

NewsLetter

Issue No.4, Vol. 3 – December 2009

Use of Close Range Photogrammetry

**DISASTER RESPONSE:
THE EO PERSPECTIVE (PART II)**

Interview with Prof. Kohei Cho



ISPRS SC Newsletter

Editor-in-Chief:

Gregor STAVBAR

Tehcnical Editor:

Gregor STAVBAR

Editorial Board:

Dr. Emmanuel BALTSAVIAS

Dr. Mojca KOSMATIN FRAS

Dr. Anka LISEC

Krzysztof STEREŃCZAK

Cemal Özgür KIVILCIM

Proof-Reading:

Martin SOMERS

Contributors:

Urša KANJIR

Aleš LAZAR

Vasileios KALOGIROU

Kaja KANDARE

To join our members area visit

www.isprs-studentconsortium.org

SC Newsletter (ISSN Y506-5879) is published every three months by ISPRS Student Consortium.



This PDF version of **SC Newsletter** is licensed under a Creative Commons Licence.

For more information about the licence visit:
<http://creativecommons.org/licenses/by-nd/3.0/>

Frontpage designed by Ayda Aktaş

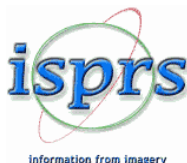


Table of Contents

- 2 NEWS FROM STUDENT CONSORTIUM SPOTLIGHTS**
Interview with Prof. Dr. Kohei Cho
- ANNOUNCEMENTS**
XXIII IGSM 2010 - Zagreb, Croatia
15th Australasian Remote Sensing and Photogrammetry Conference
- 3 USE OF CLOSE RANGE PHOTOGRAMMETRY**
The Use of Close Range Photogrammetry in Monument and Building Documentation
- 4 DISASTER RESPONSE**
The Earth Observation Perspective (Part II)
- 5 A COORDINATOR'S EYE**
What is INSPIRE?
- 6 PAST EVENTS REPORTS**
UNSW Radar Remote Sensing Short Course
30th Asian Conference on Remote Sensing
- 7 IT NEWS**
- INTERESTING LINKS**
- 8 STUDIES AND PRACTICAL WORK**
- 9 OTHER INFO**
- FUTURE ISPRS RELATED EVENTS**
Calendar of Forthcoming Events



Let's Come Together
to Make The World
Smaller and Smaller,
While Enlarging
and
Powering Our
Student Consortium
Network!!

JOIN US!!!

Dear SC Follower,

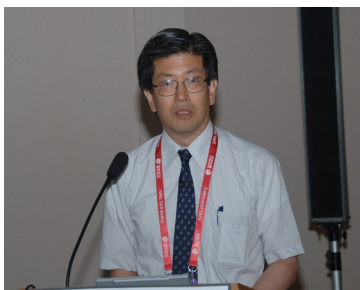
Student Consortium welcomed its 300th member just before 2010. The year has gone fast with various events and activities; The Student Consortium was present at various international, regional symposiums, local meetings etc. More, the envy of SC, our annual summer school was successfully held in Warsaw with the efforts of local volunteers and organizations. There is a huge work and need of excellent team work behind of each of these activities above. I am thankful to everyone especially SC Board Members and Regional Coordinators who made it possible. We are all grateful to our guiding WG VI/5's Chair Dr. Manos Baltasvias and thankful to the SC liaison ISPRS Council, Prof. Dr. Ammatzia Peled for his support.

2010 is full of events for ISPRS and therefore for Student Consortium. This year, the ISPRS society is celebrating its 100th birthday with the ISPRS technical commissions organising different symposiums. Special student opportunities and grants are offered to participate to events. SC has prepared its event calendar for 2010 and will be organizing student specific events both in technical and social program through the ISPRS events. Also, we will be announcing our Summer School for 2010 shortly. To keep up to date with what is happening in the community log onto our webpage where announcements are delivered directly to our members' inbox.

On Behalf of Student Consortium I wish you a healthy and pleasant year through 2010.

