



United Nations University–ITC School for Disaster Geo-information Management

Capacity Building for Disaster Geo-information Management



ITC INTERNATIONAL INSTITUTE FOR GEO-INFORMATION SCIENCE AND EARTH OBSERVATION



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In 2005 the United Nations University (UNU) appointed the International Institute for Geo-Information Science and Earth Observation (ITC) as Associated Institution. The Mission of ITC “aims at capacity building and institutional development of professional and academic organizations and individuals specifically in developing countries and emerging economies” and is principally identical to the mission of UNU, which is “to contribute, through research and capacity building, to efforts to resolve the pressing global problems that are the concern of the United Nations, its Peoples and Member States”.

The UNU-ITC School for Disaster Geo-information Management (DGIM) was established in 2006.

The main objective of DGIM is to support capacity building of organizations in developing countries through training of individuals in the collection, management, analysis and dissemination of spatial information before, during and after disaster events, in order to reduce the impacts of natural and related environmental and technological hazards.

Worldwide we are faced with a rapidly growing impact of disasters, due to increased vulnerability and climatic extremes. There is an urgent need to include the concepts of disaster risk management into planning, sustainable development and environmental impact assessment. The evaluation of the expected losses due to hazardous events requires a spatial analysis, as



all components differ in space and time, using tools that handle spatial information, such as geographic information systems (GIS).

One of the important requirements to carry out an effective disaster risk management is capacity building and training of disaster management experts and professionals. The Hyogo framework of action 2005-2015 of the UN-ISDR indicates risk assessment and education as two of the key areas for the development of action in the coming years.

Research

Within DGIM much attention is paid to knowledge development and research collaboration. This is realized through research projects, PhD research, and visiting scientists. Research projects are mostly through Netherlands funding, the European Commission, or through research agreements with partners in other countries (e.g. in India, Thailand and China). Currently, around 20 PhD researchers are enrolled in research projects under DGIM. Some of the topics of PhD research are:

Multi-hazard risk assessment and management

- Geoinformation for measuring urban vulnerability: Lalitpur (Nepal) and Medellin (Colombia)
- SDSS for urban vulnerability reduction of slum areas in Ahmedabad (India)
- Multi-Hazard risk assessment for an urban area (Yen Bai town), Vietnam.

Landslide hazard and risk assessment

- Multi-scale spatial landslide risk assessment in Cuba



- Modeling the effect of vegetation on debris flows (Kerala, India)
- Runout assessment of mountain hazards (Italy and France).

Flooding

- Integrating local knowledge into GIS-based flood risk assessment (Naga City, Philippines)
- Flood modelling (Ethiopia).

Earthquakes

- Empirical relations from topographic and geotechnical effects on soil response (Costa Rica)
- Seismotectonics of the Magadi basin: InSAR (Kenya)
- Earthquake induced landslide dams. A case study from Sichuan, China.

Land degradation

- Soil predictive modelling and spatial analysis (Thailand)
- Scaling spatial variability of rainfall and erosivity (Capo Verde)
- Hyperspectral remote sensing and soil properties for erosion modelling (Ethiopia).

Partner institutes/ partner organisations

The School has contacts with a large number of organizations. Some of these are:

International

UN-ISDR; UNOOSA; UN-SPIDER; UN-CSSTEAP; UNU-EHS; UNU-ESD; Kopernikus, GMES; IFRC; WFP; FAO.

Asia

CDUT / SKLGP, China; IIRS, NRSC, GSI, NIDM, India; Gadjah Madah University, Indonesia; NCEG, Pakistan; ICIMOD, NSET, Nepal; ACSAD, Syria; PGIS, Sri Lanka; APDC, AIT, Thailand; RIGMR, Vietnam.

Africa

RCMRD, Kenya; Makerere University, Uganda; ARU, Tanzania; Federal University of Technology, Minna, Nigeria; Midlands State University, Zimbabwe; Moi University, Eldoret, Kenya; University of Dakar, Department of Geography, Senegal.

Latin America

CEPREDENAC, Central America; CSUCA; UNAM, Mexico; CLAS, Bolivia; Universidad de San Carlos, Guatemala; CYTED.

Europe

Universities of Vienna, Utrecht, Wageningen, Geneva, Barcelona, Milano, Dortmund, Caen, Grenoble, Oslo, Durham; ICG Norway; CNR IRPI, Italy; VITO, Belgium; BGR, Germany.

Advisory services

DGIM is involved in the implementation of several projects, varying from multi-year projects co-funded by the research programme of the European Commission, to short-term on-the-job training to local governments. In our project activities in Africa, Asia and Latin America, DGIM intends to collaborate as much as possible with their university network partners. Funding comes from the Netherlands government, European Commission, and International Organizations (e.g. Worldbank, UNESCO, US-AID).



Education

Capacity building within DGIM is done through workshops and short courses, university networks, joint education programmes with partners and distance education.

For an overview of courses see www.itc.nl/education/courses/disastermgt.aspx

Certificate courses and Workshops

Short courses and workshops are organized and can be offered on request at ITC in the Netherlands as well as on location.

Degree courses

An 18-month MSc degree course is offered at ITC focusing on the use of remote sensing and geo-information technology in analyzing geo-hazards (disastrous events such as landslides and floods, as well as slow processes of land degradation) and the risk associated with them.

Joint degree courses

DGIM collaborates with several partners to offer regularly joint courses, which may be short duration (2 to 4 weeks) up to full joint MSc programmes. Short duration courses are offered annually together with partners in Bolivia (CLAS), Mexico (CIGEO/UNAM), Thailand (ADPC/AIT), India (CSSTEAP), Switzerland (CERG) and Eastern Africa (RCMRD and other University partners). Full MSc courses on Geo-information for Spatial Planning and Risk Management are organized with the Gadjah Mada University (UGM), Yogyakarta Indonesia), and with the Indian Institute of Remote Sensing (IIRS), Dehradun, India.

Distance Education

The School has developed a training package on the application of GIS for multi-hazard risk assessment. The package, called RiskCity comprises a complete suite of exercise descriptions, together with an open source GIS software (ILWIS), GIS data, answer sheets, guidance notes and presentation materials. The distance education course aims to give an understanding of the basic concepts involved in risk assessment, and how GIS can be used for analyzing different types of hazards, create an elements at risk database, assess vulnerability, make qualitative and quantitative loss estimations, carry out a cost benefit analysis, and use the data for urban planning and disaster risk management. It is offered as a distance education course.

University networks

DGIM supports university networks on disaster risk reduction in Asia, Africa and Latin America. The university network in Asia is called CASITA, established in 2005 with 13 university partners and coordinated jointly with the Asian Centre for Disaster Preparedness in Thailand. In Africa, the University Network for Disaster Risk Reduction in Africa (UNEDRA) founded in 2006, organises short courses and is currently involved in a number of research network projects. In Latin America a university network, called Red Universitaria de Investigación para la Reducción de Riesgos a Desastres en América Central (RUNIRED) has been recently established and is closely linked to the existing Central American organisation of public universities (CSUCA).





Contact Information

International Institute for Geo-Information
Science and Earth Observation (ITC)
UNU-ITC School for Disaster Geo-information
Management (DGIM)
P.O. Box 6
7500 AA Enschede
The Netherlands

Dr. C.J. (Cees) van Westen

Director

T: +31 (0)53 4874263

E: westen@itc.nl

I: www.itc.nl/about_itc/resumes/westen.aspx

Mrs. S. (Sabine) Maresch

Marketing Officer

T: +31 (0)53 4874386

E: maresch@itc.nl

Ms. A. (Anneke) Nikijuluw

Secretary

T: +31 (0)53 4874568

E: dgim@itc.nl

www.itc.nl/unu/dgim



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