What’s ITC all about?

One of humankind’s greatest challenges is to achieve an appropriate balance between developing natural resources and maintaining an optimal natural environment. To meet this challenge, we need detailed and reliable geo-information and geo-information management tools.

Disaster management

Every year natural disasters have severe consequences for a large part of the world’s population, ecosystems and resources, particularly in developing countries. Although disasters are merely a result of natural processes, their frequency and magnitude seem to be increasing as a result of changing driving forces such as climate change, land use changes and population dynamics. The disaster management research focuses on the consequences of “geo-hazards”, both those that cause rapid disasters which have a shock effect and those that cause slow-onset disasters which result in a slow and negative trend in our environment. Geological hazards such as earthquakes, tsunamis, volcanic eruptions, landslides, and hydro-meteorological hazards (floods, mudflows, cyclones) can be seen as causing rapid disasters, whereas land degradation, desertification, soil erosion and soil degradation can be seen as causing slow disasters.

Role of research at ITC

As a centre of excellence in the forefront of knowledge discovery, the Institute carries out research within the framework of a coherent research programme that addresses specific problem fields in geo-information science and earth observation. This yields new tools and methods for the collection, storage and processing of geographical data and pioneers new applications of geospatial data to societal problems, particularly in developing countries, in which geo-information science and earth observation play an important role. The research programme also contributes to ITC’s capacity building mission in developing countries and emerging economies, by training junior researchers from institutes and organisations in these countries.

The key words characterising our activities are geo-information management, worldwide and innovative. We concentrate on earth observation, the generation of spatial information, and the development of data integration methods. Furthermore, we provide tools that can support the processes of planning and decision making for sustainable development and the alleviation of poverty in developing countries and emerging economies.

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Information on ITC’s research and graduate programme

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E: research@itc.nl

More detailed information about ITC’s research and graduate programmes can be found on their web pages at: www.itc.nl/Research
Graduate programme

Junior research training for a PhD degree at the International Institute for Geo-Information Science and Earth Observation (ITC) is registered in the graduate programme. Each graduate student carries out a PhD project embedded in one of the themes of the research programme, under the supervision of the research theme leader and the PhD advisor. Each graduate student has a designated PhD project leader, the research theme leader and a project coordinator to carry out the research. Research theme leaders also encourage applicants to prepare and submit a research project outline addressing a problem with which the applicant is already familiar. A part of the application and registration procedure is a pre-application self-assessment.

There are around 100 graduate student researchers at ITC. Most are full-time PhD student researchers aiming to carry out a PhD research project in a probationary period, and carry out a self-assessment of their eligibility for registration in the ITC graduate programme. Each graduate student carries out a PhD research project in subject to quality assurance checks. The first six months of the PhD research project form a probationary period, and during this time the PhD student has to develop his/her research proposal for public presentation and examination. Successful completion of the qualification is mandatory for continuation of the PhD research. Subsequent quality assurance checks are made annually. Since 1990, over 150 alumni of the graduate programme have been awarded a PhD degree by a Dutch university.

If you would like to study within the graduate programme, consult the institute’s research web page at www.itc.nl/research, and browse the research themes to find a theme appropriate to your background and research interests. The next step is to carry out a self-assessment of your eligibility for registration (see below). At the end of the self-assessment you will find a link to online application for registration in the graduate programme. When submitted, the online application will be forwarded to the leader of the research theme you have selected.

Pre-application self-assessment

Do you have a valid passport?

Do you have an MSc degree or equivalent?

Do your competencies include all of the following:
- background knowledge in English
- background and research interest / idea that fits in with the ITC research programme?
- a recent TOEFL certificate with a score of at least 80 IELTS
- a recent IELTS certificate with a score of at least 6.0
- a recent TOEFL certificate with a score of at least 80

If the dataset of your study funding one of the following:
- the way in which the community associated with the thematic field can access and exploit new knowledge and innovation.
- the geospatial processes playing a role in the thematic field; and
- the way in which the community associated with the thematic field gain access to and exploit new knowledge and innovation.

Each PhD research project is subject to quality assurance checks. The first six months of the PhD research project form a probationary period, and during this time the PhD student has to develop his/her research proposal for public presentation and examination. Successful completion of the qualification is mandatory for continuation of the PhD research. Subsequent quality assurance checks are made annually. Since 1990, over 150 alumni of the graduate programme have been awarded a PhD degree by a Dutch university.

Fifteen research themes

Food security and environmental sustainability

Food security is a key individual right, but still far from being a reality in many parts of the tropics. Millennium Development Goal 1 (MDG 1) and forest aid has addressed the gap between net imports and net exports of agricultural products. This is at the expense of ecological sustainability, and the need for countries to be self-sufficient.

As populations in particular urban populations - increase, the need for food production increases worldwide, mainly in Africa and Latin America. This also is the reason of the assessment, thus putting MDG 1 (Environmental Sustainability) in jeopardy. In fact, MDG 7 may be incomparable with MDG 1.