Best Regards,
Cemal Özgür KIVILCIM
SC Chair

SPOTLIGHTS



Interview with Prof. Dr. Kohei Cho by Urša Kanjir

This time we interview dr. Kohei Cho, professor at the Department of Network and Computer Engineering of the Tokai University in Japan. From 2004 to 2008, he was the Commission VI President of the ISPRS and in 2009 he was assigned as the General Secretary of Asian Association on Remote Sensing (AARS). He won several awards for his work and he makes great effort to promote the profession among students.

Click [here](#) to read the entire interview.

XXIII IGSM 2010 - Zagreb, Croatia

The XXIII International Geodetic Students' Meeting (IGSM) is going to be held from **2nd to 8th May 2010 in Zagreb**, the capital of **Croatia**. The IGSM Organization board, made up of 20 students from the **Faculty of Geodesy**, has been steadily preparing for the forthcoming event during last year, backed up by both professors and assistants. This event is going to be attended by 150 students from 30 universities, situated in 20 countries. We are going to provide for you a diverse program, ranging from presentations, workshops, excursions, but also lots of cultural and social events. We invite you to present your work by holding a presentation, or taking part in a poster session, by making your own poster.

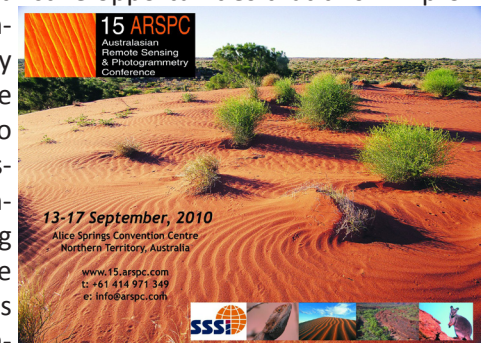
We also offer you an optional trip to Zadar, a city of exceptional history and rich cultural heritage situated on the Dalmatian coast, where we are going to stay for three days after the IGSM. We are planning to visit the National Park Kornati, the densest archipelago in the Mediterranean Sea.

You can subscribe starting with the beginning of the next year on our web site: <http://igsm2010.geof.hr>, and if you have any questions or suggestions you can write us via mail: igsm2010@gmail.com.



15th Australasian Remote Sensing and Photogrammetry Conference

The Remote Sensing and Photogrammetry Commission of the Surveying and Spatial Sciences Institute and the 15ARSPC Organising Committee look forward to welcoming delegates to the [15ARSPC in Alice Springs](#), Northern Territory, to be held between the 13th and the 17th of September 2010. This is the first time in the history of the ARSPC series that the conference is to be held in the unique landscape of Arid Central Australia. We are excited by the distinctive opportunities that this will provide for the remote sensing and photogrammetric community of Australasia. Not only will you encounter the vivid and distinctive landscape of outback Australia, but you also have the opportunity to apply remote sensing knowledge in this environment. The conference will provide a forum for showcasing Australasia's latest spatial research, expertise and future remote sensing developments along with a focus on technical and application based projects with demonstrations of new and novel products and services.



USE OF CLOSE RANGE PHOTOGRAMMETRY

The Use of Close Range Photogrammetry in Monument and Building Documentation ©

by Thanasis Moysiadis (University of Thessaly)

The very first measurements ever made were using Photogrammetry in the middle of the 19th century. The term photogrammetry was introduced by the architect Albrecht Meydenbauer, who had the idea to use photographic images for the documentation of buildings. The need of an accurate documented model of a monument provides a testimony in case of destruction.

The basic projective geometry is the same for both close-range and aerial photogrammetry. However, in close range applications the locations and orientations of images are much less regular and multistation convergent image geometry provides whole 3D coverage of an object.

of photogrammetric processing. Close range photogrammetric work nearly always uses the bundle adjustment, based on the collinearity condition, with the point coordinates and the camera stations as the unknowns. Moreover, the parameters of interior orientation can be part of the unknowns in the bundle adjustment as part of the camera calibration.

