

## president's report



### Cartographic Summit

The International Cartographic Association (ICA) and Esri hosted a Cartographic Summit in Redlands, California, 8-10 February 2016. This

summit of invite-only guests from a broad array of fields assessed the state of play in mapping and visualization and explored where we're headed. Leading thinkers from academia, government and industry explored trends and how they are shaping the work that we're doing.

Broad themes of **Data**, **Media**, and **Design** provided a focus for open sharing and conversation to learn from each other, and share best practices, and find new or proposed solutions.

The summit intended to draw together a plan for research, innovation and strategic thinking

to support mapping and visualization needs as we move forward. The intent was to set a marker for understanding common challenges from a range of perspectives in and outside the traditional cartographic communities; to draw together different ways of thinking and working; and to build bridges across the many communities in the map-making and visualization fields.

For each of the three topics, half a day was reserved, consisting of three speakers (a keynote and two lightning talks) and breakout sessions to discuss the topic based on the top five keywords generated by the audience after the talks. The findings of the four groups were reported after each session. In a final session an overall discussion was followed by a synthesis of the lessons learned.

### Data

- Keynote: *Improving Data Visualization Literacy: How to Empower Anyone to Read and Make Visualizations* by Katy Börner, Victor H. Yngve Professor of Information

> 02



A commemorative *International Map Year 2015-2016* postcard issued by the Bulgarian postal service | Photography courtesy of Temenoujka Bandrova

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## international map year 2015-2016



The International Map Year (IMY) is now being celebrated in some 40 countries (see map in the centrefold). Activities include national and local Map Days during which school children and general public are given the opportunity to learn more about the power of maps and how they can

improve our societies. Many museums, libraries and map archives are running map exhibitions. For reports on these activities and announcements about planned events, please visit the IMY webpage [mapyear.org](http://mapyear.org). In addition to the English, French and Spanish versions, *The World of Maps* book is now available in Italian (see p 17) and Portuguese. Translations into Arabic, Chinese and Indonesian are under way. We profoundly thank the volunteers who have made this possible.

We intend to summarise all IMY activities in a report, which we hope to present at the opening session of the International Cartographic Conference (ICC) in Washington in 2017. The report will also be forwarded to the United Nations Initiative on Global Geospatial Information Management (UN-GGIM) and presented at the 17th General Assembly of the ICA in Tokyo in 2019. Its findings will also be published in the *International Journal of Cartography* in 2017.

At the ICA Commission Chairs workshop organised in Vienna in 2015, the Commissions were asked to develop a series of posters on UN Sustainable Goals as part of the IMY (see President's Report, *ICA News*, No 65, December 2015, pp 1-2). The posters are now being finalised and once completed, ICA President Menno-Jan Kraak will present them at the 6th Session of UN-GGIM in New York, August 2016. The posters will then be available from the IMY webpage.

At the recent ICA Executive Committee meeting in Madrid, the ICA Working Group on International Map Year was asked to develop a proposal for the annual International Map Day (similar to the GIS Day). We aim to present it to the ICA General Assembly in 2019.

Looking at the conference themes of the upcoming International Cartographic Conference (ICC) in Washington D.C., one could easily be astonished by their number and diversity. Forty themes encompassing our discipline today stand in stark contrast with (just) seven discussed at the ICA Technical Conference in Amsterdam almost fifty years ago. The themes themselves offer an incredible variety from the Training of Cartographers (T11) and Atlas Cartography (T25) already covered in 1967 programme, to a whole raft of contemporary themes unimagined five decades back, such as Data Mining (T02) and Geospatial MOOCs (T12) – see a full list on page 5.

This is a testimony to the incredibly dynamic nature of our discipline. There is no doubt that technological advancements of recent times have accelerated the development of cartography to reach new heights. Art and science – the complementing pylons of our discipline – have also flourished, thanks to reinjecting art back into cartography and investing in innovative research around the world. It only takes a few examples from the most recent International Cartographic Conference in Rio de Janeiro to realise what exciting stories can be told with maps. Fascinating films, lenticular atlases, breath-taking digital landscapes of faraway lands, augmented cities, artistic rendering of statistical data, captivating and thought-provoking presentations... the list goes on. I think those that met in Amsterdam in April 1967 would be quite impressed with where we have got to half a century later.

That dynamism and buzz enjoyed by our discipline also inspired me to take a fresh look at *ICA News*. More colour, lighter visual elements and a brand new typeface, supporting even the most demanding typographic requirements, make up the new design. I sincerely hope you like it.

Our American colleagues invite us to celebrate cartography with them at the ICC 2017 in Washington D.C., while the IMY celebrations spread rapidly around the world – these are the flagship stories reported in this issue.

Igor Drecki | Editor ICA News | ICA ■

The **ica news** is published by the International Cartographic Association (ICA).

President: **Menno-Jan Kraak** | University of Twente | The Netherlands

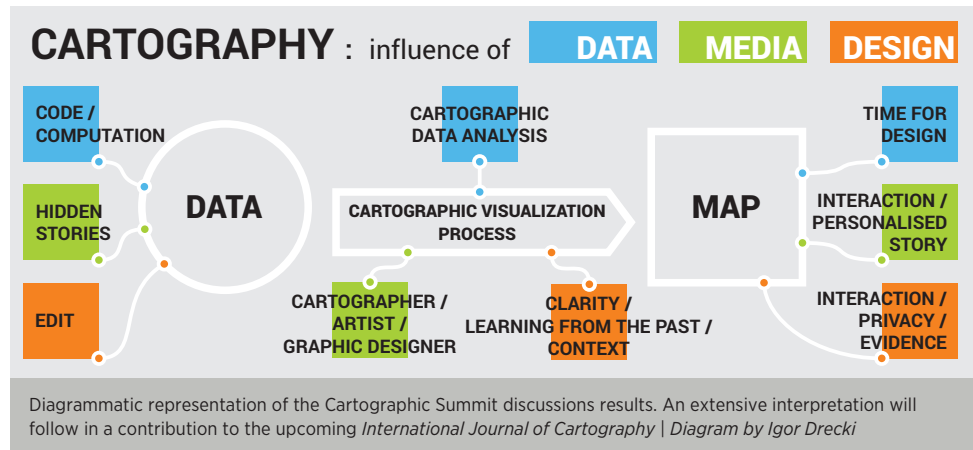
Secretary General & Treasurer: **László Zentai** | Eötvös Loránd University | Hungary

Editor ICA News: **Igor Drecki** | The University of Auckland | New Zealand

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## president's report cont...



Science, Indiana University

- Lightning Talk: *Big Data Cartography* by James Cheshire, Lecturer in Quantitative Human Geography, University College London
  - Lightning Talk: *Doing Cartography as Professional Amateurs* by Alan McConchie, Lead Cartographer, Stamen Design
- Keywords for the topic of data: data design, data analysis, domain expertise, user and applications, conceptualization.

