Cartography, education and training

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About ICA
• About Cartography
  • ICA Commission on Education and Training
• About training
  • Capacity Building
  • UNGGIM: Sustainable development goals & Maps
• About Education
  • MSc Cartography (Erasmus Plus)
  • MOOC (Penn State)

About Cartography
• ...the art, science, and technology of making and using maps
About Cartography

- ...the art, science, and technology of making and using maps

Many correct design options

Bertin's Data Analysis

Internet, Displays, Mobile

update coastline

Professionals & Crowd
About Cartography

• ...the art, science, and technology of making and using maps

About the International Cartographic Society

ICA's mission

• To promote the discipline and profession of cartography internationally

• ICA is the world authoritative body for cartography

ICA Instruments

• Journal
• Website (blogs, facebook, twitter)
• Publications (book series, columns, interviews)
• Conferences
• Research scholarships
• Capacity development (fellowships / courses)
• Research agenda
• External contacts
  • ICSU (GeoUnions)
  • JBGIS
  • Partner UN-GGIM (via IMY & JBGIS)
  • Geo for all / OS Geo
Commissions and working groups

- Ubiquitous Mapping
- Topographic Mapping
- Mountain Cartography
- Map Projections
- the History of Cartography
- Map Production and Geospatial Management
- Art and Cartography
- GIS for Sustainability
- Cartographic Heritage into the Digital
- Abuses
- Cartography in Early Warning and Crisis Management
- SDI and Standards
- Location Based Services
- Maps and the Internet
- Cognitive Issues in Geographic Information Visualization
- Generalisation and Multiple Representations
- Education and Training
- Visual Analytics
- Open Source Geospatial Technologies
- Use, User and Usability Issues
- Maps and Graphics for Blind and Partially Sighted People
- Art and Cartography
- Toponymy
- Ubiquitous Mapping
- the History of Cartography
- Maps and the Internet
- SDI and Standards
- Cartography in Early Warning and Crisis Management
- Location Based Services
- Map Projections

Training: ICA Capacity Building and Outreach Programmes

- Addressing core aim of ICA mission
- Run on request or in conjunction with events & visits
- Strong involvement of ICA commissions and their specific expertise
- Current topics like OpenSource WebMapping, Modern Cartography, Map Design etc.
- Often hands-on format of workshops, often 2-3 days

Commission on Education and Training

- To promote and deliver workshops (and online, eLearning alternatives), possibly in conjunction with other ICA Commissions, introducing, in particular, knowledge transfer to developing member nations of ICA

Education and Training

- Sensor-driven Mapping
- Topographic Mapping
- Ubiquitous Mapping
- Map Production and Geospatial Management
- Mountain Cartography
- Cognitive Issues in Geographic Information Visualization
- Planetary Cartography
- Visual Analytics
- Open Source Geospatial Technologies
- Use, User and Usability Issues
- Art and Cartography
- Toponymy
- Maps and Graphics for Blind and Partially Sighted People
- the History of Cartography
- Generalisation and Multiple Representations
- GIS for Sustainability
- Cartographic Heritage into the Digital
- Maps and the Internet
- Geospatial Analysis and Modeling
- Abuses
- Cartography and Children
- Location Based Services
- Map Projections

International Cartographic Association
Association Cartographique Internationale

University of Twente
Training: ICA Capacity Building and Outreach Programmes

- During an ICA Hands-on Capacity Building Workshop in Sint-Maarten

The International Map Year [mapyear.org]

- Objective: increasing peoples’ knowledge of cartography
- IMY Working Group has produced a textbook, *The World of Maps*, that can be freely downloaded from the IMY homepage
- Originally written in English, with translations in French and Spanish, and in near future in Chinese, Arabic, and Italian
- Number of downloads by October 8, 2015: 14,419
Training: ICA and UNGGIM: new sustainability goals

- Goals
  - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

- Targets
  - 4.1
  - 4.2
  - 4.3
  - 4.4
  - 4.5
  - 4.6
  - 4.7

- Indicators
  - 4.1.1
  - 4.1.2
  - 4.2.1
  - 4.2.2
  - 4.3.1
  - 4.4.1
  - 4.4.2
  - 4.5.1
  - 4.7.1
  - 4.7.2

http://www.un.org/sustainabledevelopment/education/

Education: The international Master of Science in Cartography

- Cartography M.Sc. has been selected for Erasmus+ by the Education, Audiovisual and Culture Executive Agency of the European Union in 2014

- Key Action 1: Learning Mobility for Individuals – Erasmus Mundus Joint Master Degrees (EMJMD)
  - supports excellent international Master courses in Europe
  - support the EU’s external action in the field of higher education
  - improve the skills of Master graduates, and their employability
Education: The int’l MSC Cartography:

- Students’ origin 2011-2014
  - 2011: 14 students from 10 countries
  - 2012: 20 students from 12 countries
  - 2013: 11 students from 9 countries
  - 2014: 16 students from 12 countries

Education: The int’l MSC Cartography: Students’ background

- Grant agreement of coordinating university (TUM) with European Commission for five years (October 2014 until September 2019)
  - Preparatory year (October 2014 until October 2015)
  - Three student intakes (2015, 2016, 2017 for two academic years (120 ECTS)
  - 38 highly remunerated scholarships for students (25% EU, 75% non-EU)
  - At least four scholars/guest lecturers per intake
Education: The int’l MSC Cartography: 2015 applicants

- 2015: 116 applications from 49 different countries

Education: The int’l MSC Cartography: 2015 scholarships

- 2015: 11 scholarships students (3EU / 8 non-EU)

Education: The int’l MSC Cartography: curriculum

<table>
<thead>
<tr>
<th>Semester</th>
<th>Modules</th>
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<tbody>
<tr>
<td>1st</td>
<td>Basic</td>
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<tr>
<td>TUM</td>
<td>Modules</td>
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<td>Advanced</td>
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<td>Advanced</td>
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Education: MOOC (Massive Open Online Course) & Cartography

- www.coursera.org/course/maps
Education: MOOC & Cartography: enrollments

Education: MOOC & Cartography: students

- Education
  - Bachelor degree (33%)
  - Master’s degree (39%)
  - Currently attending (19%)
- 51% native English speaking
- Professional Background
  - Comp. Sci (33%)
  - Education (14%)
  - Arch & Engineering (10%)
  - Business (8%)
- Employed full-time (55%)

Education: MOOC & Cartography: numbers

Big Class = Big Data

- 100,130 registered
- 60,986 active
- 302,671 lecture streams
- 103,084 quizzes submitted
- 18,722 discussion threads
- 130,806 posts & comments

Education: MOOC & Cartography: challenges - attrition
Education: MOOC & Cartography: challenges - support creative design

- WebGIS helps make MOOCs possible
  - Localization
  - Browser-based (no download)
  - Interface paradigm intended for beginners

- WebGIS offers very limited design affordances

- How do we support creative mapmaking at scale?

Education: MOOC & Cartography: opportunities

- New Research Potential
  - From the data generated by students
  - From student participation in external studies

- Citizen Science Opportunities

- Possible to shape a MOOC around a data challenge

Let's make the world a better place with maps