The collinearity equations are used for photogrammetric resection and intersection. By means of resection the different positions of the camera in space used for camera calibration, as well as the exposure stations of the stereopair are computed, knowing the coordinates of ground control points, the corresponding image measurements as well as the parameters of interior orientation. With photogrammetric intersection, given the images exterior orientation, inner orientation elements and image coordinates of the point of interest, the identities and locations of new points of interest in the ground coordinate system are computed.

In monument and building documentation certain monument specifications, which differ based on a national basis, need to be considered. These specifications provide a valuable and robust control on the provision of base mapping data in conservation and recording projects.

To conclude, photogrammetry provides a valuable methodology in building and monument documentation, with correct image geometry and the high spatial resolution of photographic imaging can lead to a well produced documented model.

In the *next Newsletter issue*, the use of Laser Scanning in monument and building surveying is outlined.

Related Organizations

[The International Council on Monuments and Sites](#)

[The International Scientific Committee for Documentation of Cultural Heritage \(CIPA\)](#)

Related Conferences

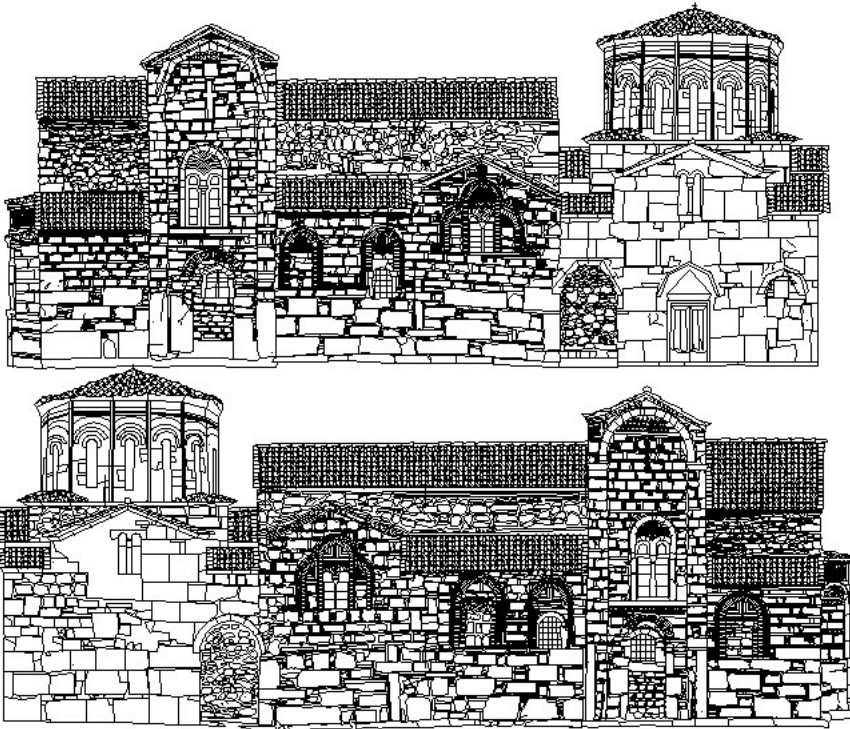
[ISPRS Commission V Mid-Term Symposium Close Range Image Measurements Techniques](#)

22nd – 24th June 2010, Newcastle upon Tyne, UK

XXIII CIPA Symposium, 12th - 16th Sept. 2011, Prague, Czech Republic



© Thanasis Moysiadis



© Thanasis Moysiadis

Interior orientation describes the internal geometry of a system of a camera and a lens system. The main concern for photogrammetrists is to be able to compensate for the lenses distortions and evaluate its stability and performance. This is the objective of camera calibration, which is crucial factor before the commencement

The Earth Observation Perspective (part II)

by Vasileios Kalogirou (RSAC c/o ESA)

Having already considered some important issues relevant with disaster response and Earth Observation (see [previous](#) article), we can now proceed with a small introductory description of the International Charter for Space & Major Disasters (or simply 'the Charter'), which was initiated almost 10 years ago by the European and French Space Agencies (ESA and CNES), with the Canadian Space Agency joining some months later in October 2000. Since then many space agencies have joined the Charter, enlarging its 'artificial constellation'.