### Media

- Keynote: *carto-future-ography* by Gary Gale, CTO, what3words
- Lightning Talk: *Mapping for new media. Building on 128 years at National Geographic* by Kaitlin Yarnall, Director of Maps, Graphics, and Art, National Geographic
- Lightning Talk: *Cartographic Design as Visual Storytelling* by Robert Roth, Director, University of Wisconsin Cartography Laboratory Assistant Professor, UW-Madison Department of Geography

Keywords for the topic of media: storytelling, technology to create interaction; ethics, tracking; purpose of map; user, human make and using the maps

### Design

- Keynote: *Pictures and Geography* by Nigel Holmes, Graphic Designer, Explanation Graphics

- Lightning Talk: *Geoprivacy in the Age of Big Data* by Jeremy W. Crampton, Associate Professor of Geography, University of Kentucky
  - Lightning Talk: *Evidence Based Design* by Sara Irina Fabrikant, Professor, Department of Geography, University of Zurich
- Keywords for the topic of design: clarity, user/audience, privacy, uncertainty, issues of design for big data

### Synthesis

- Synthesis: *ICA Viewpoint & Lessons Learned* by Menno-Jan Kraak, ICA president, Professor of Geovisual Analytics and Cartography, University of Twente / ITC
- The third day was a view into the Esri Kitchen. The participants were able to comment on planned developments related to topics such as Mapping and Visualization, 3D and Story Mapping as well as a few other topics, while discussing with Esri developers.

### Results

How the audience reacted to the summit can be found on Twitter via [#cartosummit](https://twitter.com/cartosummit).

The results of the discussions are summarized in the figure above. A more extensive interpretation will follow in a contribution to our *International Journal of Cartography*.

Menno-Jan Kraak | President | ICA ■

Participants of the Cartographic Summit organised by Esri, 8-10 February 2016 | Photograph courtesy of Menno-Jan Kraak





# ica news ica executive committee meets in madrid

The second meeting of the ICA Executive Committee (EC) in the 2015-2019 term took place in Madrid, Spain, between 25-27 February 2016. It was held at the Instituto Geográfico Nacional de España (IGN), an Affiliate Member of the ICA, and hosted by ICA Vice President Pilar Sánchez-Ortiz. The meeting presented an opportunity to discuss the future activities of the International Cartographic Association and make a series of important decisions.

The EC members were welcomed to the IGN by Amador Elena, General Director of the IGN; Mónica Groba, Secretary General of the IGN; Sebastián Más, Deputy Director for Geodesy and Cartography and Javier Matesanz, Assistant Deputy Director for Geodetic and Cartography and President of the Spanish Society of Cartography (SECFT). The meeting itself took place in a very symbolic room – the Ibañez Ibero Room – named in honour of the engineer, geographer and founder of the Instituto Geográfico y Estadístico (later IGN) in 1870.



Members of the ICA Executive Committee with Board members of the National Geographic Institute of Spain (IGN) and President of the Spanish Society of Cartography (SECFT) | Photograph courtesy of Pilar Sánchez-Ortiz

During the meeting, the EC made the following decisions:

- To prepare a call for an Extraordinary General Assembly during the International Cartographic Conference (ICC) in Washington, D.C., in 2017 – the purpose is to propose changes to the statutes that will allow smoother coordination of the ICA activities.
- To establish Regional Cartographic Conferences (RCC) on an alternating year basis with the ICCs – there is a clear need to have a network of regional conferences that would complement our established ICCs, as was recently proven by the successful EuroCarto event in Vienna; a call to organize the first RCCs in 2018 is being prepared and will be announced by the end of 2016.

In addition, the ICA scholarship rules have been updated (for more details, please visit [icaci.org/scholarship](http://icaci.org/scholarship)). We have now scholarships available for young scientists and professionals from ICA member nations that wish to actively participate in the ICCs and RCCs, as well as in the ICA Commissions and Working Groups events.

There is also extra funding available for cartographers and GIScientists from non-developed member states.

On the second day, EC members visited the IGN's Thematic Cartography and National Atlas department. The visit coincided with the commemoration of the 30th anniversary (1986-2016) of the National Atlas of Spain and provided opportunities to meet with staff, and learn about IGN's facilities and current projects.

The ICA Executive Committee meeting was a significant event for the IGN and the first organised in Madrid since 1974 when the International Cartographic Conference was hosted there.

**Pilar Sánchez-Ortiz Rodríguez and Menno-Jan Kraak** | ICA Vice President / ICA President | Spain / The Netherlands ■



(from left) Georg Gartner, David Forrest and Lynn Usery visiting the IGN's Thematic Cartography and National Atlas department | Photograph courtesy of Pilar Sánchez-Ortiz

# ica news 25 years ago...

The story on SPOT satellite imagery products and services below provides fascinating insights about the growth of the industry that is currently a part of almost all mapping projects. It's amazing to read that 25 years ago it could flourish on 1000 sales and the 'impressive' 30m absolute location accuracy.

Igor Drecki | Editor ICA News | ICA ■

## ICA Newsletter, No 17, May 1991

### Remote Sensing News

[...]

#### SPOT IMAGEMAPS

Sales of SPOT imagemaps are rising rapidly: 150 in 1989; 500 in 1990, and a target figure of 1000 in 1991. A SPOT imagemap resembles a map, except that the conventional planimetric content is replaced by a satellite image. If suitable ground control points (GCPS) are available for level 2B preprocessing, the absolute location accuracy is an impressive 30m. SPOT imagemaps are highly useful for surveying and fieldwork and also as a working document for preparation of thematic maps highlighting natural resources and development options. SPOT imagemaps are also used for local-level multidisciplinary management. In this context, their low cost makes them an essential component of any development project in areas where maps are unreliable or unavailable.

In late 1990, SPOT IMAGE decided to launch a new family of products under the general tradename GEOSPOT. Physically, a GEOSPOT product is a map-type document on a SPOT satellite image underlay. It is geo-referenced to a given cartographic projection, geo-coded to a specific geographic grid, and cut to match a specified system of map sheet lines or a geographic grid. They are available in a range of scales from 1:25 000 to 1:100 000. Other scales between 1:10 000 and 1:25 000 are available on request.

The GEOSPOT products are ideal for a wide range of applications including: natural resources inventories, development projects, urban planning and management, civil engineering project management, monitoring and management of exploitation of natural resources at the local or regional level, demographic studies, new mapping and map updating projects, setting up of geographic databases, etc.

Source: SPOT Flash, No. 1, February 1991

# ica executive committee

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| *The Netherlands*

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## Submission Deadlines

**15 May** for June editions

**15 November** for December editions

## icc 2017 washington d.c. · usa



The 28th International Cartographic Conference ([www.icc2017.org](http://www.icc2017.org)) will be held July 2-7, 2017, at the Marriott Wardman Park Hotel in Washington, D.C. The Local Organizing Committee (LOC) is now accepting submissions of abstracts and papers ([icc2017.org/abstracts-full-papers-and-posters](http://icc2017.org/abstracts-full-papers-and-posters)). The themes of the conference are listed on page 5 and available at [icc2017.org/conference-themes](http://icc2017.org/conference-themes). We invite potential speakers to submit an abstract – see due dates listed below.

Washington, D.C. is one of the world's leading cities for cartography and geographic science innovation. Here, maps have a major impact on global policy. The World Bank, non-governmental agencies (NGOs), federal mapping organizations, and academic groups are using geographic tools to address the social challenges of our world.

This location provides access to high-profile speakers that are leaders in the cartography and geographic information science disciplines. In addition, the LOC is arranging special events, including a map art display and historical map exhibits in association with the Library of Congress, which houses one of the world's largest map collections. Tours will include organizations such as the U.S. Geological Survey and the National Oceanic and Atmospheric Administration. The social program will include events in the Washington, D.C. area, with several receptions, including a gala dinner on 6 July 2017. An orienteering competition will be held, as well as a meridian walk to visit the four points that served as the Prime Meridian for the United States before it adopted the Greenwich standard.

The ICC 2017 venue is the Marriott Wardman Park Hotel, one of the largest and best-rated hotels in the area. Rooms are offered at a reduced conference rate of \$149 plus taxes, with free in-room Wi-Fi. Many excellent international restaurants are within walking distance along Connecticut Avenue.

The hotel's exhibit space will include the International Trade Exhibition, the International Cartographic Exhibition, and the Children's Map Competition. In addition to traditional cartographic products, the International Cartographic Exhibition will include an exhibition of aeronautical and nautical charts in association with the International Hydrographic Organization.

Commercial companies, government and academic institutions, and NGOs are invited to reserve space in the International Trade Exhibition. Organizations can also sponsor individual events or items. A complete list of levels of sponsorship, sponsorship items, costs, and benefits is provided in the ICC 2017 Exhibit and Sponsorship Prospectus ([icc2017.org/wp-content/uploads/2016/03/ICC2017Prospectus.pdf](http://icc2017.org/wp-content/uploads/2016/03/ICC2017Prospectus.pdf)).

The hotel venue is located on the Washington, D.C. Metro Red Line at the Woodley Park/Zoo stop. Near the hotel is the National Zoo, home of four giant pandas. Using the Metro, visitors can travel to all of Washington, D.C., including the free Smithsonian Museums and Washington's National Mall, with its historic monuments. Attendees with individual registrations will receive a Metro card.

The LOC is working with the U.S. Department of State to facilitate the acquisition of visas as needed by ICC 2017 participants. Letters of invitation will be provided as required for all registered attendees.

The ICC 2017 LOC extends a warm invitation to everyone to participate in a magnificent conference and exhibition of cartography, in addition to a celebration of United States' independence on July 4, 2017.

### Due Dates

- 26 October 2016** : Submission of abstract and papers
- 10 January 2017** : Notification of acceptance
- 31 January 2017** : Submission of final manuscripts
- 16 February 2017** : Conference registration for presenters/authors

**E Lynn Usery** | Conference Director | ICC 2017 Local Organising Committee | USA ■

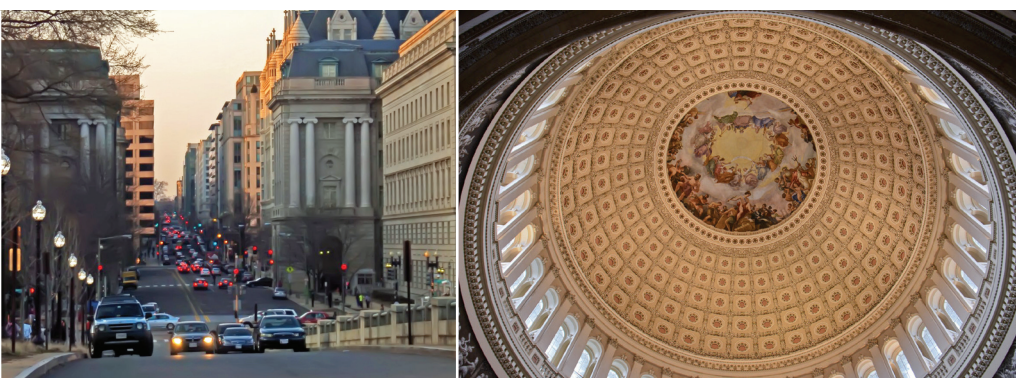
(from left) Smithsonian Metro Station, Washington D.C.; entry way of the Marriott Wardman Park Hotel, the venue of ICC 2017; busy streets of Washington D.C.; the dome of the United States Capitol building, the seat of the United States Congress





ICC 2017 Conference Themes	
T01	Visual analytics, geovisualization, and dynamic cartography
T02	Spatial analysis, geocomputation, modeling, and data mining
T03	Virtual reality, augmented reality, 3D mapping, and Geodesign
T04	Generalization, multi-resolution data, and multi-scale representation
T05	Thematic cartography and multivariate data mapping
T06	Bertin's <i>Sémiologie Graphique</i> at 50 years; semiology
T07	User studies; user experience and usability; user interface design
T08	Cognitive issues in map use and design
T09	Children and cartography
T10	Accessible cartography for people with disabilities
T11	Education and training in cartography and geospatial technologies
T12	Outreach, geospatial MOOCs, and sharing mapping methods beyond cartography
T13	Design of maps
T14	Arts and culture; spatial digital humanities
T15	History of cartography and historical cartography
T16	Digital issues in cartographic heritage; map and geoinformation curatorship
T17	Ubiquitous cartography and theoretical cartography
T18	Critical cartography; GIS and society
T19	Web cartography; map services and apps; GIS cloud computing
T20	Collaborative mapping, volunteered geographic information, and crowdsourcing
T21	Open source mapping and open geospatial data
T22	Location based services, geospatial prospecting, and privacy issues
T23	Intellectual property rights in mapping and geospatial data
T24	Management, workflows, and supply chains for map publishing and geospatial products
T25	Atlas cartography: advances in structure, design, and technology use
T26	Spatial semantics and ontologies; spatial data infrastructures; interoperability
T27	Quality of geospatial data, maps/charts; data integration, metadata, and standards
T28	Big data; sensor networks and remotely-sensed data for mapping; feature extraction from lidar
T29	Projections, coordinate systems, transformations, and conversions
T30	Topographic mapping; design and update of national mapping series
T31	Toponyms: place names as cultural heritage, place-name conflicts, toponymic field work and documentation
T32	Mountain cartography and terrain representations; recreation and orienteering maps
T33	Cadastral mapping; mapping for city management
T34	Digital Transportation Infrastructure: highly precise and continuously updated road models for autonomous vehicles
T35	Marine and aeronautical cartography, navigation charts and data, baselines, and sovereign zones
T36	Geospatial intelligence and military cartography
T37	Early warning, risk reduction, and crisis management using maps and geospatial information systems
T38	Sustainable development; adaptation and resiliency mapping
T39	Planetary, extrasolar, and celestial cartography
T40	Developments in intensively mapped domains: global change, soils, geology, agriculture, humanitarian programs, crime, facilities management, etc

ICC 2017 Conference Programme	
	<b>Saturday, 1 July</b>
08:00 – 18:00	Commission Workshops
	<b>Sunday, 2 July</b>
08:00 – 18:00	Commission Workshops
08:00 – 18:00	Exhibit Installation
10:00 – 18:00	Registration Open
12:00 – 18:00	Extraordinary General Assembly
	<b>Monday, 3 July</b>
08:00 – 18:00	Registration Open
09:00 – 11:00	Opening Ceremony
11:00 – 19:30	Exhibits, International Cartographic Exhibition, Children's Map Competition, Posters Open
11:00 – 13:30	Lunch on own
13:30 – 17:30	Technical Sessions
18:00 – 19:30	Opening Reception in the Exhibit Hall
	<b>Tuesday, 4 July</b>
08:00 – 17:00	Registration Open
08:30 – 10:10	Technical Sessions
10:00 – 15:00	Exhibits, International Cartographic Exhibition, Children's Map Competition, Posters Open
10:30 – 11:30	Plenary 1 and Commission Introductions
11:30 – 13:30	Lunch on own
13:30 – 15:50	Technical Sessions
	<b>Wednesday, 5 July</b>
08:00 – 17:00	Registration Open
08:30 – 10:10	Technical Sessions
10:00 – 18:00	Exhibits, International Cartographic Exhibition, Children's Map Competition, Posters Open
10:30 – 11:30	Plenary 2 and Commission Introductions
11:30 – 13:30	Lunch on own
13:30 – 17:30	Technical Sessions
	<b>Thursday, 6 July</b>
08:00 – 17:00	Registration Open
08:00 – 18:00	Exhibit, Map, Poster Dismantle
08:30 – 10:10	Technical Sessions
10:30 – 11:30	Plenary 3 and Commission Introductions
11:30 – 13:30	Lunch on own
13:30 – 17:30	Technical Sessions
19:30 – 23:00	Gala Dinner
	<b>Friday, 7 July</b>
08:00 – 11:00	Registration Open
08:30 – 11:30	Technical Sessions
11:30 – 13:30	Lunch on own
13:30 – 15:30	Closing Ceremony



**ICC 2017**  
2-7 July 2017, Washington, D.C., USA  
[www.icc2017.org](http://www.icc2017.org)

## tim nolan



When I was young maps fascinated me because they were colourful representations of real world distant places where different things happened. Whether that was tramping in

Arthur's Pass, or following my sister's OE (Overseas Experience) as she travelled through Asia and Europe, a map was a portal to a distant place. I was also intrigued by how and why landscapes appear as they do, and how that changes over time – New Zealand has an incredibly diverse range of geomorphology packed into a very small country – so I ended up studying geography, and using maps and mapping techniques to help showcase interesting aspects of New Zealand's small but diverse range of physical and cultural geography.

I also have an interest in telling historical stories through mapping, and I have come across many large historical potential datasets (i.e. 'historic maps') tied up as static raster data. I am working on a couple of projects at the moment to convert historical raster mapping data into more useful vector GIS data.

I currently manage my own mapping consultancy, regularly producing both cartographic and GIS outputs for clients, from complete atlas to individual planning maps. The common factor for me is using a map to generate and display something for the client that was not seen before – maps are a beautiful and concise way to visually communicate these sometimes hidden aspects of both the cultural and physical environment.

There is nothing better for me than to see someone looking at a map, and seeing the realisation dawn on them when they get that new bit of information and understanding.

**Tim Nolan** | Director | Blackant Mapping Solutions, Christchurch | New Zealand | [blackant@snap.net.nz](mailto:blackant@snap.net.nz)

Top part of a page from the 2008 *Macmillan New Zealand World Atlas*, focused on New Zealand environmental issues. The themes mapped include changes to the native forest cover between year 950 and 2000, brushtail possum invasion and colonisation 1837-2006, and trends and targets in packaging recovery. Information was sourced and then compiled into maps and diagrams to convey the salient points.

# profiles bollettino dell'associazione italiana di cartografia

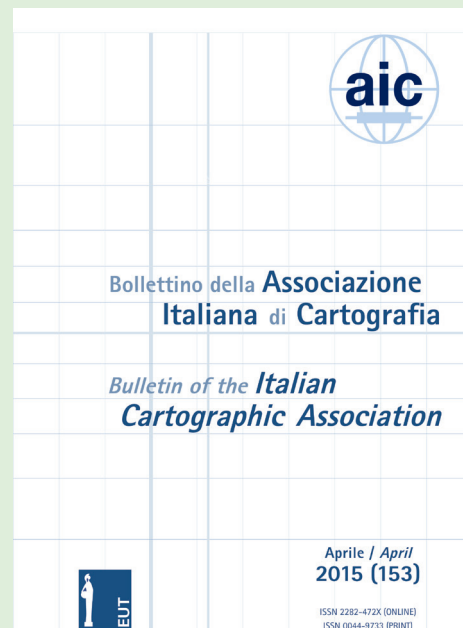
[www.openstarts.units.it/dspace/handle/10077/9933/](http://www.openstarts.units.it/dspace/handle/10077/9933/)

The Italian Cartographic Association (AIC) is an open association, whose aim is to contribute to the development, study and research of cartography, to improve the professional cartographic culture among members, and to promote Italian cartography abroad within the international cooperation. Since its establishment in 1963, the Association gathers scholars, professionals, mapping agencies, map makers and amateur cartographers that participate in various activities, which include an annual Conference and publication of a journal.

The *Bulletin of the Italian Cartographic Association* collects works submitted by authors into a peer reviewed, three issues per year, online journal. The Bulletin publishes contributions by both Italian and international authors. At present, authors from France, Greece, Romania and Spain are regularly contributing to the Bulletin.

Recently, a review of the Bulletin was undertaken focusing on internationalisation and improvement of its quality. Submitted papers in Italian, English or French, are reviewed using a double blind refereeing process. From 2015, the common parts of the Bulletin are published in both, Italian and English.

The Bulletin is distributed as an Open Access Journal by the University of Trieste Press (EUT) and the full content of the Bulletins, as well as the single papers, can be downloaded in pdf and ePub formats. A parallel section of the Bulletin, named *Percorsi*, aims at gathering

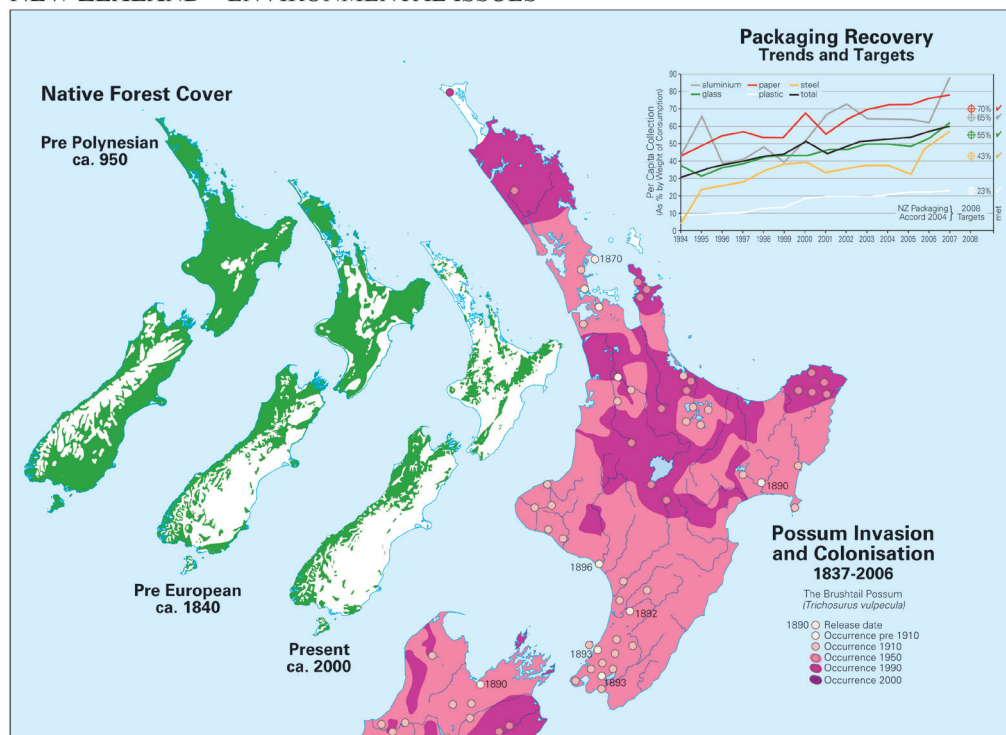


Recent cover of the *Bulletin of the Italian Cartographic Association*

web-gis based tourist paths or experiences linked to scientific papers on thematic cartography ([www.openstarts.units.it/dspace/handle/10077/9911/](http://www.openstarts.units.it/dspace/handle/10077/9911/)).

**Giuseppe Borruso** | Chair of the Scientific Committee | Bulletin of the Italian Cartographic Association | Italy

## NEW ZEALAND – ENVIRONMENTAL ISSUES





[www.slovakcarto.sk/](http://www.slovakcarto.sk/)

The Cartographic Society of the Slovak Republic (CS SR), founded on 25 November 1993, connects persons interested in cartographic works, cartographic information and spatial information in the GIS. It supports the development of cartography and its history, education of cartographers and represents the Slovak Republic in the International Cartographic Association (ICA). The CS SR, with 100 regular members, is a small society albeit its members contribute greatly to the cultivation and spreading of cartographic literacy among the population.

Every two years CS SR organises cartographic conferences (along with the Czech Cartographic Society), and regular seminars *Activities in Cartography* and *Historical Maps*; it publishes a six-monthly periodical *Cartographic Letters* covering articles involved with cartography, photogrammetry, remote sensing and geo-information science.

Education in cartography and geo-information science at a university level is carried out according to two models, i.e. the technical model with geodetic-topographic and technological objectives, and the nature-scientific model with geographical objectives.

The university studies comprise three levels, i.e. a Bachelor, Masters and a PhD. Education is

carried out at the Faculty of Civil Engineering of the Slovak University of Technology in Bratislava, the Faculty of Forestry and Faculty of Ecology and Environmental Science of the Technical University in Zvolen, the Faculty of Mining, Ecology and Geotechnics of the Technical University in Košice, the Faculty of Natural Sciences, Comenius University in Bratislava and at the Faculty of Science of Pavol Jozef Šafárik University in Košice.

Coordination and development of contacts with the ICA and the mediation of its activities to Slovak experts is carried out via cooperation with the ICA commissions and participation at ICA conferences, seminars and cartographic exhibitions (at the ICC 2009 in Chile, the Slovak tourist maps made by VKÚ a.s. Harmanec won the first prize in their category). CS SR coordinates participation of Slovakia in the Barbara Petchenik Children's World Map Competition (Slovakian children were awarded distinctions in 1993, 1995 and 2001).

The relationships between the CS SR and the ICA have been distinctly promoted by visits of the ICA Presidents in Slovakia: Dr Michael Wood in 1999 and Prof Georg Gartner in 2011. Active cooperation of Dr Jan Pravda with the Commission on Theoretical Cartography was also fruitful and currently Dr Jan Feranec serves



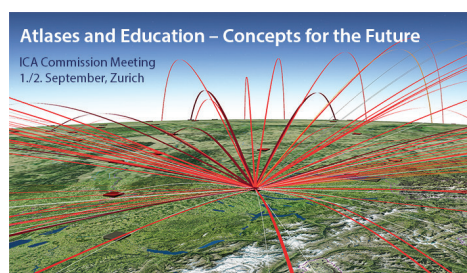
Cartographic Society of the Slovak Republic regularly organizes and supports the Barbara Petchenik Children's World Map Competition | Photograph courtesy of Jan Feranec

as Vice Chair of the Commission on Sensor-driven Mapping.

Various contacts of the CS SR with the ICA widen the horizon of Slovak cartographers and geo-information scientists in the international context, contributing to the progress of these disciplines that benefit the public at large.

**Jan Feranec and Robert Fencik** | Cartographic Society of the Slovak Republic | Slovakia ■

## reports ica commissions



### Atlases

[www.univie.ac.at/cnra/](http://www.univie.ac.at/cnra/)

#### Joint Meeting and Workshop in Zurich, Switzerland

The ICA Commissions on Atlases and the ICA Commission on Education and Training are organising a Joint Meeting and Workshop *Atlases and Education – Concepts for the Future*. The meeting will take place at the Institute of Cartography and Geoinformation, ETH Zurich, Switzerland, between 1-2 September 2016.

The first day will feature keynote presentations and state-of-the-art contributions. During the second day, we plan to present and discuss

future atlas and educational concepts. In addition, we are planning to visit Zurich's famous map library (Zentralbibliothek), the old town, and a tour on the Uetliberg, Zurich's nearest mountain spot. For further information please visit the Commission's website.

**René Sieber** | Chair | ICA Commission on Atlases | Switzerland ■

### Cartography in Early Warning and Crisis Management

[comcewa.geogr.muni.cz/](http://comcewa.geogr.muni.cz/)

#### Workshop in Novosibirsk, Russia

One of the traditional activities of the ICA Commission on Cartography for Early Warning and Crises Management (CCEW&CM) is the annual workshop organised at the international exhibition and scientific congress Interexpo GEO-Siberia. The 12th Interexpo GEO-Siberia,

held between 20-22 April 2016 in Novosibirsk, was the largest exchange forum for the professional community in Russia. More than 150 organisations from Russia were represented with international delegates coming from Austria, Belarus, Belgium, Canada, China, Czech Republic, Finland, Germany, Israel, Kazakhstan, Mongolia, The Netherlands, Nigeria, Switzerland, Ukraine, USA and Uzbekistan.

The event started with greetings by Prof Alexander Karpik, Rector of the Siberian State University of Geosystems and Technologies (SSUGT), and Vladimir F. Gorodetsky, Governor of Novosibirsk Region. On behalf of the ICA, greeting were conveyed by Prof László Zentai, Secretary General and Treasure (Hungary). A letter from ICA President Prof Menno-Jan Kraak (The Netherlands) was included in the congress materials. Prof Vladimir Tikunov, Chair of the ICA Commission on Geographic Information and Sustainability, and Prof Milan Konečný, Chair of the ICA Commission on Cartography in Early Warning and Crisis Management, served in the Organising Committee.

One of the plenary sessions featured presentation by Prof László Zentai titled *From*

> 08



Participants of the 7th International Workshop *Early Warning and Crises Management in the Big Data Era* organised by the ICA Commission on Cartography in Early Warning and Crisis Management at the international exhibition and scientific congress Interexpo GEO-Siberia in Novosibirsk, Russia | Photographs courtesy of Milan Konečný

*Paper Maps to Open GIS: the Way to Cartography 2.0 at the Geological and Geophysical Institute of Hungary.*

This time, the 7th International Workshop *Early Warning and Crises Management in the Big Data Era* was organised with the International Seminar *Digital Earth role in sustainable development of territories influenced by significant global climate changes* (the first International Society for Digital Earth (ISDE) event held in Russia and the region) and the International Student and Young Researcher Summer School *GI Support of Sustainable Development of Territories in the Conditions of Global Climate Change*, the latter coordinated by Prof Vladimir Tikunov. The Workshop addressed the following key issues:

- Big Data theories and applications in early warning (EW) and crises management (CM)
- Collaborative emergency decision-making based on geoinformatics/geomatics and cartographic support
- Internet of things: from vertical development to horizontal integrations
- Emergency management information systems
- Geographic information science & technology for early warning, crisis response and management
- Modelling and simulation based on multimedia data
- Information acquisition and fusion of Big Data
- Analytical modelling and simulation
- Ubiquitous, adaptive and context-based mapping
- Determining and estimating future threats
- Foresight, planning, and risk analysis integration
- Community policing in EW and CM
- Media effectiveness analysis of crisis response

Discussions were moderated by Prof Milan Konečný (Masaryk University, Czech Republic), Prof Dmitry V. Lisitsky, Assoc Prof Svetlana S.