Research partners

The research programme of the International Institute for Geo-Information Science and Earth Observation (ITC) develops cutting-edge knowledge and innovative approaches in geo-information science and earth observation. The programme addresses applications of geospatial data for space and resource management and the provision of geospatial data for the user community, with emphasis on solving problems in developing countries.

In order to ensure that this new knowledge and innovation in space and resource management and the provision of geospatial data leads to societal benefits, the programme is formulated as a number of interlinked research themes. Each ITC research programme has a research theme leader, that has a complementary expertise. Each research theme is led by one of ITC’s professors. Each group typically comprises several expert staff members and a number of graduate students carrying out research for a PhD degree within the framework of the graduate programme. MSc students are also assigned to a research theme as apprentice researchers during their thesis period (six months). Furthermore, the outcome of research studies is used to update the education in both degree, diploma and certificate (short) courses (see the separate education brochure).

Research partnerships

ITC’s research programme is carried out in collaboration with a number of worldwide research centres, that have a complimentary expertise. Current partnerships can be viewed at www.itc.nl/education/researchpartners
Graduate programme

Junior researchers studying for a PhD degree at the International Institute for Geo-Information Science and Earth Observation (ITC) are registered in the graduate programme. Each graduate student carries out a PhD project embedded in one of the themes of the research programme under the supervision of the research theme leader and for these projects graduate student researchers are involved to carry out the research. Research theme leaders also encourage applicants to prepare and submit a research project outline addressing a problem with which the applicant is already familiar as part of the application and registration procedure.

There are around 100 graduate student researchers at ITC. Most are full-time PhD student researchers aiming to complete a PhD research project embedded in one of the themes of the research programme under the supervision of the research theme leader. Some research projects are defined by the research theme leader and for these projects graduate student researchers are involved in carrying out a PhD research project embedded in one of the themes of the research programme.

For more information on our research and graduate programme Geo-information Science and Earth Observation www.itc.nl/research

Pre-application self-assessment for the graduate programme

Have you successfully completed all of the following:
- five years of tertiary (post-school) education?
- an MSc degree or equivalent?
- an MSc (or equivalent) thesis or dissertation based on approximately six months of independent research?

Do your competencies include all of the following:
- background and research interest / idea that fits in with the ITC research programme?

Can you demonstrate your proficiency in English by means of one of the following:
- an MSc thesis in English?
- a recent TOEFL certificate with a score of at least 600?
- a recent IELTS certificate with a score of at least 6.0?

In the status of your study funding one of the following:
- fully funded by a fellowship provider?
- application to fellowship provider submitted or planned?
- partial support for study in a sandwich construction assured through local partners?
- other means of funding?

You must have answered “Yes” to all five questions in order to proceed with an application for registration in the ITC graduate programme.

ITC graduate programme Geo-information Science and Earth Observation

Output
- PhD and MSc graduates
- Scientific publications

Partnerships
- Research partnerships
- Joint education programme

Affiliations
- University of Twente
- Wageningen University and Research Centre
- Ghent University
- Delft University of Technology

Association
- United Nations ITU
- School for Disaster Geo-information Management
- School for Land Administration Studies

Fifteen research themes

- Joint education programme
- Research partnerships
- Affiliations
- Association

Food security and environmental sustainability

Food security is a key individual right, but still far from being a reality in many parts of the tropics (Millennium Development Goal 1). Trade and food aid has widened the gap between net importers and net exporters of agricultural commodities and has reduced the need for countries to be self-sufficient.

As populations increase, urban populations lead the way. Agriculture and food production increase worldwide, mainly in Africa and Latin America. This is the reason for the assessment, thus putting MDG 1 (Environmental Sustainability) in perspective. In fact, MDG 7 may be incompatible with MDG 1.

Research programmes

The research programme of the International Institute for Geo-Information Science and Earth Observation (ITC) develops cutting-edge knowledge and innovative approaches in geo-information science and earth observation. The programme addresses applications of geospatial data for space and resource management and the provision of geospatial data for the user community, with emphasis on solving problems in developing countries.

In order to ensure that new knowledge and innovation in space and resource management and in the provision of geospatial data lead to societal benefit, the programme is formulated as a number of interrelated research themes. Each of these research themes is further subdivided into three domains:
- earth observation and geoinformation processing technologies relevant to the thematic field;
- the thematic processes playing a role in the thematic field; and
- the way in which the community associated with the thematic field can access and exploit new knowledge and innovation.

In each theme, researchers are called out by a team led by one of ITC's professors. Each group typically comprises several expert staff members and a number of graduate students carrying out research for a PhD degree within the framework of the graduate programme. MSc students are also assigned to a research theme as apprentice researchers during their thesis period (six months). Furthermore, the outcome of research activities is used to update the educational in both degree, diploma and certificate (short) courses (visit www.itc.nl/education for further information or see the separate education brochure).
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Disaster management

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Role of research at ITC

As a centre of excellence in the forefront of knowledge discovery, the Institute carries out research within the framework of a coherent research programme that addresses specific problem fields in geo-information science and earth observation. This yields new tools and methods for the collection, storage and processing of spatial data and pioneering new applications of spatial data to societal problems, particularly in developing countries, in which geo-information science and earth observation play an important role. The research programme also contributes to ITC’s capacity building mission in developing countries and emerging economies by training junior researchers from institutes and organisations in these countries.

At the International Institute for Geo-Information Science and Earth Observation (ITC), Enschede, the Netherlands, knowledge of geo-information management is readily available and is continually being developed and extended. By means of education, research and project services, we contribute to capacity building in developing countries and emerging economies. In doing so, considerable attention is paid to the development and application of geographical information systems (GIS) for solving problems. Such problems can range from determining the risks of landslides, mapping forest fires, planning urban infrastructure, implementing land administration systems, and monitoring food and water security, to designing a good wildlife management system or detecting environmental pollution.

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At the end of the self-assessment period, the student must carry out a self-assessment of his/her eligibility for registration in the graduate programme. This self-assessment is mandatory for continuation of the PhD research.

If you have successfully completed all of the following:
- five years of tertiary (post-school) education
- an MSc degree or equivalent
- an MSc thesis in English
- five years of tertiary (post-school) education
- a recent TOEFL certificate with a score of at least 100
- a recent IELTS certificate with a score of at least 6.0

You must have answered “Yes” to all five questions in order to proceed with an application for registration in the ITC graduate programme.

Please note that ITC does not offer fellowships or other forms of support for full-time PhD research students. However, if your intended PhD research project is subject to quality assurance checks, you may be considered for co-funding (with the thematic field can access and exploit the research funds). However, if your intended PhD research project is subject to quality assurance checks, you may be considered for co-funding (with the thematic field can access and exploit the research funds).

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To ensure that new knowledge and innovation in space and resource management and in the provision of geospatial data lead to societal benefits, the programme is formulated as a number of cross-disciplinary research themes. Each of these research themes is focused on the thematic field of space and resource management and the provision of geospatial data for the user community.

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Food security and environmental sustainability

Food security is a key individual right, but still far from being a reality in many parts of the tropics. The Millennium Development Goal (MDG) 7 (Environmental sustainability) has set the goal of halving, by 2015, the proportion of people who suffer from hunger. The need for food security is a key individual right, but still far from being a reality in many parts of the tropics. The Millennium Development Goal (MDG) 7 (Environmental sustainability) has set the goal of halving, by 2015, the proportion of people who suffer from hunger. The need for food security is a key individual right, but still far from being a reality in many parts of the tropics. The Millennium Development Goal (MDG) 7 (Environmental sustainability) has set the goal of halving, by 2015, the proportion of people who suffer from hunger.

As populations in particular urban populations—increasingly able to afford high-quality food—food production increases worldwide, mainly in Africa and Asia. However, this growth in food production is not always sufficient to meet the need for food security to self-sufficient.

An important role in ensuring food security is played by food security and environmental sustainability. Food security is a key individual right, but still far from being a reality in many parts of the tropics. The Millennium Development Goal (MDG) 7 (Environmental sustainability) has set the goal of halving, by 2015, the proportion of people who suffer from hunger.

Research programmes

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In each theme, research is carried out by a group led by an ITC professor. Each group typically comprises several expert staff members and a number of graduate students carrying out research for a PhD degree within the framework of the graduate programme. ITC students are also assigned to a research theme as apprentice researchers during their thesis period (six months). Furthermore, the outcome of research activities is used to update the education in both degree, diploma and certificate (short) courses (visit www.itc.nl/education for further information or see the separate education brochure).

Fifteen research themes

- Biodiversity in Fragile ecosystems (Dr. N. Verhagen)
- Carbon cycle and climate change (Prof. A. de Goey)
- Disaster management (Prof. V. Jetten)
- Earth sciences (Prof. F.D. van der Meer)
- Food security and environmental sustainability (Prof. E. Smaling)
- Governance and integrated spatial assessment (Prof. A. van der Veen)
- Informal urban governance of urban regions (Prof. Y. Georgiadou)
- Land administration for informed governance (Prof. P. van der Knaap)
- Managing water scarcity (Dr. M. Lubrucki)
- Spatial data infrastructure technology (Dr. A. van der Heijden)
- Spatial-temporal data integration and visualization (Prof. M.J. Knaap)
- Stochastic methods for image mining and data quality (Prof. A. Bont)
- Sustainable urban-regional dynamics (Prof. H. van Wanzeele)
- Utilisation of sensor developments for efficient topographic mapping (Prof. G. Vosselman)
- Water cycle and climate (Prof. B. So, Prof. W. Verburg)

Research partnerships

ITC’s research programme is carried out in collaboration with a range of worldwide partners, that have a complementary expertise base. Current partnerships can be viewed at www.itc.nl/research/researchpartners.asp.
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