The main idea behind the Charter is that the signatory agencies commit to some of their resources in the case of a major disaster, in order to enable efficient and immediate use of EO data for disaster response and crisis management. Needless to say that the whole chain-of-actions from the beginning (activation of the Charter) up to the end (provision of information/maps) is a very well-documented process. Here we should clarify something: There are particular bodies that can request a Charter Activation (the so-called 'Authorised Users'). Usually Civil Protection or other security bodies that belong to a country which participates somehow into the Charter can request its services. Other countries that do not participate in the Charter (directly or through an international agency) can still request for Activation in the case of a major disaster, through United Nation bodies. There are also cases where a participating country can activate the Charter above another country, which is not represented in the Charter.

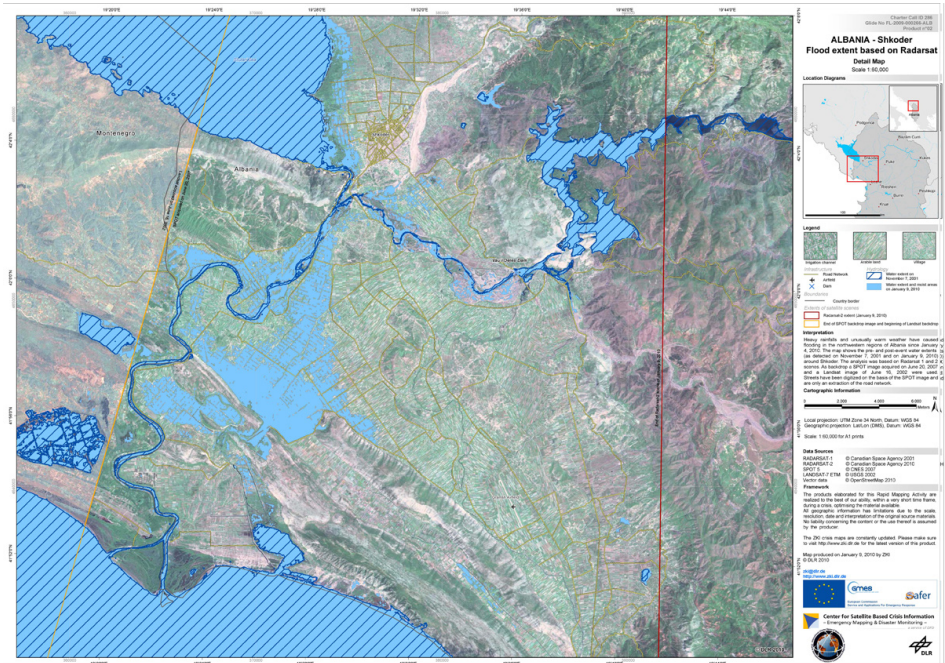
The main parties that are involved in any Charter-activation are:

1. the aforementioned Authorised User (AU) who will request the activation,
2. the On-Duty Operator (ODO) who will receive and confirm the request, re-transmitting it to the Emergency On-Call Officer (ECO),
3. the Emergency On-Call Officer (ECO) who will verify the validity of the Charter's request and will submit EO-data requests in the Space Agencies. All the information regarding the disaster event and the data requests are gathered in the Dossier, which after is being passed to the Project Manager,
4. the Member Agencies of the Charter, which receive the data requests and task their satellites,
5. the Project Manager (PM) who coordinates the whole process after the ECO's planning and ensures the data provision to the end-user.

In particular cases, there are also Value-Adding Resellers which will receive and process the images in order to provide meaningful information. All those parties are involved in the Charter's process, whose response-time varies

according to the event. In general, as can be seen from the products that are published on the [Charter's website](#), the response time from the activation to the publication of a disaster map and its provision to the End User can vary from few hours up to 2 days. This can be considered as a major achievement for EO-based services and is mainly due to the 'artificial constellation' of satellites that act all together to ensure appropriate coverage above a disaster area, and also due to the efficient and quick process which has been improved during those 10 years. I believe that the Charter is a very good example of how satellite resources and EO science can be applied to improve the quality of emergency response services and -why not- save human lives.