Dyshlyuk and Dr Alexey A. Kolesnikov (all SSUGT), Prof Vladimir S. Tikunov (Moscow State University) and Prof Maxim V. Nyrtsov (Moscow State University of Geodesy and Cartography). Presented papers included:

- *Research Agenda of Early Warning and Disaster/Crisis Management: Geoinformatics and Cartographic Role* (keynote) by Milan Konečný
- *Cartographic Database for Study of Hazardous Hydrometeorological Phenomena in the Perm Krai* by R.K. Abdullin, Perm State University, Russia
- *Mapping of Mudflow Processes in the South Baikal Lakeside Based on Basin Morphosystem Conception* by V.P. Stupin and D.G. Syrenov, Irkutsk National Research State Technical University (INRTU), Russia
- *Data in the Cloud – a Push for the Geodetic Economy* by O. Schuster, GEOHAUS – Consortium, Germany
- *Mapping and Satellite Fire Monitoring in the Baikal Lakeside* by B.N. Olzoev and L.A. Plastinin, INRTU, Russia
- *Territorial Zoning of the Former Proving Ground Using Geoinformation Mapping* by Y.G. Poshivalo and Y.Y. Yakovenko, Siberian State University of Geosystems and Technologies, Russia
- *Key Aspects of GIS Development for Automated Decision-making on Fire Fighter in the Territories of Altai Krai's Municipal Formations* by M.V. Karmanova, Siberian State University of Geosystems and Technologies, Russia
- *Generation of Virtual Terrain Models and Buildings* by A.A. Kolesnikov and P.M. Kikin, Siberian State University of Geosystems and Technologies, Russia
- *Geoinformation and Cartographic Analysis of the Flood Background in the Basin of the Charysh River* by I.N. Rotanova and V.A. Oblasov, Altai State University, Barnaul, Russia
- *Using Different Types of Initial Data for*

*Monitoring of the Coastline Inland Seas* by R.V. Schultz, J.V. Kravchenko and T.N. Kvartych, Kyiv National University of Construction and Architecture, Kyiv, Ukraine

- *Software Architecture for Critical Incident Response and Warning* by A.V. Dubrovsky, A.E. Ivanov and V.N. Nikitin, Siberian State University of Geosystems and Technologies, Russia

An additional paper by Milan Konečný was presented as part of the ISDE activities: *United Nation Disaster Risk Reduction Concept and Digital Earth Potentials*.

Workshop was attended by around 100 participants, mainly students and young scientists, but also by international experts.

All events were organised by Igor Musichin, Vice Rector, Argina Noviskaja and Olesija Malygina, all from SSUGT – many thanks.

## Future Plans

The next Commission events will be held in Nanjing, China, 27-31 October 2016 and in Hyderabad, India, January 2017.

**Milan Konečný** | Chair | ICA Commission on Cartography in Early Warning and Crisis Management | Czech Republic ■

## Education and Training

[education.icaci.org/](http://education.icaci.org/)

The ongoing work of the ICA Commission on Education and Training is governed by its Terms of Reference, and progress can be reported on several of these topics. Participation and contribution to the work of the Commission by engaging with the activities suggested by our agenda is encouraged.

## Deliver educational material

The ongoing work of our ex-Chair, Dr David



Fraser, has resulted in a proposal for comprehensive Cartographic Workshops to be held in the South Pacific in November 2016. These events are being planned by a team of Mr Nasi Racaca, NaGIS Fiji and Rockingham, Australia; Mr Seli Taufa, Chief Draftsman at Ministry of Lands, Survey & Natural Resources, Tonga; Associate Professor Nick Rollings, University of the South Pacific, Fiji; and Dr David Fraser, National Councillor, Mapping Sciences Institute, Australia. This team will present the Workshops, assisted by an eminent group of international visitors.

The content of the Workshops will cover all aspects of cartography: General Overview of Cartographic Principles, Specific Elements of Cartography, and Contemporary Cartography.

The first workshop, in the Kingdom of Tonga, will take place from 14th to 18th November 2016; and the second will be located in the Republic of Fiji from 21st to 25th November 2016. These events are timed to run prior to the popular annual Pacific Island GIS & Remote Sensing Users Conference to be held in Suva, Fiji, from 28th November to 2nd December 2016 ([gsd.spc.int/gisconference/](http://gsd.spc.int/gisconference/)).

## Organise workshops

The Commission will join with the ICA Commission on Atlases to present a seminar on *Atlases and Education – Concepts for the Future*. This will be our major event for 2016, so we hope that many interested in the work of the Commission will aim to join us. This joint workshop will take place on 1st and 2nd September 2016 at ETH, Zurich, Switzerland. All are encouraged to attend and to prepare material for presentation.

The first day will examine state of the art in the areas of atlases, education, and the juxtaposition of these. Commission members are encouraged to consider presentations on current experiences in educational atlas design, production and use; on the role of new paradigms of 'atlas' type materials for education (e.g. story maps); on the use of atlases in educational programmes in Third World countries; and on the way in which atlases can address the educational aspects of the new UN Sustainability Goals. The second day will consider future developments, and there is scope for Commission members to speculate about the ways in which technological and pedagogical change can be driven by, and reflected by, maps and atlases in the classroom.

## Develop a Body of Knowledge

Preparatory work has been undertaken by the Chair of the Commission to understand how a Body of Knowledge (BoK) can be created. Several existing BoK in other disciplines have been examined, and a number of issues need to be addressed: what is the nature of 'knowledge' itself; how can we claim the 'territory' of

cartography; what is a BoK for; what is the community which should be consulted to develop the BoK and how is it to be asked; what is the form of the deliverable?

The BoK developed for Geographic Information Science and Technology (GIST) in 2006, and currently under revision ([ucgis.org/project-group/gist-body-knowledge-project](http://ucgis.org/project-group/gist-body-knowledge-project)) is an excellent model to follow, and it is clear from this and from other BoK initiatives that the Delphi method ([en.wikipedia.org/wiki/Delphi\\_method](http://en.wikipedia.org/wiki/Delphi_method)) is an optimal means of gathering and compiling content for the BoK. This process will be initiated soon, and a major event associated with this is a special workshop at Mapping 2016, the annual meeting of the British Cartographic Society and the Society of Cartographers, in Cheltenham, UK, from 6th to 8th September 2016 ([www.cartography.org.uk/downloads/mapping2016/Mapping2016flyer.pdf](http://www.cartography.org.uk/downloads/mapping2016/Mapping2016flyer.pdf)).

The intention is to promote a creative environment in which ideas for content of the BoK can be pro-actively prompted, debated and refined. All are welcome to attend and contribute to this important activity. The result will be a draft Body of Knowledge which will be distributed widely for consultation by the worldwide cartographic community: all input into the BoK will be invaluable over the next three years. The major output from the Commission at the end of its four year term in 2019 will be the BoK.

## Contribute to International Cartographic Conferences

Issues related to the BoK will be reported on at the next ICC in Washington DC, 2nd to 7th July 2017, in a pre-conference workshop, in the usual Commission business meeting, and in the main programme of the ICC itself.

There is tentative agreement to join with the ICA Commission on Maps and the Internet to present a workshop related to joint interests. This will take a similar form to the workshop which was organised in Curitiba, Brazil, prior to the Rio de Janeiro ICC in 2015. Participation in late June 2017 at a venue in historic Williamsburg, Virginia, USA is welcome.

The Call for Papers for the main ICC conference has now been issued (deadline for abstracts is 26th October 2016) and contributions in themes related to education and training (T11 and T12, in particular) are encouraged.

## Update the Commission's webpage

The commission set up a new Commission webpage ([education.icaci.org/](http://education.icaci.org/)) with a new facelift. Webpage content is still under construction, but is intended to be ready by July 2016.

David Fairbairn | Chair | ICA Commission on Education and Training | *United Kingdom* ■

## Generalisation and Multiple Representation

[generalisation.icaci.org/](http://generalisation.icaci.org/)

### Symposium in Amsterdam, The Netherlands

Producing maps and geo-data at different scales is traditionally one of the main tasks of National (and regional) Mapping Agencies (NMAs). The derivation of small scale maps (less detail) from large scale maps (more detail), i.e. generalisation, used to be a manual task of cartographers. With the need for more up-to-date data as well as the development of automated generalisation solutions in both research and industry, NMAs are implementing automated generalisation production lines. To exchange experiences and identify remaining issues the 2nd ICA / EuroSDR NMA symposium was organised jointly by the ICA Commission on Generalisation and Multiple Representation and the Commission on Modelling and Processing of the European Spatial Data Research (EuroSDR) on 3rd and 4th December 2015 at Kadaster in Amsterdam. Over 60 people from 18 NMAs, industry (ESRI, ISpatial) and universities exchanged experiences on this topic and discussed issues for further research.

The presentations at the workshop showed that most NMAs have implemented a certain form of automation in their workflows, ranging from generalisation of certain features while still maintaining a manual workflow, to a fully automated procedure with options for semi-automated editing and generalisation afterwards. The following questions were discussed at the break out sessions:

- How to deal with heterogeneous source data, which are more and more frequent since NMAs act more and more as integrators of data produced by other administrations?
- How can successful implementations of some NMAs be transferred to others while all NMAs have their own specific context? A key for success is for example a clean and semantically rich source data set.
- What does "good enough" mean in terms of cartographic generalisation? Some NMAs chose to go for fully automated processes while accepting a lower cartographic quality or a less rich content of the resulting maps, while others prefer to keep some manual edits to assure the best cartographic quality.
- If generalisation of a complete map is feasible, is there still a need to maintain object identifiers for the derived products? Maintaining these identifiers also implies to support incremental updates as part of the automated generalisation process. This is yet an unresolved problem.
- How can maps be generalised on-the-fly as



anne in paris



georg and lászló  
on el hierro



chris in whistler



imy in usa



INTERNATIONAL MAP YEAR 2015-2016

information  
map data: naturalearthdata.com  
map projection: robinson, pacific-centred  
sources: imy website mapyear.org;  
ica news, nos 63-66, 2014-2016

cartography by igor drecki, june 2016

ica executive committee in madrid



imy in sudan



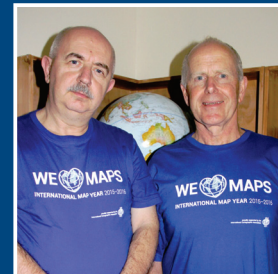
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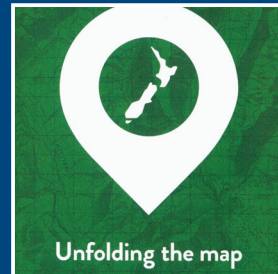
imy in japan



lászló and david  
in melbourne



imy in new zealand



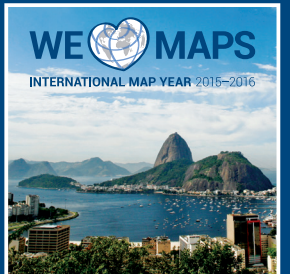
imy in mexico



jesús reyes in havana



imy inauguration  
in rio de janeiro



# international cartographic association cartographique internationale

## international map year around the world

june 2016

imy participating country

imy event(s)

imy photo post





Participants of the 2nd ICA / EuroSDR National Mapping Agencies Symposium at Kadaster in Amsterdam, The Netherlands | Photograph courtesy of Dirk Burghardt

required when disseminating these via the web within SDIs? Since current automated generalisation solutions do not fulfil this requirement, maps at intermediate zoom levels are currently being pre-processed.

- Is it necessary to distinguish and maintain Digital Landscape Models and Digital Cartographic Models at several levels of detail?
- How can automated generalisation solutions be used to derive on-demand maps for different purposes (hiking, cycling, water navigation etc.)?

From the presentations, abstracts and discussions of the workshop, several open issues were identified that need further attention by either academics or industry.

At first, operators for automated generalisation provided by industry are often implemented as black boxes. Since successful generalisation requires adjustments, the practitioners from NMAs, who are in charge of generalisation, mentioned a need for more transparency and better possibilities to experiment with the underlying implemented algorithms.

Another remaining issue in generalisation is the lack of appropriate personnel. Implementing automated generalisation within NMAs requires highly qualified people with knowledge on information technology and skills in data generalisation. Both are characterised by steep learning curves and the lack of such personnel may hinder the implementation of automated solutions within NMAs.

Automated generalisation at NMAs also requires an improved scalability of processes. One of the challenges for full automation of the generalisation process lies in the possibility to process the entire country. Besides computer power, this requires a smart way for partitioning to be able to apply area- and context-depend-

ent algorithms and parameter values as well as a tool to handle feature morphology for morphology-tailored generalisation processes. A good solution for partitioning also includes distribution of the computation, as well as the management of dependencies between partitions.

Finally the integration of 2D, 3D and 4D was mentioned as open issue by most of the participants. Many NMAs are making the step from 2D mapping to 3D mapping with maintenance of temporal information (4D). The 3D maps are increasingly considered within the context of multi-scale products and some NMAs even maintain 3D data as source data from which 2D data is derived. This brings another challenge for generalisation, i.e. deriving small-scale products via 3D generalisation. While automated generalisation research in 2D has a rich history, research on generalisation of 3D urban models is relatively recent. Several researchers have studied the generalisation of individual buildings and groups of buildings. However, they often focus on a single generalisation problem while we have learned from the 2D cartographic domain that for successful generalisation solutions it is essential to generalise urban objects with respect to their surroundings. This context dependent generalisation is hard to implement and not yet well understood in 3D.

The presentations and short abstracts can be found on the ICA Commission on Generalisation and Multiple Representation website [generalisation.icaci.org/index.php/preevents](http://generalisation.icaci.org/index.php/preevents).

## Future Plans

The venue of the next meeting of the ICA Commission on Generalisation and Multiple Representation will be a pre-conference workshop prior to the AGILE Conference on

*Automated generalisation for on-demand mapping in Helsinki, Finland, 14 June 2016.*

**Dirk Burghardt, Cécile Duchêne, Jantien Stoter, Vincent van Altena and Marc Post** |

Chairs and Members | ICA Commission on Generalisation and Multiple Representation / EuroSDR Commission on Modelling and Processing | Germany / France / The Netherlands ■

## Location Based Services

[lbs.icaci.org/](http://lbs.icaci.org/)

### LBS 2016 in Vienna, Austria



The ICA Commission on Location Based Services and Technische Universität Wien are organizing the 13th International Conference on Location-

Based Services (LBS 2016), which will take place in Vienna, Austria on 14-16 November 2016.

Built on the success of previous conferences in this series, LBS 2016 is addressed to scholars, researchers, digital industry / market operators, and students of different backgrounds (scientific, engineering and humanistic) whose work is either focused on or relevant to location based services (LBS). The conference will offer a common ground to colleagues from various disciplines and practice where they can meet, interact and exchange knowledge, experience, plans and ideas on how LBS can and could be improved, and how it will influence both science and society. The conference invites three types of contributions: full papers, work in progress

## LBS 2016

13<sup>th</sup> Conference on Location-Based Services  
Vienna, 14–16 November 2016



and showcases. Deadlines for submission are June 1 for full papers, July 1 for work in progress, and September 18 for showcases. High-quality submissions are intended to be published in the *Journal of Location Based Services* and in a book of the Springer series *Lecture Notes on Geoinformation and Cartography*. For more information, please refer to the conference website [lbsconference.org/](http://lbsconference.org/).

### Research Agenda for Location Based Services

Location Based Services (LBS) have become a research field since the early 2000s. Since that time, there have been many changes in the field, which open up a lot of basic and applied research questions to the LBS research community. To motivate further LBS research and stimulate collective efforts, the ICA Commission on Location Based Services is currently starting an initiative to develop a cross-cutting research agenda for the field of LBS, aiming to identify key research questions and challenges that are essential for the LBS development in the next 5 to 10 years.

As a first step in this process, we invite all interested parties to write a one paragraph proposal to describe what they believe are the “big problems” that should be addressed to bring LBS research into a higher level. The commission chairs together with several invited experts will then examine, classify, and group these proposals, and provide a preliminary list of “key problems”. The list will be circulated to the LBS research community, and we will then invite everyone to write a one-page position paper to further develop cross-cutting research directions and plans to address these “key problems”.

Important dates are:

- 15 July 2016, deadline for one paragraph proposals of “big problems” in LBS
- 20 August 2016, publication of selected “key problems” on the commission website
- 1 October 2016, deadline for expression of interest in writing a one-page position paper
- 1 November 2016, deadline for one-page position papers

We are exploring the possibility of having a workshop, preceding the LBS 2016 in Vienna, to discuss these position papers and the cross-cutting research directions. For more details of the initiative, please refer to [lbs.icaci.org/research-agenda/](http://lbs.icaci.org/research-agenda/).

### Other Activities

A special issue on “Location-Based Services” of the ISPRS *International Journal of Geo-Information* is planned for 2016. The special issue aims to provide a general overview on recent research activities related to LBS. The current submission deadline is 30 June 2016. Please refer to [www.mdpi.com/journal/ijgi/special\\_issues/LBS/](http://www.mdpi.com/journal/ijgi/special_issues/LBS/) for more details.

**Haosheng Huang** | Chair | ICA Commission on Location Based Services | *Austria / China* ■

## Map Design

[mapdesign.icaci.org/](http://mapdesign.icaci.org/)

### Commission Activities

Members of the ICA Commission on Map Design were heavily involved in the organization and delivery of the ICA/Esri Cartographic Summit held in Redlands, California, USA in February 2016. Chair Kenneth Field was part of the Organizing Committee along with ICA and Esri colleagues. The invite-only event brought together over 40 key people from the world of cartography, design, journalism and related disciplines to discuss what cartography is from their perspective and what are the emerging issues and opportunities.

The 3-day event was a huge success with the workshop and discursive format providing an opportunity for all to contribute in different ways. Importantly, this event was as much about hearing from non-cartographers to gauge their perspectives and to inform those in the cartographic community. ICA President Menno-Jan Kraak brought together the results of discussions in the role of design, media and big data as key issues (see President’s Report on page 1). The sessions were all recorded and can be viewed at (audio and slides) [www.esri.com/events/cartographic-summit/recordings](http://www.esri.com/events/cartographic-summit/recordings). A number of other outcomes of the Summit are planned such as a summary paper.

As part of the Cartographic Summit, the Commission on Map Design hosted an evening networking event to allow attendees to mingle in a more informal setting. This was designed to encourage further discussions and to provide space for attendees to develop contacts. Chair Kenneth Field and Vice Chairs Ian Muehlenhaus and Damien Saunder hosted the event.

Members of the Commission have also taken part in meetings at the American Association of Geographer’s Annual Meeting to further develop the work begun during the pre-ICC 2015 Curitiba workshop to develop a revised research strategy for ICA and Cartography. The outcomes of these meetings will form three key position papers to be submitted to the *International Journal of Cartography*. The Commission is involved in ongoing work to

support the Local Organising Committee of the ICC 2017 in Washington with regard to the international map competition.

Commission members have also been involved in the ongoing project to support the UN-GGIM Sustainability goals through developing a poster focusing on Map Design and the Oceans.

A key new text on Cartography is currently in development. Authored by Kenneth Field and Damien Saunder, this text is due to be completed by the end of 2016 for publication in 2017 ahead of the ICC 2017 in Washington. The focus of the text is to provide a cartographic companion – a reference for cartographers as well as those new to map-making that brings ideas and techniques up-to-date in a modern, accessible format.

Finally, our ‘style guides’ are being developed. These will provide guidance on how to develop a particular look and feel for maps. Templates are currently being finalized to illustrate the initial ideas and project goals. We’ll be taking a crowd-sourced approach to develop a broad selection of different style guides to support cartographic work.

**Kenneth Field** | Chair | ICA Commission on Map Design | *United Kingdom* ■

## Mountain Cartography

[mountaincartography.org/](http://mountaincartography.org/)

### Workshop in Berchtesgaden, Germany

The ICA Commission on Mountain Cartography holds its traditional Workshops every second year, alternating with the International Cartographic Conferences (ICC). In 2016, we celebrated the 10th Anniversary Workshop from April 26 to 30, at Carl-von-Stahl-Haus, a rustic mountain hotel on the Austria-German border. The venue was 1733m above sea level and adjacent to Berchtesgaden National Park. The workshop organisers were Manfred Buchroithner and Benjamin Schröter from the Institute for Cartography, Technical University Dresden, Germany. Access to Carl-von-Stahl-Haus was only possible by hiking with a backpack for 30 to 40 minutes from the summit station of the Jennerbahn Cable Car. Since the weather at the time was wintry, including two days of whiteout conditions, getting to the site was an exciting challenge. Two participants travelled to and from the workshop on skis.

The overall theme of this year’s workshop was *Unbounded Mapping of Mountains*. The first two days featured presentations on various mountain cartography topics, from cutting-edge research to overview reports, and included both theoretical and practical aspects of the discipline. The third and final day was devoted to mountain recreation. The workshop brought together 46 participants from 18

> 14





(clockwise from top left) Carl-von-Stahl Haus near the Austrian-German border, the venue of the 10th ICA Mountain Cartography Workshop; the colourful assembly of Workshop participants; one of the paper sessions | