's message



Dear All,

Welcome to another jam packed and informative newsletter. This one cunningly timed to be released just before the conference. Many thanks to all our contributors and Elspeth Robertson, our Newsletter editor for pulling together another great issue.

Talking of the conference this years event, takes place in Burlington House, London from the 15<sup>th</sup> to 17<sup>th</sup> December and will mark the 25<sup>th</sup> anniversary of the GRSG - the conference is a celebration of just that. We have drawn together an exciting and interesting programme which takes a look back at the history of geological remote sensing, what have been the major achievements and where do we think it is going in the future. To help us find our way through this we have six keynote speakers exploring the application of remote sensing to six different areas of geology over the last 25 (or more) years. The conference also offers the usual opportunity to catch up with all the latest advances in geological remote sensing and network with old and new colleagues.

Hopefully you have already registered for the event; if not there is still time to register on line or on the door: <https://www.grsg.org.uk/events/grsg-silver-anniversary-conference-2014-25-years-geological-remote-sensing/>.

In this issue we have an update on the GRSG North American committee. This successful initiative has been in place since our 2011 meeting when Adam Carter took the lead as the North American Chairman. In that time they have played a great role in furthering the reach of the GRSG to the Americans and providing a focal point for geological remotes sensing actives. Along with the creation of an impressively strong committee the NA committee have held several very successful careers webinars aimed at students wanting to work in the geological remote sensing industry. Adam has now stepped down as the chairman so I would like to express my thanks for all his hard work. I would also like to welcome the new North American Chairman, Christian Haselwimmer. Christian is with Chevron in the US, but is well known to many of us as several years ago he was on the UK committee where he did a great job so we are sure he will continue to grow the NA side of the GRSG.

Enjoy reading the newsletter and I hope to see many of you in the conference.

Best Wishes

Luke Bateson (GRSG Chairman)  
[chairman@grsg.org](mailto:chairman@grsg.org)



# Editor's message



Dear all,

It is with great pleasure to send out the winter edition of the Newsletter. As you are undoubtedly aware, we are gearing up for 25<sup>th</sup> Anniversary of the GRSG with our AGM next week. We look forward to seeing many of you there, especially as we have an impressive program across the three days. Details can be found on the GRSG website as well as in this issue. Also, there will be cake!

In this issue we have the usual [News and Developments](#) section – lots of news to report as with the remote sensing is hitting the headlines! Please have a look at the [events](#) page as it has been updated with many meetings to consider for next year, including Wavelength and Fringe. Finally, we have a great update from the activities of the GRSG North American Committee, including details for a series of special sessions at the ASPRS Imaging and Geospatial Technology Forum next May. Details can be found in the events section.

As always, I hope you enjoy reading this issue and please feel free to send contributions. Many thank to all those who have contributed, any feedback is always welcome.

I look forward to meeting many of you next week.

Best wishes

Elspeth Robertson  
GRSG Newsletter Editor - [newsletter@grsg.org.uk](mailto:newsletter@grsg.org.uk)

As some of you may know GRSG now has its own group pages on both **LinkedIn** (over 1,700 members!) and **Facebook** but now we are also on **Twitter** under **@grsg\_geolsoc**. Search for us under GRSG – Geological Remote Sensing Group (LinkedIn and Facebook) and join in the discussions and meet other like-minded people. For more information on these groups please contact Huma Irfan.

All past GRSG newsletters (numbers 1 to 70) are available on the website  
<https://www.grsg.org.uk/newsletters/>

## This is Mars – Christmas present idea!

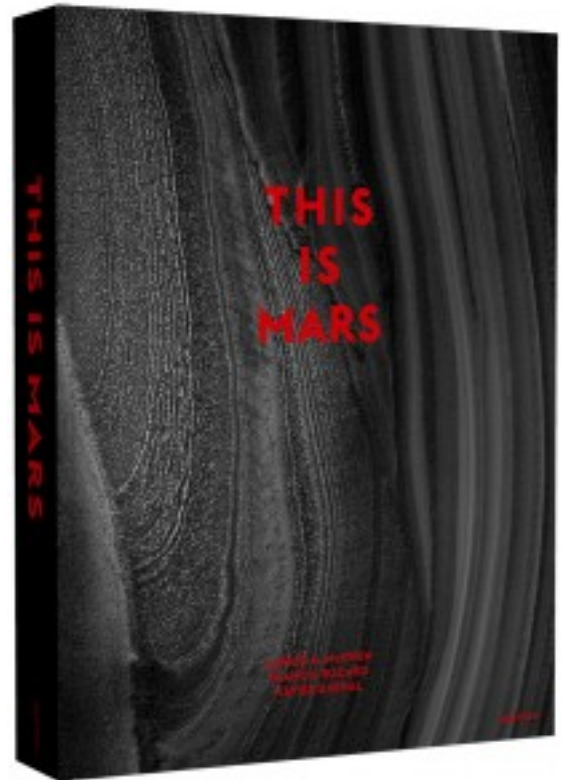
A lovely coffee-table book with stunning black & white satellite images (Mars Reconnaissance Orbiter, MRO) of Mars.

This Is Mars offers a previously unseen vision of the red planet. Located somewhere between art and science, the book brings together for the first time a series of panoramic images recently sent back by the U.S. observation satellite MRO (Mars Reconnaissance Orbiter). Since its arrival in orbit in 2006, MRO and its HiRISE telescope have been mapping Mars's surface in a series of exceptionally detailed images that reveal all the beauty of this legendary planet. Conceived as a visual atlas, the book takes the reader on a fantastic voyage—plummeting into the breathtaking depths of the Valles Marineris canyons; floating over the black dunes of Noachis Terra; and soaring to the highest peak in our solar system, the Olympus Mons volcano. - See more at: <http://aperture.org/shop/books/this-is-mars-books#sthash.dj3Oroyg.dpuf>

In fact the book is so huge it could double as a coffee table in its own right!

On display at Waterstones, Piccadilly for those who pass through GeolSoc

Source: <http://aperture.org/shop/books/this-is-mars-books>

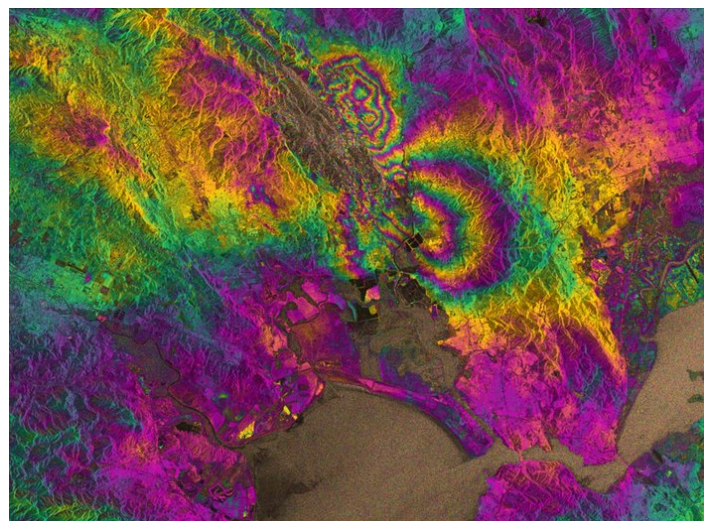


## Sentinel-1A maps Napa Valley Earthquake

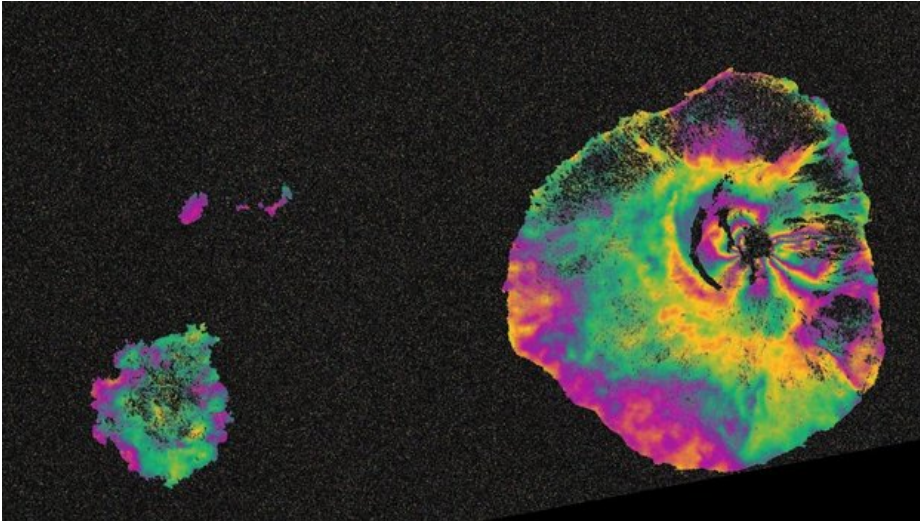
Scientists collaborating through the UK Natural Environment Research Council's Centre for the Observation and Modelling of Earthquakes, Volcanoes and Tectonics (COMET), used Sentinel-1A's capabilities to analyse the quake.

It clearly confirms that part of the West Napa Fault system was responsible for the 6.0 earthquake that rocked California's wine-producing region. However, the fault had not been identified as being particularly hazardous prior to the quake that hit on 24 August.

Source: [http://www.esa.int/Our\\_Activities/Observing\\_the\\_Earth/Copernicus/Sentinel-1/Radar\\_vision\\_maps\\_Napa\\_Valley\\_earthquake](http://www.esa.int/Our_Activities/Observing_the_Earth/Copernicus/Sentinel-1/Radar_vision_maps_Napa_Valley_earthquake)



## Fogo volcano on Sentinel's radar



Radar images from the Sentinel-1A satellite are helping to monitor ground movements of the recently erupted Fogo volcano.

Located on Cape Verde's Fogo Island, the volcano erupted on 23 November for the first time in 19 years and has been active ever since. Lava flows are threatening nearby villages, and local residents have been evacuated.

The image above is a combination of two radar images from 3 November and 27 November, before and during the eruption.

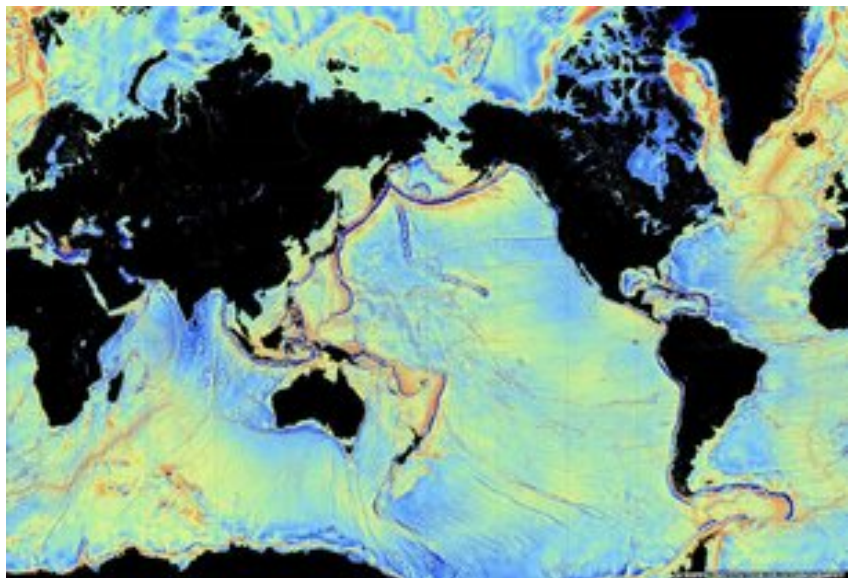
Source: [http://www.esa.int/Our\\_Activities/Observing\\_the\\_Earth/Copernicus/Sentinel-1/Fogo\\_volcano\\_on\\_Sentinel\\_s\\_radar](http://www.esa.int/Our_Activities/Observing_the_Earth/Copernicus/Sentinel-1/Fogo_volcano_on_Sentinel_s_radar)

## Cryosat unveils secrets of the deep

ESA's ice mission has been used to create a new gravity map, exposing thousands of previously uncharted 'seamounts', ridges and deep ocean structures. This vivid new picture of the least-explored part of the ocean offers fresh clues about how continents form and breakup.

Carrying a radar altimeter, CryoSat's main role is to provide detailed measurements of the height of the world's ice. This allows us to see how the thickness of the ice changes, seasonally and in response to climate change.

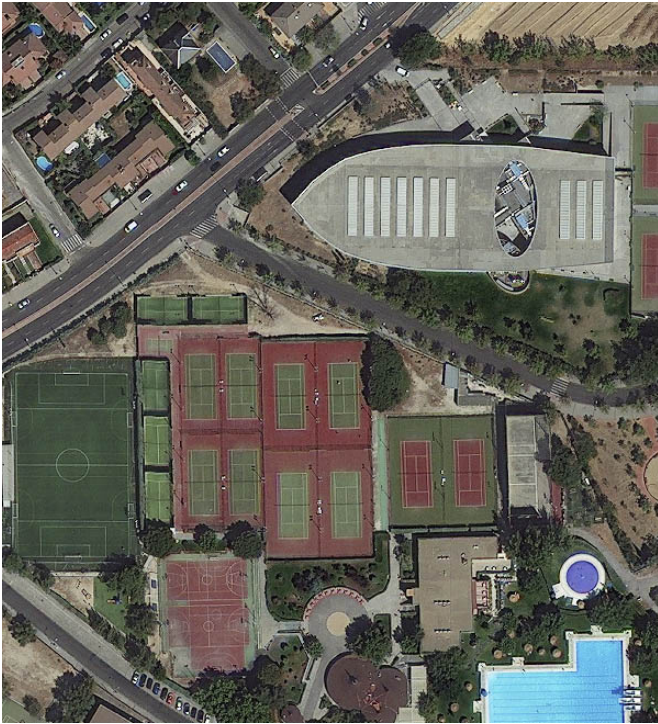
The new map will also provide the foundation for the upcoming new version of Google's ocean maps to fill large voids between shipboard depth profiles.



Source and image credit:

[http://www.esa.int/Our\\_Activities/Observing\\_the\\_Earth/CryoSat/CryoSat\\_unveils\\_secrets\\_of\\_the\\_deep](http://www.esa.int/Our_Activities/Observing_the_Earth/CryoSat/CryoSat_unveils_secrets_of_the_deep)

## WorldView-3: First images



WorldView-3 satellite sensor is the first multi-payload, super-spectral, high-resolution commercial satellite sensor operating at an altitude of 617 km.

WorldView-3 provides 31 cm panchromatic resolution, 1.24 m multispectral resolution, 3.7 m short wave infrared resolution and 30 m CAVIS resolution. WorldView-3 has an average revisit time of <1 day and is capable of collecting up to 680,000 km<sup>2</sup> per day.

On August 13, 2014, DigitalGlobe launched WorldView-3 into orbit. On August 19, a mere six days after launch, the team completed commissioning the satellite bus and opened the door on the main telescope to begin observing our changing planet. And on August 21, the team completed the focusing and achieved Initial Operational Capability (“IOC”) on the entire suite of WorldView-3’s 27 super-spectral bands.

Source: <http://www.satimagingcorp.com/satellite-sensors/worldview-3/>

<http://www.digitalglobelog.com/2014/08/26/worldview-3-first-images/>

## UrtheCast's product sample downloads



UrtheCast has announced that Theia product samples are available to download. These images are captured by UrtheCast’s medium-resolution camera (MRC) onboard the International Space Station (ISS). The MRC is a multispectral, nadir-pointing imager that captures 6-meter class, 50-km wide swaths of still imagery, which will be made commercially available on the UrtheCast platform.

While the images will be made available on an individual basis, they will also be processed and constantly streamed to the UrtheCast platform. This will be realized on the interactive platform as a near realtime flyover view of the planet directly below the ISS as it orbits the globe 16 times every day.

Picture: Urthecast

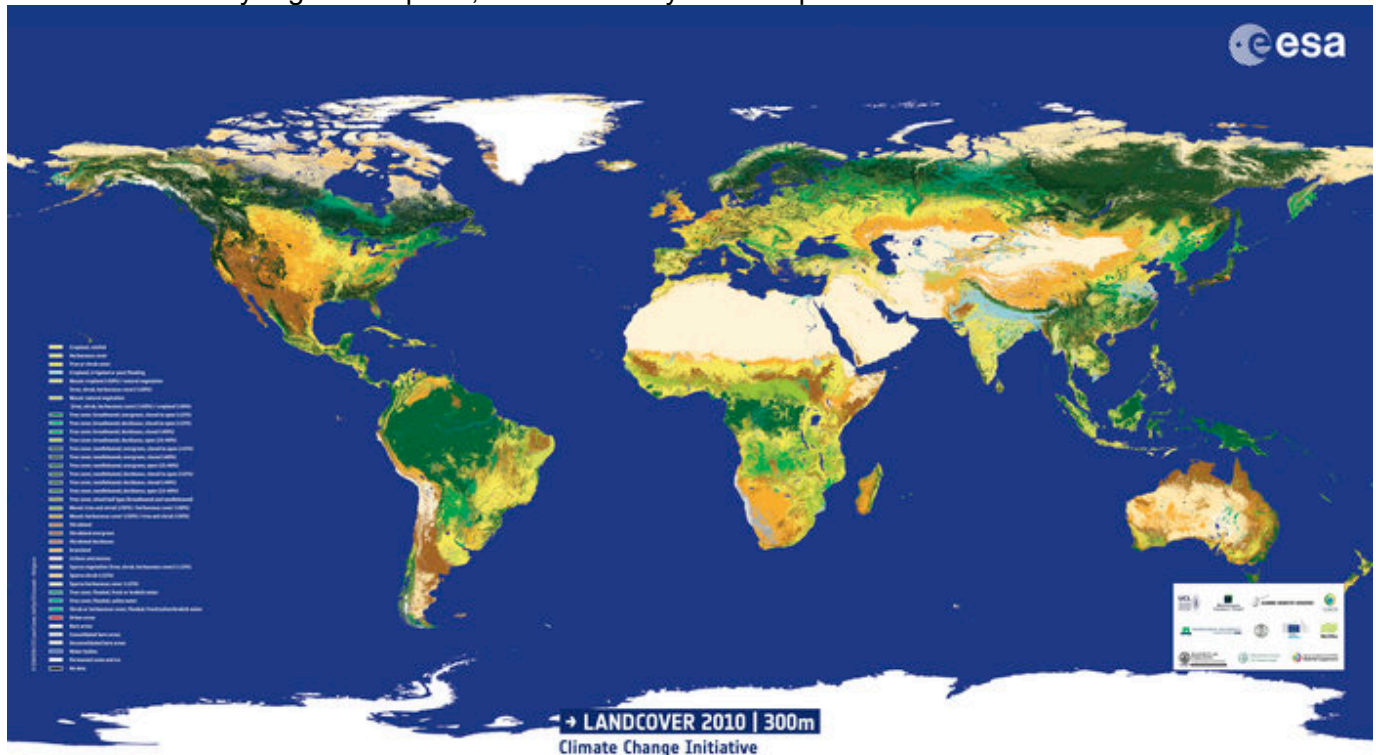
Source: <http://lp.urthecast.com/theia-sample-product/>



## ESA's Landcover 2010

This global land-cover map was created using data from the Envisat mission for the 2010 epoch (2008–12). This is the most recent data product from the Climate Change Initiative (CCI) Land Cover team led by the Université catholique de Louvain, showing 22 different types of global land cover classes, plus 14 regional land cover classes.

Following the [GCOS](#) Implementation Plan, the purpose of the CCI Land Cover project is to make the best use of available satellite sensor data to provide an accurate land-cover classification that can serve the climate modelling community. The maps propose a legend based on the FAO/UNEP Land Cover Classification System, in order to be compatible with previous products. The land-cover maps are currently under validation by regional experts, coordinated by the European Commission's Joint Research Centre.



Source: [http://www.esa.int/spaceinimages/Images/2014/10/Land\\_cover\\_2010](http://www.esa.int/spaceinimages/Images/2014/10/Land_cover_2010)

Copyright: ESA/CCI Land Cover/Université catholique de Louvain

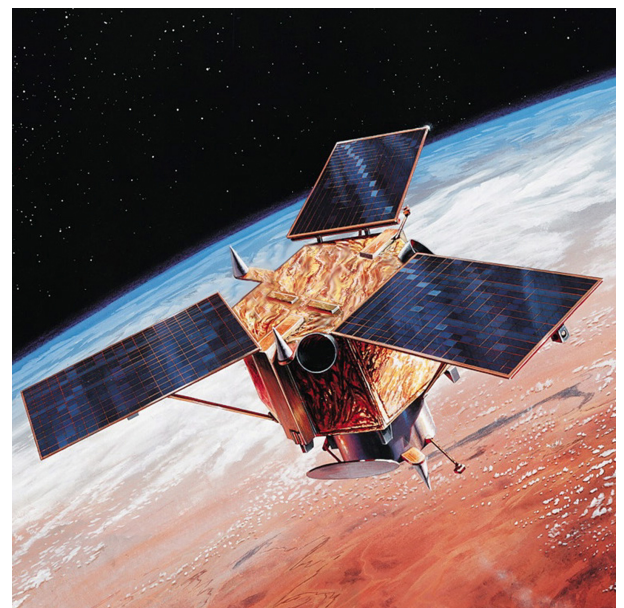
## IKONOS reaches 15 years old

Ikonos celebrated its 15<sup>th</sup> Birthday on the 24<sup>th</sup> September. It was the first satellite to collect and publicly share high-resolution earth images, was launched on Sept. 24, 1999, and has taken thousands of photos of Earth for applications including national security, disaster relief, agriculture, and mapping.

Source: <http://www.lockheedmartin.com/us/news/press-releases/2014/september/0924-space-IKONOS.html>

Image Credit:

<http://www.exelisinc.com/solutions/IKONOS/Pages/default.aspx>



## 100 Great Geosites announced



The Geological Society of London has named its top 100 geological sites in the UK and Ireland, including 10 "people's favourites"

As part of [Earth Science Week 2014](#), The Geological Society and partner organisations are celebrating this unique geo-heritage by launching a list of 100 Great Geosites across the UK and Ireland.

Check out the final winners on the website: <http://www.geolsoc.org.uk/100geosites>

Source and picture credit: <http://www.bbc.co.uk/news/science-environment-29572008>

## DAICHI-2 (ALOS-2) Images

### More newly acquired images from ALOS 2.

Image 5 (A) is an image acquired by the PALSAR-2 using strip map mode (about 3-meter resolution) at 10:55 p.m. on June 20, 2014. The image was colored\* spuriously using polarization data acquired through the observation in order to understand the land cover classification more precisely.

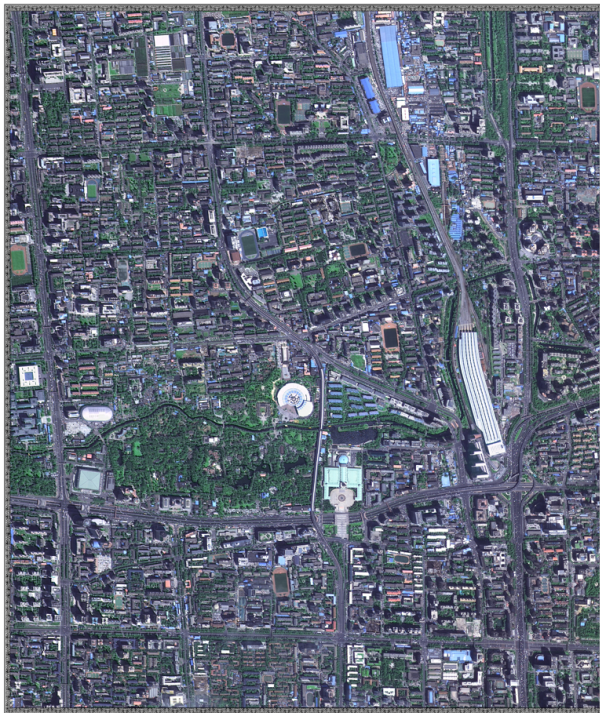
The Japan Aerospace Exploration Agency (JAXA) acquired images from the Phased Array Type L-band Aperture Rader-2 (PALSAR-2)\* aboard the Advanced Land Observing Satellite-2 "DAICHI-2" (ALOS-2). The DAICHI-2 was launched on May 24, 2014, and it is currently under initial functional verification. The images were captured during the verification stage.



Source and picture credit: [http://www.eorc.jaxa.jp/ALOS-2/en/img\\_up/alos2\\_1st/pal2\\_1stimg\\_20140619-21.htm](http://www.eorc.jaxa.jp/ALOS-2/en/img_up/alos2_1st/pal2_1stimg_20140619-21.htm)

## Gaofen-2 EO Satellite releases first imagery

### 高分二号卫星北京西直门融合影像



融合方式：金色影像(0.8米)和多光谱影像(3.2米)融合  
接收日期：2014年08月24日  
比例尺 1:4000  
国际理工与空天工程中心  
中国资源卫星应用中心制作

Chinese space authorities have released the first imagery captured by Gaofen-2, the country's most advanced earth observation satellite so far. Gaofen-2, which was launched on 19 August, can render images with a ground sampling distance of 80 centimetres in panchromatic mode and 3.2 metres in multispectral mode.

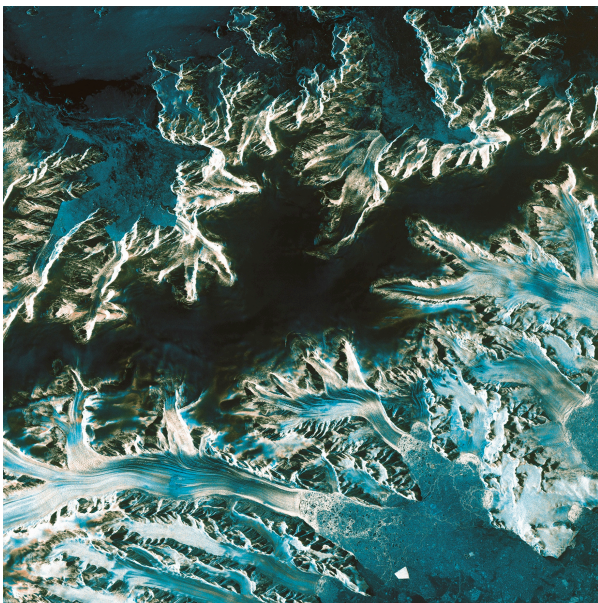
Chinese space authorities have downloaded 15 high-resolution photos from the EO satellite. The State Administration of Science, Technology and Industry for National Defense plans to use the new satellite to help with a variety of tasks, including land use surveillance, mineral resource surveys and disaster relief.

This comes as China announced last week that it plans to build a comprehensive Earth Observation system within the next ten years that integrates use of air-, space-, and ground-based technology, including UAVs, satellites, and GNSS systems.

Source:

<http://www.sastind.gov.cn/n112/n117/c417968/content.html>

## Sentinel-1A Data Hub



The Sentinel-1 Scientific Data Hub provides free and open access to a Rolling Archive of Sentinel-1 Level-0 and Level-1 user products.

Products are available for the following Sentinel-1 acquisition modes:

- Strip Map (SM)
- Interferometric Wide Swath (IW)
- Extra Wide Swath (EW)

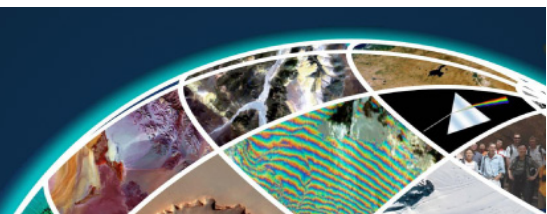
Access the site [here](#)

For more news and information about GRSG check out the news feed on our new website!

<http://www.grsg.org.uk/>



GRSG Geological Remote Sensing Group



# 2014 AGM: 25<sup>th</sup> Anniversary



DRAFT Programme – Subject to Change



25 years of Geological Remote Sensing  
with the GRSG

Geological Remote Sensing Group



Sunday 14 <sup>th</sup> December 2014 – Icebreaker Reception 6pm The Glassblower, 40-42 Glasshouse Street, W1B 5JY.		
Day 1 – Monday 15 <sup>th</sup> December 2014		
08:30-09:30	Registration & Coffee	
09:30	Welcome	Welcome + Introduction to the GRSG, GRSG Chairman: Luke Bateson (BGS)
AM1	Past and Future Geological Remote Sensing	Session Chair and Introduction: Eric Peters
09:45	Keynote: 25 years and more of geological remote sensing snapshots then and now	Geoff Lawrence, TREICol (founding Chairman)
10:25	The past, present and future of remote sensing at Shell	Nick Kellerman: Shell, Netherlands
10:45	32 years of Remote Sensing Spectral Geology	Dr Micky Brown: Mappa Mundi, UK
11:05	TBC	Nigel Press
11:25-11:55	Coffee Break 1 (+ poster session + exhibition)	
11:55	30 years of coastal cliff monitoring in Portugal: from simplified methods to new remote sensing techniques	Rita Matildes: University of Lisbon , Portugal
AM2	Geological Mapping 1	Session Chair: Luke Bateson (BGS)
12:15	Field Mapping with a hand held high resolution digital camera and 3D motion sensor	Erik Vest Sorensen: Geological Survey of Denmark (GEUS)
12:35	Assessing the use of object based classification for lithological mapping	Dr Stephen Grebby: BGS, UK
12.55	Improved delineation of litho contacts by super resolution mapping of landsat imagery of Cuddalore region, Southern India	Shanmuga Priyaa S: Anna University Chennai, India
13:15-14:15	Lunch	
PM1	Oil & Gas 1	Session Chair: Martin Insley (Tullow Oil)
14:15	Keynote: Advances in satellite remote sensing for hydrocarbon exploration	Martin Insley: Tullow Oil, UK
14:55	Remote Sensing in the tropics: linking the onshore with the offshore of South East Asia	Duncan Witts: NPA Satellite Mapping (CGG), UK
15:15	Validation of operational surface movement measurement at an enhanced oil recovery field	Michael Henschel: MDA, Canada
15:35-16:05	Coffee Break 2 (+ poster session + exhibition)	
PM2	Oil & Gas 2	Session Chair: Nick Kellerman (Shell)
16:05	Supporting Reservoir Management and geomechanical model calibration with advanced InSAR surface displacement monitoring	Andrea Tamburini: TRE, Italy
16:25	Remote Sensing and geophysical footprints of microseepages in Brazilian onshore basins: possible vectors towards petroleum plays	Prof Carlos Roberto de Souza Filho: University of Campinas, Brazil
16:45	KSAT operational maritime monitoring services in NRT worldwide, experiences, challenges and future missions	Carles Debart: KSAT, Norway
17:05	GIS and Remote Sensing based quantitative assessment of oil spill frequencies, leak sources and their controlling natural factors around oil rocks over islands in the Caspian sea using multi temporal Envisat radar satellite images 2009 – 2010	Emil Bayramov: Dresden University of Technology, Germany
17:25	GRSG AGM	The Geological Remote Sensing Group Annual General Meeting (AGM)
18:00	Wine Reception and Anniversary Cake	Geological Society

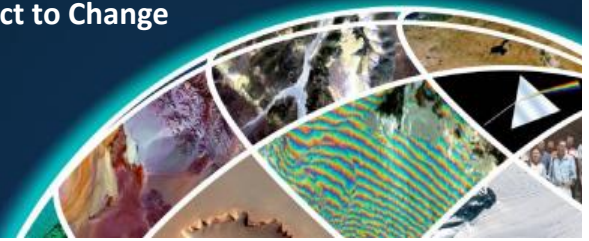


Day 2 – Tuesday 16 <sup>th</sup> December 2014		
08:30-09:00	Registration & Coffee	
09:00	Welcome	Welcome + Introduction to the GRSG, GRSG Chairman: Luke Bateson (BGS)
AM1	Remote Sensing and Disaster Management	Session Chair: Richard Teeuw (University of Portsmouth)
09:10	<b>Keynote: How the use of remote sensing for disaster management has evolved over the past 25 years</b>	<b>Richard Teeuw: University of Portsmouth, UK</b>
9:50	Assessing data poverty – case studies for emerging countries	Mat Leidig: University of Portsmouth, UK
10:10	The use of remote sensing in earthquake disaster response (Kashmir & Haiti)	Anna Mason: MapAction UK
10:30-11:00	Coffee Break 1 (+ poster session + exhibition)	
AM2	Planetary	Session Chair: Gareth Morgan (Imperial College)
11:00	A geomorphic study of Kasei Valles, Mars: based on super quality DEM generation	Matthew Webster: UCL, UK
11:20	Characterisation of a potential landing site of interest in the lunar South polar region	Huma Irfan: UCL/Birkbeck, UK
11:40	Near Infrared CRISM investigation of hydrothermally altered Amazonia impact craters on Mars	Stuart Turner: University of Leicester, UK
12:00	Geomorphological Interpretation of glacial landforms in eastern Hellas Planitia, Mars	Stephen Brough: University of Aberystwyth, UK
12:20	Comparative fluvial geomorphic analyses of Martian and Terrestrial images – a prelude to Mangalyann image analyses	Vaishali Rajendra Kumar: Anna University Chennai, India
12:40	Then and now: a look at how our view of Mars has changed	Joel Davis: UCL, UK
13:00-14:00	Lunch	
PM1	Geohazards	Session Chair: Stuart Marsh (University of Nottingham)
14:00	<b>Keynote: title TBC</b>	<b>Stuart Marsh: University of Nottingham, UK</b>
14:40	Datong ground deformation monitoring using ISBAS technique/Deformation detection using ISBAS: A case study in Northern Peninsular Malaysia	Muhammad Asyran and Ahmed Dahir Athab: University of Nottingham, UK
15:00	Sabkha geohazard detection using multispectral remote sensing	Julita Drweiga: UCL, UK
15:20	The contribution of surface change tracking by photogrammetric means and DEM processing to physically based landslide susceptibility analysis	Victor Garzon: Centro de Geologia FCUL, Portugal
15:40	Use of SAR imagery for geohazards and damage assessment in urban sites and heritage assets: where we are and development perspectives	Deodato Tapete: University of Durham, UK
16:00-16:30	Coffee Break 2 (+ poster session + exhibition)	
PM2	New Processing Techniques	Session Chair: Dietmar Backes (UCL)
16:30	Illumination insensitive image matching for terrain related applications	Xue Wan: Imperial College, UK
16:50	Spectral feature mapping: a new way to interpret mineral spectra	Neil Pendock: Geospectral Imaging, South Africa

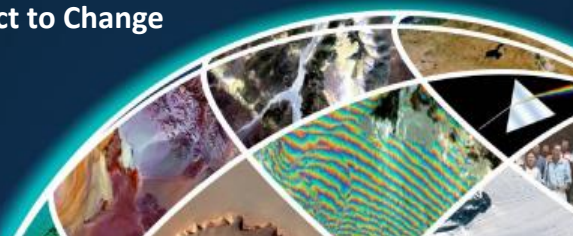




25 years of Geological Remote Sensing  
with the GRSG  
Geological Remote Sensing Group



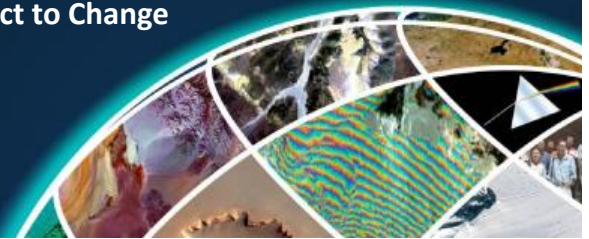
17:10	QUANTOOLS: new tools for mineral mapping using high resolution data	Veronika Kopackova: Czech Geological Survey
17:30	Reflectance processing for extended spectral satellite imagery	Gary Crews: Spatial Energy, USA
17:50	Better Sensors = Better Imagery = Better Outputs	Dr Mike Smith: University of Kingston, UK
18:10	<b>Walk to ROSL (Royal Overseas League)</b>	
18:30	<b>Conference dinner (Ticketed event)</b> Welcome drinks at 18:30 Dinner starts at 19:30	Royal Overseas League



Day 3 – Wednesday 17 <sup>th</sup> December 2014		
08:30-09:00	Registration & Coffee	
09:00	Welcome	Welcome : GRSG Chairman: Luke Bateson
AM1	Engineering Applications	Session Chair: Jason Manning (Arup)
09:10	Keynote: Title TBC	Jason Manning: Arup, UK
9:50	Improvements in underground tunnel monitoring with high resolution InSAR: new case studies	Chiara Giannico: TRE, Italy
10:10	How advances in remote sensing is changing the way engineering geologists work, or not.	Dr Andrew Hart: Atkins, UK
10:30	Assessing the effectiveness of remote sensing techniques for mine entry inspections	Phil Broughton: Coal Authority, UK
10:50-11:20	Coffee Break 1 (+ poster session + exhibition)	
AM2	Geological Mapping 2	Session Chair: Charlotte Bishop (NPA)
11:20	Early case studies on geologic applications enabled by SWIR bands on the WorldView-3 satellite	Gary Crews Spatial Energy (on behalf of William Baugh, Digital Globe.)
11:40	High resolution, ground based, terrestrial laser scanner and hyperspectral imaging of geological outcrops	Shuhab Khan PhD: University of Houston, USA
12:00	Discrimination geological differences in the Kruger National Park, South Africa using segmentation of vegetation cover on Landsat TM imagery	Chris Munyati: North West University, South Africa
12:20	On top of the World: A unique mission covering Mount Everest from a Stemme powered glider in 3D with the airborne high altitude camera system MACS - Himalaya	Tilman Bucher: DLR, Germany
12:40-13:40	Lunch	
PM1	Mineral Exploration	Session Chair: Dan Taranik (Exploration Mapping)
13:40	Keynote: The first quarter: 25 year history of mineral exploration remote sensing	Dan Taranik: Exploration Mapping, USA
14:20	Mapping and monitoring the earth using ASTER mineral information	Tom Cudahy: CSIRO, Australia
14:40	Mineral mapping of Makhtesh Ramon in Israel using hyperspectral remote sensing imagery in the VNIR-SWIR and LWIR regions	Prof. Eyal Ben Dor: Tel Aviv University, Israel
15:00	Exploration of small scale hydrothermal alteration in Iceland using spectral unmixing techniques	Jennifer Harris: Birkbeck College, UK
15:20-15:50	Coffee Break 2 (+ poster and exhibition break down)	
PM2	Hyperspectral	Session Chair: Micky Brown (Mappa Mundi)
15:50	Characterisation of the transvaal banded iron formation of South Africa by reflectance spectroscopy from 0.4-15 µm	Dr Michaela Frei: BGR, Germany
16:10	Geological mapping in Antarctica using airborne hyperspectral data	Martin Black: University of Hull/BAS, UK
16:30	Automated spectral matching in Hyperion images to estimate the grades of iron ore, limestone and magnesite deposits of India	Padma. S: Anna University Chennai, India
16:50	Mine waste mapping with spaceborne multispectral and hyperspectral sensors in south Africa and Europe New application to the EnMAP and Sentinel-2 mission	Christian Mielke: GFZ Potsdam University, Germany



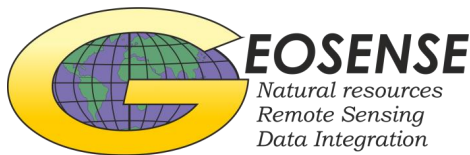
25 years of Geological Remote Sensing  
with the GRSG  
Geological Remote Sensing Group



17:10	Conference Closing Remarks	
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## GRSG 2014 Sponsors:

There is still time to sponsor! Contact [treasurer@grsg.org.uk](mailto:treasurer@grsg.org.uk) for more information





## Attention all students!!



**GRSG Membership for students is only £7!** As a GRSG student member you are able to apply for the annual Student Award (see the next page for further details), you can get exclusive access to the current and old Newsletter issues, as well as receive invitations to careers webinars and events.

If you would like to join you can do so online at <https://www.grsg.org.uk> or if you would like to know more information please contact the GRSG Student Representative Xue Wan ([x.wan12@imperial.ac.uk](mailto:x.wan12@imperial.ac.uk)) or the GRSG Membership Secretary, Huma Irfan ([membership@grsg.org.uk](mailto:membership@grsg.org.uk)).

# NA GRSG Careers Webinar



The 2014 **GRSG Careers in Remote Sensing and GIS Webinar 2014** is now available [online](#)

If you are a student finishing studies in the near future and looking for advice on career options or a Young Professional looking for new directions, this webinar may provide you insight on how to work in the Remote Sensing and GIS world.

This webinar provides information about careers in Remote Sensing, including:

- Key skill sets for a career in remote sensing
- Advantages and challenges of remote sensing jobs in Academia, Consulting and Industry
- Whether getting a PhD for a job in remote sensing is necessary
- How often do these jobs come up? How hard are they to find?

Speakers include:

**Cynthia Dacre**, Manager of Geologic Programs, MDA Information Systems

**Ayo Adediran**, Remote Sensing Focal Point, Shell Canada

**Dr. May Yuan**, Professor, Geospatial Information Science at University of Texas at Dallas

Access the 2014 and 2013 webinar on the [GRSG website](#), under the student section.



## The Geological Remote Sensing Group



# GRSG Annual Student Award

- ❖ Three awards of £750 for geoscience remote sensing research students
- ❖ The student awards are available for GRSG student members in full or part-time university programs
- ❖ These awards may be used to support fieldwork, data/software purchases and attendance at conferences



More information :

<https://www.grsg.org.uk/>

Follow us:



# Fieldwork Bursary



Nigel Press was very honoured by the GRSG's gesture in making him Life-time Member of the GRSG following the support of Nigel Press Associates Ltd (now CGG Services (UK) Ltd) in GRSG activities for a number of years. Recognising that there is still much needed scientific progress to be made in our discipline, he wanted to offer some continuing contribution for the future in return. Nigel is therefore pleased to announce that a fieldwork bursary fund run by his family is being opened to Members of GRSG. The Fund provides a few bursaries each year, mainly to MSc students, to undertake fieldwork which has a humanitarian, sociological or environmental benefit, and ideally is carried out in conjunction with an NGO. Selection of projects is made purely on merit; last year The Fund partly supported a GRSG member, Naomi Morris, on a very ambitious trip to work on geo-hazards in Papua New Guinea, other recipients included undergraduates from Oxford who worked on the Colima volcano in Mexico and L'Aquila earthquake site in Italy.

More details on this opportunity and how to apply can be found at [www.lydiapress.org](http://www.lydiapress.org)

## Introducing the new GRSG North American Chairman.... Dr. Christian Haselwimmer



Dr. Christian Haselwimmer is a Remote Sensing Scientist with Chevron Energy Technology Company's Environmental Unit, based in San Ramon, CA. ETC's remote sensing group is involved in developing and deploying remote sensing techniques with the aim of reducing the environmental footprint of Chevron's activities.

Prior to joining Chevron ETC, Christian was a post-doctoral research fellow at the Geophysical Institute of the University of Alaska Fairbanks where he worked on the application of multisource remote sensing to the mapping and quantitative resource assessments of geothermal systems in the State of Alaska. He has work experience and interests in the development and application of remote sensing to energy and geological resource studies. His work experience covers a wide range of remote sensing approaches including hyperspectral, SAR, and hyperspatial remote sensing from Unmanned Aerial Systems (UAS). Christian has a PhD in Geological Remote Sensing from Imperial College London (awarded in 2010), an MSc in Remote Sensing from University College London, and a BSc in Geological Sciences from Oxford Brookes University.

# Earth Observation for Oil and Gas (EO4OG) Workshop



*Christian Haselwimmer, GRSG North America Chairman*

**18<sup>th</sup> November, 2014, London (hosted by Arup)**

The EO4OG workshop reviewed results of work done by 4 contractors to compile O&G geospatial challenges and how they can be addressed with earth observation technologies, and also catalogue how mature those technologies area. The attendees participated in an exercise to prioritize which technologies are especially important to their business, and assess their impact and usage levels. This information will be used to produce final reports to the oil and gas earth observation community early in 2015. One consensus of the oil and gas company attendees is that already, the outputs from this effort will be useful in teaching O&G companies what's possible to do, and to also help coordinate future technology development efforts. In terms of moving forward with adoption of earth observation technologies within O&G companies it was also felt that collaborative case studies between ESA, service companies, and O&G companies would be very valuable. More information and outputs from the EO4OG initiative are available through the Oil and Gas Earth Observation (OGEO) portal: <http://www.ogeo-portal.eu/>



*“Weeping Taranaki”, Egmont National Park, New Zealand. ESA’s Earth Observation Image of the week (31 October)*

# IOGP Earth Observation Subcommittee Workshop on Standards for EO Geospatial Products and Services (including EARSC Certification Workshop)



*Christian Haselwimmer, GRSG North America Chairman*

**19<sup>th</sup> November, 2014, London (hosted by Tullow Oil)**

The Workshop on Standards for EO encompassed reviews of technical advances in remote sensing in the morning, including a summary of current IOGP Earth Observation Joint Industry Programs (JIP's), Petroleum Environment Research Forum (PERF) projects, and developments in the OGP Common Operating Picture (COP). In the afternoon, the attendees split into two parallel sessions.

Session one encompassed a discussion among representatives of O&G and Earth Observation consultants, resulting in an improved understanding of the challenges each side faces. For one thing, the original tension between O&G companies needing to understand what's possible and EO Service companies being reluctant to reveal what they can do, first illuminated in the original ESA/OGEO workshop in 2010, still persist. Another observation is that while O&G companies are looking at building a COP exclusively for emergency response, the service companies are looking at a "COP" as a means for easier communication & data delivery with their clients, and across the industry. Obviously, both sides are not on the same page yet, but comments were made to try and bridge the gaps, and all agreed that continued dialogue would be important.

Session two encompassed presentations and discussions about developing standards for Earth Observation products, and about EARSC companies going through a certification process, so that prospective clients will gain greater confidence that when they ask for geospatial data products and analysis, whatever they get will meet at least basic technical and operational standards.

# RSPSoc 2014: New Sensors for a Changing World



*Martin Black, British Antarctic Survey & GRSG committee member*

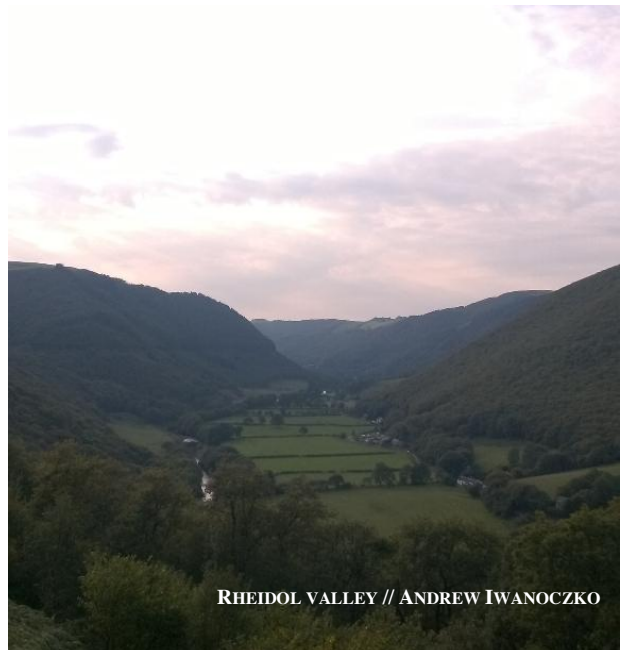
The annual RSPSoc Conference was held in early September in a sunny Aberystwyth, co-hosted by Environment Systems and Aberystwyth University. The conference itself had its usual wide array of Remote Sensing subjects, from a diverse range of topics along with several interesting keynotes. For some, myself included, it was their first visit to Aberystwyth; a beautiful sea-side town, set in unspoilt scenery on the shores of Cardigan Bay. Fortunately we were bestowed with excellent weather throughout the conference allowing for some spectacular views over the Bay.



CARDIGAN BAY // @RSPSOC2014

The conference was preceded by a number of technical workshops, including LiDAR processing, UAVs, the natural habitat of Wales and the biennial NERC Field Spectroscopy Facility Workshop. I attended the latter to give a brief talk on my field spectroscopy work in Antarctica (shameless self promotion: you can read more about my trip in issue 69 of the GRSG Newsletter from March 2014). Following the technical workshops, the conference proper kicked off with a keynote from Dr Sandra Brown of Winrock International, on measuring and monitoring carbon stocks of tropical forests. The technical program of the conference followed, with parallel sessions on a wide variety of topics covering almost all remote sensing applications, along with sessions from RSPSoc's special interest groups. The Technical/Operational Special interest group (TOPSIG) session by Alastair Graham was well attended on the first day of the conference, and the Landslides and Mass Movements session, hosted by none other than GRSG itself and chaired by Luke Bateson on the second day of the conference included some very interesting talks.

The conference had a number of very well received social events. My social calendar began with the annual RSPSoc football match (thankfully our team won, despite my only shot on goal completely leaving the 5-a-side pitch). This was followed by a visit to the National Library of Wales for the Icebreaker reception, including some stunning sunset views of the Bay and tours of the library's collections. There was also a fantastic journey by steam train through the Vale of Rheidol valley and the conference dinner at the Marine Hotel.



RHEIDOL VALLEY // ANDREW IWANOCZKO

The conference finished up with a session UAVs, where GRSG's own Xue Wan gave a talk on vision based UAV navigation which went on to win the Presidents Cup. Congratulations Xue! I'll leave you with a couple of key facts and figures: there were over 220 delegates from 18 countries with over 90 oral presentations across the 14 technical sessions. More than 100 organisations/institutions were represented, along with more than 30 sponsors attending/exhibiting. I'm looking forward to the next RSPSoc in Southampton in 2015.



THE CONFERENCE DELEGATES // @RSPSOC2014

# UAS Mapping 2014 Reno

**Christian Haselwimmer, GRSG North America Chairman**

The American Society for Photogrammetry and Remote Sensing held an Unmanned Aerial Systems (UAS) symposium in Reno from October 21-22 with a specific focus on surveying and mapping applications. Over 500 attendees from the UAS, geospatial, government, academia, and media industries participated in the inaugural event, demonstrating the strong demand for UAS mapping applications. Sessions were filled to capacity with an impressive lineup of speakers, and over 70 companies exhibited including UAS manufacturers, service providers, software vendors, and instrument manufacturers. A live demonstration was held outside Reno at an ASPRS calibrated test site where both fixed wing and multi-rotor small UAS (sUAS) were flown. Of the 25 software vendors that exhibited one of the most interesting was DroneDeploy (<https://www.dronedeploy.com/>) that provides orthorectified UAS imagery in real-time via cell-phone data connection and cloud-based data processing. Another interesting development is from SkyWard (<http://skyward.io/>) that is developing a system of navigable drone highways in the sky, which can be used for commercial purposes whilst operating within full regulatory compliance (in the USA). Developments in LiDAR sensors and integrations on sUAS platforms were also evident; both Riegl (<http://www.rieglusa.com/index.html>) and Velodyne (<http://www.velodynelidar.com/lidar/lidar.aspx>) showed new compact and light-weight LiDAR sensors that have been integrated on larger multi-rotor platforms. In addition, Phoenix Aerial Systems (<http://phoenix-aerial.com/>) and XactSense (<https://www.xactmaps.com/>) exhibited their LiDAR data acquisition capabilities using these sensors integrated on multi-rotor platforms. Overall, UAS Mapping 2014 Reno was a great success and an excellent opportunity to see the current state of the art in UAS hardware, software, and applications focused on surveying and mapping.



Photo from UAS Mapping Reno 2014 live demonstration; crew from Altavian preparing their Nova F6500 fixed wing UAS for launch.



# New CEOI-ST Projects Aim to Address Technology Challenges in Remote Sensing



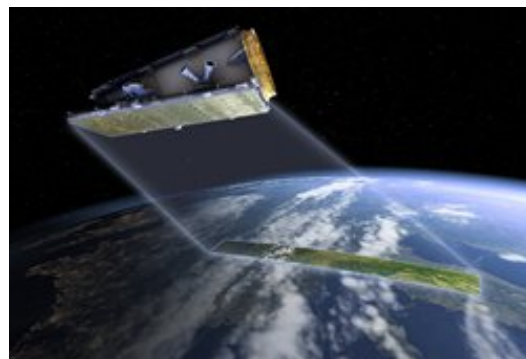
As part of its mission to develop UK capabilities in future space instrumentation for Earth Observation, CEOI-ST has been identifying a range of issues that need to be addressed in the next generation. A series of Challenge Workshops have been mapping the key challenges for scientific research, while an Industry Consultation Workshop identified a range of issues that need to be addressed if the Remote Sensing, Geographic Information Systems, and Unmanned Aerial Vehicle markets are to fulfil their commercial potential.

In scientific research, improvements in technical performance continue to be a key need, particularly for spectral and spatial resolution, sensitivity, and speed of data access. The advent of small, nano and cubesats has also opened up new deployment options in space and created opportunities for a wide range of innovative new missions. However, deployment of remote sensing instruments on these smaller platforms has a wide range of challenges. Size, weight, cost, and power consumption all need to be reduced significantly, whilst delivering the required performance and meeting the challenges in calibration.

In commercial markets, the major need is for improved temporal rather than spatial resolution. An effective way of achieving this is to fly a larger number of smaller, cheaper satellites which can give improved coverage of target geographical areas and provide better continuity of service through their ability to be replaced cost effectively. This need maps well to the emergence of smaller satellite platforms and to the technical challenges for remote sensing instruments of reduced size, weight, cost, and power consumption.

Both the scientific and commercial needs align with the priorities of the UK Space Agency 'Strategy for Earth Observation from Space, 2013-2016', including:

1. Build on UK leadership in processing, analysis, quality assurance and control, modelling and visualisation of space data for environmental research and climate applications.
2. Become global leaders in Synthetic Aperture Radar (SAR) technologies and exploitation especially for civil resilience, natural hazard management and maritime security.
3. Increase UK leadership in developing small, low-cost missions.



The key challenges in deploying remote sensors on small satellites are infrastructure limitations, including attitude determination and control, communications, mass & dimensions, power, propulsion, and thermal control. As a result, there will be a range of constraints on how far different remote sensing modalities can be miniaturised to be deployed on these small platforms. Active sensing modalities such as LIDAR will be limited by the power budget; modalities with larger sensing systems such as high resolution optical imaging or SAR will be limited by size; while modalities with high data rates and processing requirements such as hyperspectral imaging will be limited by bus, comms and onboard computing constraints.

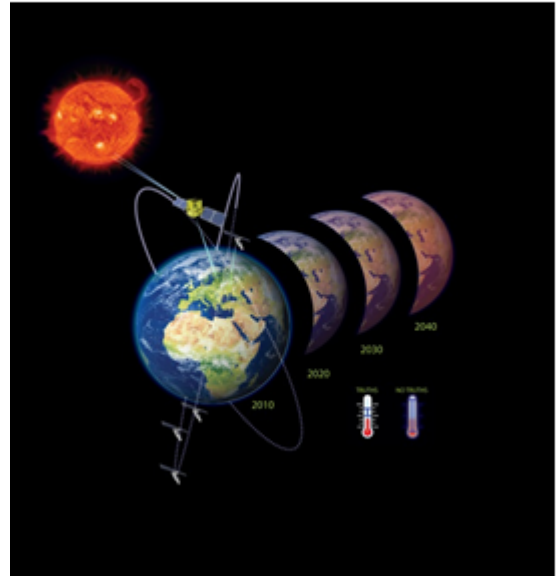
So how are these strategic and detailed challenges being addressed in practice by CEOI-ST? The Centre has just announced funding for a portfolio of new projects which focus on specific aspects of the grand challenges:

**Hyperspectral imaging**

- Improvements in instrumentation and retrieval algorithms of hyperspectral imagers for demonstration of 3D retrieval of NO<sub>2</sub> concentrations over a city scale.

**Infra Red**

- Benchmark measurements of both incoming (solar) and outgoing (reflected solar) radiation with sufficient spectral resolution / accuracy to detect the subtle fingerprint of climate change.
- Thermal IR mission concept to measure global winds, with 1500km swath-width, day/night operation, providing high quality thermal IR images at 900m resolution, and using proven microbolometer technology.
- Heavy ion testing of the latest large format ROIC technology for MCT infrared detectors using in-pixel avalanche gain for low flux remote sensing.
- Demonstration and assessment of thermal infrared laser heterodyne spectro-radiometry for the remote sensing of carbon dioxide.

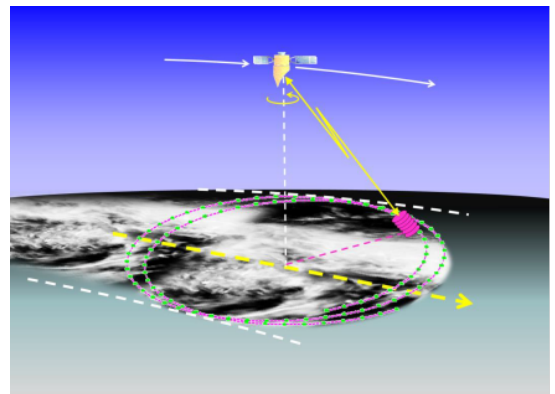


**Millimetre Wave**

- UK contribution to the feasibility study for the Atmospheric Limb Sounding Satellite (ALISS), leveraging previous UK technology developments in novel millimetre sideband-separating mixer (SHIRM) and Wideband Spectrometer (WBS) developments
- Novel instrument concept to observe ice clouds and humidity using large detector arrays, without mechanical scanning.

**Radar**

- Dual frequency, 35 and 240 GHz, Doppler radar with radiometric mode for the detection and quantification of mid and high latitude precipitation.
- Low cost generic measurement system to characterise ferrite materials in their remanent state for use in radar missions from C-band to Ka-band.



**SAR**

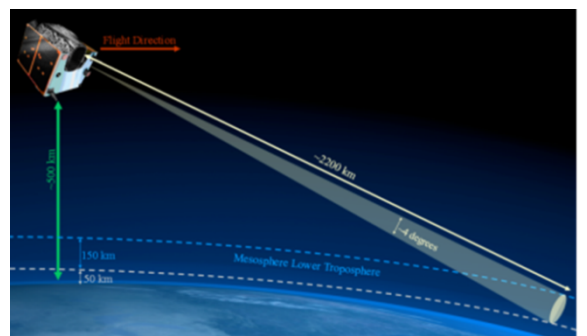
- Conically scanning broad-swath Dopplerised 94GHz radar to provide global measurements of winds, rainfall and cloud ice water content with 50km horizontal and 1km vertical resolution

**Terahertz**

- Novel limb sounding, multi-channel radiometer operating at 0.8 – 5 THz and deployed in low Earth orbit to make global measurements of key atmospheric species in the upper atmosphere

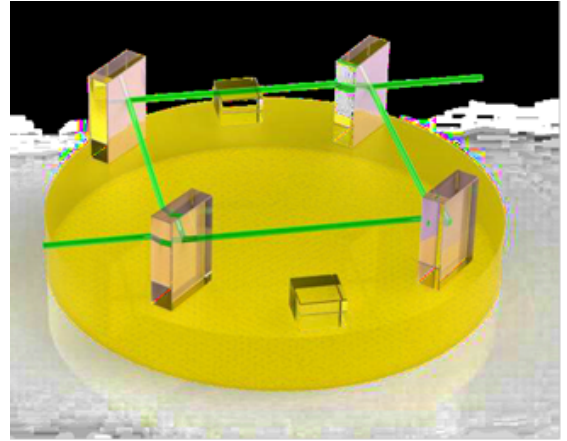
**Calibration**

- Accurate calibration of SAR interferometric phase for ocean surface current measurement to support the Wavemill concept for global measurements of ocean surface currents.
- Conformal, thin, lightweight meta-reflector (M-R) which is easily attached and possesses a highly stable reflection phase property for ground segment calibration and validation.



**Enabling technologies**

- Bonded optical assemblies using novel procedures such as mechanised component alignment and bonding, and ground surface active alignment prior to bonding.
- Adaptation for wider use of a contactless power and data transfer device with 95% power transfer efficiency & high reliability data transfer at rates in excess of 5Mbps
- Developing a Frequency Selective Surface to separate the 183 GHz channel from the 166 GHz channel for global temperature and water vapour profiles.



Addressing the larger challenges of increased performance and miniaturisation in Earth Observation instrumentation will require improvements in a wide range of enabling technologies. The CEOI-ST programme is always seeking high quality proposals for projects that are aligned with these objectives.

Further information about these projects and others funded by the CEOI can be found at [www.ceoi.ac.uk](http://www.ceoi.ac.uk). You can also contact the CEOI Director, Professor Mick Johnson: Tel: +44 (0)1438 774421 or email: [mick.johnson@astrium.eads.net](mailto:mick.johnson@astrium.eads.net).

## DECEMBER

10-11: **PROSPEX 2014**, London

PESGB is pleased to bring you the 12th show in the highly successful series of Prospects Fairs: the UK's leading networking event for exploration and development

We're pleased to still offer many talks from PROSPEX 2013 including keynotes and prospects to go. Check out the [talks online](#) for more information!

PROSPEX is a two day exhibition with a parallel speaker programme including the highly popular 'Prospectsto Go' sessions, for more information about the show, [please click here](#) or contact Ben Gardner ([ben@pesgb.org.uk](mailto:ben@pesgb.org.uk))

Registrations sales close Friday 5 December. Onsite registrations will still be available.

## GRSG 2015 AGM

A promotional banner for the GRSG 2015 AGM. The background features a satellite in orbit over a stylized Earth with a rainbow-colored horizon. The text on the banner includes the GRSG logo, the title '25 Years of Geological Remote Sensing', the dates '15th - 17th December 2014', and the location 'The Geological Society, London'.

Geological  
Remote Sensing  
Group 

**25** Years of Geological Remote Sensing  
15<sup>th</sup> – 17<sup>th</sup> December 2014  
The Geological Society, London

[Register Now! \(Click here\)](#)

## 15-19: **AGU FALL MEETING**, San Francisco

With nearly 24,000 attendees, the AGU Fall Meeting is the largest Earth and space science meeting in the world. Now in its 47th year, the AGU Fall Meeting is the best place to present your research, hear about the latest discoveries, trends, and challenges in the field, and network and make connections that can enhance your career.

The AGU Fall Meeting brings together the entire Earth and space sciences community for discussions of emerging trends and the latest research. The technical program includes presentations on new and cutting-edge science, much of which has not yet been published, meaning you'll return to work with knowledge you can't get anywhere else.

Pre-registration deadline: 14 November

## **FEBRUARY**

### 8-9: **Annual Investing in African Mining INDABA**, Cape Town, South Africa

Investing in African Mining Indaba™ is an annual professional conference dedicated to the capitalisation and development of mining interests in Africa. It is currently is the world's largest mining investment event and Africa's largest mining event.

## **MARCH**

### 23-27 March: **FRINGE 2015 WORKSHOP**

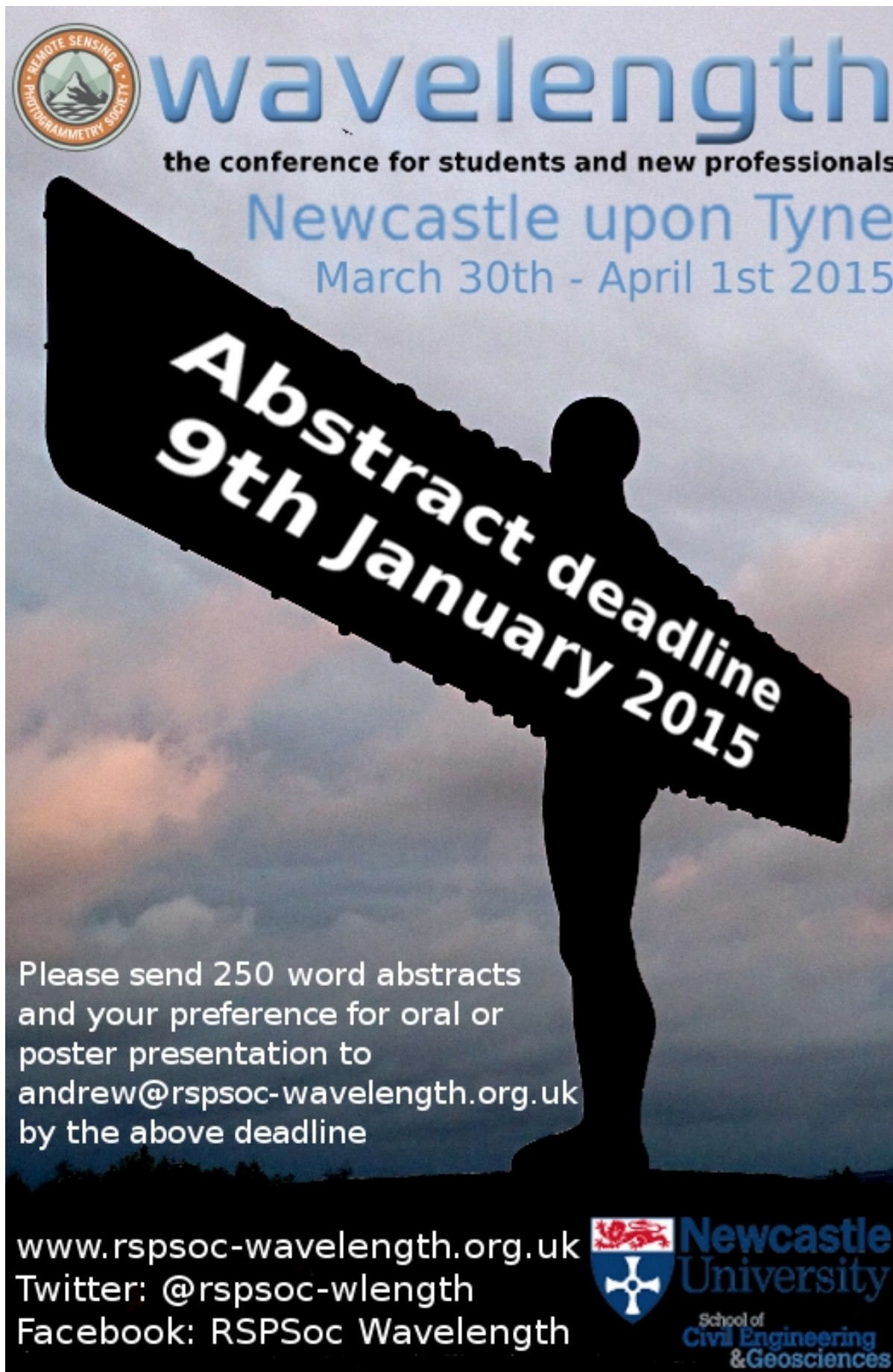



The European Space Agency, in the context of the Scientific Exploitation of Operational Missions (SEOM) element, is organising the 9th International Workshop Fringe 2015 Advances in the Science and Applications of SAR Interferometry and Sentinel-1 InSAR Workshop. The event will be hosted in ESA-ESRIN in Frascati, Italy between 23 and 27 March 2015.

The workshop is open to scientists, Sentinel-1 data users, students, representatives from national, European and international space agencies, and value adding industries.

The official language of the workshop is English. No participation fees will be charged. Participants are expected to finance their own travel and accommodation expenses.

The conference for students and new professionals in remote sensing and photogrammetry




 **wavelength**  
the conference for students and new professionals  
Newcastle upon Tyne  
March 30th - April 1st 2015

**Abstract deadline  
9th January 2015**

Please send 250 word abstracts  
and your preference for oral or  
poster presentation to  
[andrew@rspsoc-wavelength.org.uk](mailto:andrew@rspsoc-wavelength.org.uk)  
by the above deadline

[www.rspsoc-wavelength.org.uk](http://www.rspsoc-wavelength.org.uk)  
Twitter: @rspsoc-wlength  
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 **Newcastle  
University**  
School of  
Civil Engineering  
& Geosciences

## APRIL

12-17: **EUROPEAN GEOSCIENCES UNION GENERAL MEETING**, Vienna, Austria

The EGU General Assembly 2015 will bring together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary and space sciences. The EGU aims to provide a forum where scientists, especially early career researchers, can present their work and discuss their ideas with experts in all fields of geoscience. The EGU is looking forward to cordially welcoming you in Vienna!

Abstract deadline: 7 January 2015.

14-16: **9th EARSeL SIG Imaging Spectroscopy workshop**

EARSeL's Special Interest Group on Imaging Spectroscopy aims to encourage international discussions among specialists working with innovative Earth Observation technologies.

The 9th meeting, jointly organized by [Trier University](#) and the [CRP – Gabriel Lippmann](#), builds on the 8 previous successful workshops and will be held in Luxembourg in April 2015.

The workshop will cover all themes related to imaging spectroscopy. Hyperspectral remote sensing has started to move from a largely airborne to a fully spaceborne capability with the development of a number of satellite spectrometers, which will be launched in the next few years. Nevertheless, we find an increasing number of airborne and UAV-based systems in the research community with many new possible applications. At the same time the latest imaging spectrometers measure not just the traditional visible and near-infrared regions, but now also cover fluorescence and the thermal- and mid-infrared regions. These technical developments have fostered a number of groundbreaking research fields.

Deadline for submission of abstracts is 30 November 2014.



## GRSG North America Special Sessions

At the ASPRS Imaging and Geospatial Technology Forum

### Call for Papers

The **GRSG North America Committee** in collaboration with the **American Society of Photogrammetry and Remote Sensing (ASPRS)** is holding a series of special sessions on geological applications of photogrammetry and remote sensing at the **Imaging and Geospatial Technology Forum (IGTF)** (formerly the ASPRS Annual Conference) to be held at the Tampa Marriott Waterside Hotel, Tampa, Florida, May 4 through May 8, 2015. Abstracts are requested covering the following proposed themes:

- Applications of Unmanned Aerial Systems (UAS) in the extractive industries
- Advances in geological remote sensing for natural resource exploration
- Applied ecological remote sensing
- Operational uses of remote sensing in the extractive industries

GRSG North America will also be hosting a **networking and social event** during the **IGTF**. For more information or to submit an abstract (deadline: March 31st, 2015) please e-mail: [northamerica@grsg.org.uk](mailto:northamerica@grsg.org.uk). **We look forward to seeing you in Tampa!**



[www.asprs.org](http://www.asprs.org)



Geological Remote Sensing Group  
North America Committee

[www.grsg.org.uk](http://www.grsg.org.uk)



## JUNE

### 1-4: 77<sup>TH</sup> EAGE Conference & Exhibition 2015, Madrid, Spain

The topics have been set and the call for extended abstract for the 77th EAGE Conference & Exhibition 2015 in Madrid is now open! We invite you to submit your abstract and become part of the technical programme during the annual conference next year.

Registration opens	01 December 2014
Deadline conference call for extended abstracts	15 January 2015
Deadline early registration	15 March 2015
Deadline late registration	15 May 2015
Opening 77th EAGE Conference & Exhibition 2015	01 June 2015
Deadline workshops call for extended abstracts	15 February 20

### 2-5: WHISPERS Workshop in Hyperspectral Image and Signal Processing: Evolution in Remote Sensing, Tokyo, Japan

After a record breaking edition in 2014 at EPFL in Lausanne (250 participants), which featured an outstanding **technical program**: <http://www.ieee-whispers.com/index.php/past-editions/2014-lausanne-switzerland>

as well as a number of **exhibiting companies**: <http://www.ieee-whispers.com/index.php/2014-sponsors>

The **2015 edition** of WHISPERS will be held in **Tokyo, Japan**.

Important dates: full paper submission: 31, January 2015

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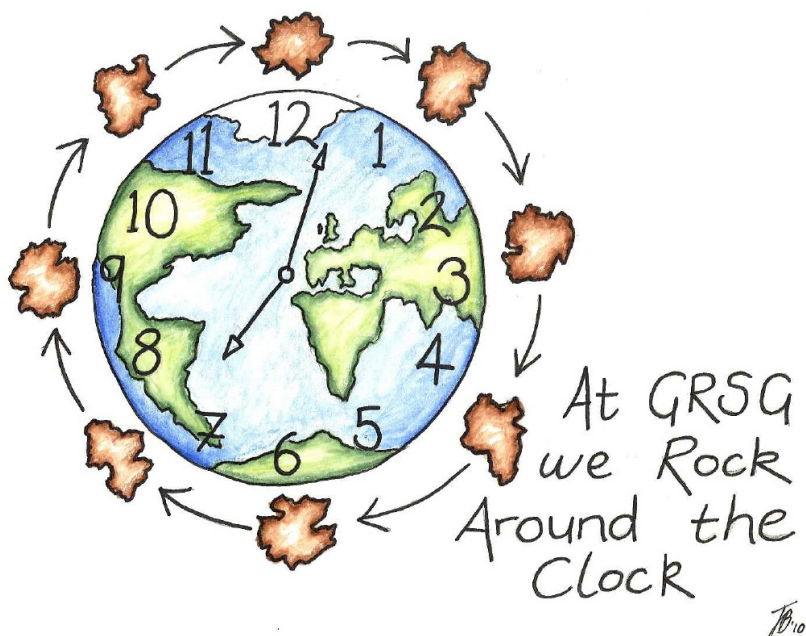
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Geological Remote Sensing Group

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