Because I do not claim to include everything in this small article, I invite you to have a look on the Charter's website on www.disasterscharter.org.



Shkoder, Albania
Source: RADARSAT-1, RADARSAT-2, SPOT-5, LANDSAT-7 ETM
Acquired: pre-event 07/11/2001; post-event 09/01/2010
Copyright Canadian Space Agency, CNES, USGS.
Image processing, map created 09/01/2010 by ZKI. © DLR

The author states that this article contains only publicly available information from the Charter's website.

A COORDINATOR'S EYE

Dear reader's, dear members!

In order to improve our work on a local level and ensure better coordination and exchange of information there is an initiative that every country has its own representative. Therefore, I would like to invite all of you with ideas and a little of free time to [contact](#) me and participate in the SC.

In this way, all of us will have faster and up to date information of what our colleagues are working on in other countries, maybe their interesting projects, find out if there are some student exchange programs to be involved in, etc. We can put all this information on our [website](#) and make it a vivid place for information exchange. Share your own work and experiences.

Ivana Dabanović,
European Regional Coordinator

Become a member of the Student Consortium!

As a member you will be kept informed about the activities of the SC, education, conferences, you will obtain SC Newsletters and much more!

Membership is open to all the students and researchers interested in remote sensing, photogrammetry and spatial sciences and there is no membership fee.

[Be part of the society now!](#)



What is INSPIRE?

by Ivana Dabanović

There is more and more European countries accepting the INSPIRE idea, putting it in its legislative frame and in use. Within some time span, all EU countries will be obliged to follow the INSPIRE standards. Here we bring some general information about this initiative (source: inspire.jrc.ec.europa.eu)

The challenges regarding the lack of availability, quality, organization, accessibility, and sharing of spatial information are common to a large number of policies and activities and are experienced across various levels of public authority in Europe. Infrastructure for Spatial Information in the European Community (INSPIRE) for environmental policies, or policies and activities that have an impact on the environment. INSPIRE will be based on the infrastructures for spatial information that are created and maintained by the Member States of the EU. Interoperability in INSPIRE means the possibility to combine spatial data and services from different sources across the European Community in a consistent way without involving specific efforts of humans or machines. Interoperability may be achieved by either changing (harmonising) and storing existing data sets or transforming them via services for publication in the INSPIRE infrastructure. It is expected that users will spend less time and efforts on understanding and integrating data when they build their applications based on data delivered within INSPIRE.

- Metadata must include the conditions applying to access and use for Community institutions and bodies; this will facilitate their evaluation of the available specific conditions already at the discovery stage.
- Member States are requested to provide access to spatial data sets and services without delay and at the latest within 20 days after receipt of a written request; mutual agreements may allow an extension of this standard deadline.
- If data or services can be accessed under payment, Community institutions and bodies have the possibility to request Member States to provide information on how charges have been calculated.
- While fully safe-guarding the right of Member States to limit sharing when this would compromise the course of justice, public security, national defence or international relations Member States are encouraged to find the means to still give access to sensitive data under restricted conditions, (e.g. providing generalized datasets) Upon request, Member States should give reasons for these limitations to sharing.

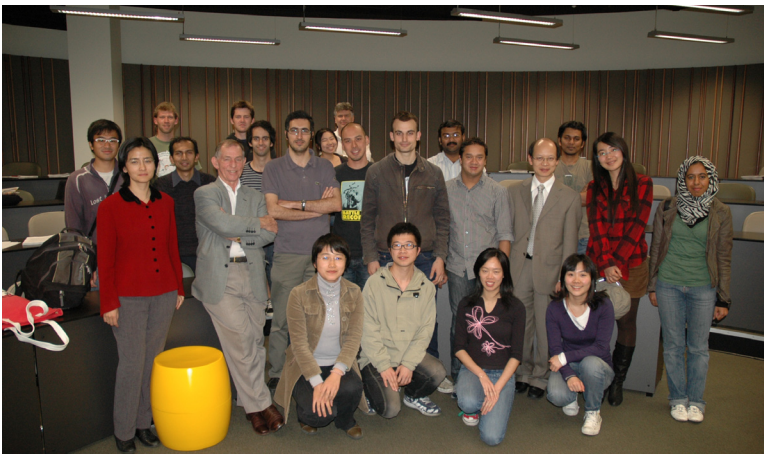
PAST EVENTS REPORTS

UNSW Radar Remote Sensing Short Course

by Joanne Poon

The University of New South Wales hosted an intensive five day short course on Radar Remote Sensing in Sydney, Australia. The course was attended predominantly by postgraduate research students from environmental management, electrical engineering, spatial, geography and computer science backgrounds. The remaining 10% was made up of industry representatives from government departments (Roads and Traffic Authority, Department of Environment, Climate Change, Water NSW) and private industry (Sinclair Knight Merz). Radar has many different components which make up a suite of technologies (phase, intensity and polarisation). The course was principally theoretical focusing on microwave remote sensing, but there was also some time to have a taste of some radar applications in environmental monitoring, forestry and mining for land mapping, urban subsidence, DEM generation and ground settlement monitoring. Associate Professor Linlin Ge, Professor Bruce Forster, Professor Tony Milne and Dr. Michael Chang covered topics including the nature of surface and volume scattering, image distortion and geometric and radiometric corrections, synthetic aperture radar, airborne and satellite imaging radar systems, image processing, and radar applications in agriculture, forestry, geology, oceanography, engineering, tropical wetlands, urban and mapping. It is an exciting time for microwave remote sensing and radar applications as more and more radar sensors are being launched and we will see increasing volumes of data being made available in the near future. The UNSW radar short course is run in Sydney annually. Further information can be found [here](#).

I highly recommend it for next year!



UNSW radar short course participants in 2009

The 30th Asian Conference on Remote Sensing (ACRS)

by Kyaw Sann Oo

Over the 18th - 23rd October 2009, the 30th ACRS conference was successfully held at Beijing Conference Center in the capital of China. AARS (Asian Association on Remote Sensing) assembly was also held in parallel within the conference days. Conference program also included the 30th ACRS attracted participants by hosting a one day student program and a colorful youth night event as pre-event; ACRS's 30th celebration; retirement of the general secretary and appointment of a new one in AARS. 30 years after the ACRS birth, the 30th ACRS announced that "Asia Onward Space Age" in the region. There were three sessions for student participants. These included:

1. one day pre-event student program,
2. white elephant session with how to promote students and young scientists in Asia
3. UN GAID e-SDDC Young Scientist Forum Session under ACRS

Pre-event Student Program

Organizing committee allocated one day pre-event student program on the 18th of October, 2009. There were 15 technical sessions in five rooms for full day. The program undertook 360 minutes of technical sessions. However the event is called youth night; famous seniors were involved to the enjoyable youth activities with much satisfaction. Most of papers were dominantly contributed by Chinese and Japanese students although there were also paper contributions from various countries (Indonesia, Iran, Korea, Russia, Malaysia, Mongolia, Myanmar, Netherlands, South Korea, Singapore and Thailand).

White Elephant Session with "how to promote Students and Youth Scientists in Asia"

Every year, white elephants club members give their life knowledge to younger members through ACRS. ISPRS-SC appeared under the white elephant session with an allocation for a 10 minute presentation to student participants and seniors. Finally, the session is closed by open discussions between seniors and youths to promote students and young scientists in Asia.

UN GAID e-SDDC Young Scientist Forum Session under ACRS

A new session appeared at this years ACRS event called UN GAID e-SDDC Young Scientist Forum. The session was led by one of ISPRS-SC's national coordinators.

Merrick Advanced Remote Sensing (MARS) 6.0

Merrick & Company, one of the world's leader in light detection and ranging (LiDAR), digital orthophotography, photogrammetry, hyperspectral mapping, and geographic information systems (GIS) mapping, announced the release of Version 6.0 of its proprietary software designed to view and manage geospatial mapping light detection and ranging (LiDAR) data.

The MARS software suite is a robust, production-grade Windows application designed to manage, visualize, process and analyze LiDAR data with powerful visualisation capabilities and performance.

Many new application features and product enhancements have been added to the application, which now fully supports Windows 32-bit and 64-bit operating systems. Natively supports LiDAR (LAS), imagery (RGB & hyperspectral) and GIS (vector) datasets. The newest version of MARS is expected to appeal to a wide variety of commercial, government and academic users.

Source: <http://merrick.com>

LandSIM3D v2.0

Bionatics has released version 2.0 of LandSIM3D. Its 3D simulation and visualisation software dedicated to territory planning and landscape preservation. This version offers new features to answer the growing needs of city planning and landscape design professionals looking for powerful simulation and decision-making tools able to guaranty a sustainable development of the territory.

LandSIM3D v2.0 will stream the 3D models on the fly and display them in the 3D, in addition to the full procedural display of the rest of the scene. Such technology allows realistic visualisation of the city while maintaining the interactivity in the display of the scene. The time simulation features have also been extended to all the data used to build a scene (objects, elevation, aerial imagery, vector maps, biotopes) in order to simulate and the visualise all the characteristics of evolution of a city, a territory or a complex project thanks to the timeline.

Source: <http://www.landsim3d.com/>



Cartography 2.0

A free online knowledge base and e-textbook for students and professionals interested in interactive and animated maps

More info [here](#)

ESA Earth Observation Missions

More info [here](#)

RESOURCES

ESRI GIS Bibliography

More info [here](#)

Aerial Photography & Satellite Imagery

More info [here](#)

JOURNALS

Earthzine

On-line publication for the international Earth-observing community that fosters Earth observation and global awareness

More info [here](#)

FREE SOFTWARE

LAStools

Converting, viewing and compressing LIDAR data in LAS format

More info [here](#)

RELATED ORGANIZATIONS

International Association for Mathematical Geosciences

More info [here](#)

TUTORIALS

GISHowTo.com

Source for GIS tips and tutorials

More info [here](#)

STUDIES AND PRACTICAL WORK

This column serves as a guide for the students who are thinking or are willing to go studying or doing practical work abroad. We have searched for new opportunities in different faculties, schools and other learning programs all over the world in order to encourage as many students as possible to take new steps towards new horizons.

The **Technical University of Madrid, Spain**, is offering **Master's program** in **Satellite Technology**. The purpose of this programme is to develop students into competent and interdisciplinary engineers prepared for future engineering roles in space related industries, government agencies and business management. It has a strong emphasis on both **theoretical** and **applied** aspects, including practical hands-on lab sessions held at the most important space centers and companies involved in the master.

More info [here](#)



CLGE Launches FirstSTEP: a Student & Trainee Exchange Programme

FirstSTEP: the programme was first Launched at the CLGE General Assembly in Rome in September 2009 and also launched at InterGEO 2009 in Karlsruhe. The purpose of this programme is to provide students and trainees with an opportunity to discover the geodetic practice within different European countries and concurrently gain experience in their field of study, past or present. CLGE acts as a bridge between the working world and the academic world enabling companies to post a notice of any vacancies, and for students willing to gain experience in a different European country as to where they are currently living or studying. First-Step is a meeting point for students and trainees that are in search of work and for companies that are in search of students and/or trainees. For further information visit our [website](#) or email us on FirstSTEP@clge.eu;

Currently we have 19 students that have their applications on line and 5 companies that are offering jobs in Austria, Belgium, Poland and Malta. We encourage more companies to post vacancies on line as the students & trainees are our future in the world of Surveying.

The **Global Security and Crisis Management** Unit of Joint research Centre (JRC) in **Ispra, Italy**, is looking for a **post-doc researcher** for the activities related to **human settlement analysis with optical VHR imagery** with the duration **36 months**. The candidate will work with new generation high resolution (HR) and very high resolution (VHR) optical and radar satellite data. Application must be delivered before **31 January, 2010**, so hurry up!

More info [here](#)

The Cooperation between three universities in **Germany, Spain and Portugal** results in The **International Masters Program in Geospatial Technologies**. The three-semester program targets holders of Bachelor degrees in application areas of **Geographic Information (GI)**. The European Commission provides also **financial contributions or scholarships** for students.

More info [here](#)

Space agencies join forces to systematically observe climate variables

Over 30 000 people from 190 nations are gathered at the two-week UN Climate Change Conference in Copenhagen. On Thursday about 150 distinguished guests attended an ESA-hosted side event entitled 'Global Monitoring of our Climate: the Essential Climate Variables'.

During the event, speakers from various agencies highlighted the role that Earth observation satellites play in providing systematic global climate observations. These observations are essential for climate change research and for managing mitigation and adaptation strategies..

Read more...

Unexpected Ice Loss Detected in East Antarctica

Using gravity measurement data from the NASA/German Aerospace Center's Gravity Recovery and Climate Experiment (Grace) mission, a team of scientists from the University of Texas at Austin has found that the East Antarctic ice sheet-home to about 90 percent of Earth's solid fresh water and previously considered stable-may have begun to lose ice.

Read more...

1949 Aerial Survey of London

Bluesky has uncovered a series of 1949 original aerial survey photographs covering the whole of Greater London. Revealing the capital in the post-war period, landmarks that we take for granted today are pictured under construction; Battersea Power Station has only three out of its four chimneys while the Royal Festival Hall, whose foundation stone was laid that year, is a 1940's building site. The photographs were rediscovered following an agreement between Bluesky and Blom Aerofilms which will see these images, part of the UK's largest collection of commercial aerial survey images, available online.

Read more...

PCI Geomatics Supports ISPRS Foundation

Richmond Hill, Ontario – December 14, 2009 - PCI Geomatics is pleased to announce its support for The ISPRS Foundation Inc. (TIF) which offers assistance to the photogrammetric, remote sensing and spatial information sciences and technologies.

The ISPRS Foundation Inc. is a non-profit scientific and educational entity managed by a Board of Trustees for, but independent of, the International Society for Photogrammetry and Remote Sensing (ISPRS). The Foundation provides grants that assist individuals, especially from emerging markets and regions, who wish to further their knowledge, skills and experience in the sciences and technologies associated with the disciplines embodied by the ISPRS.

Read more...

Gi4DM 2010 - Remote Sensing & Geo-Information for Environmental Emergencies

Torino, Italy, 2-4 Februar 2010

For more info visit: <http://www.gi4dm-2010.org/>

EuroCOW 2010 - Calibration & Orientation

Castelldefels, Spain, 10-12 Februar 2010

For more info visit: <http://www.ideg.es/page.php?id=787>

GEOProcessing 2010

St. Maarten , Netherlands Antilles, 10-15 Februar 2010

For more info visit:

<http://www.iaaria.org/conferences2010/GEOProcessing10.html>

MicroRad 2010

Washington, USA, 1-4 March 2010

For more info visit: <http://www.microrad2010.org/>

ISPRS Workshop on "Advances in Cultural Heritage Measurement Techniques"

Kanpur, India, 10-12 March 2010

For more info visit: <http://www.iitk.ac.in/arch3d/>

RSPsoc Annual Student Meeting 2010

Plymouth, UK, 15-17 March 2010

For more info visit: <http://www.rspsoc2010asm.webs.com/>

ISPRS Workshop on "Core Spatial Databases - Updating, Maintenance & Services - from Theory to Practice"

Haifa, Israel, 15-17 March 2010

For more info visit: <http://geo.haifa.ac.il/~isprs/HaifaJointWS/>

ICCCM'2010

Estoril, Portugal, 11-17 April 2010

For more info visit: <http://icccm.dcea.fct.unl.pt/>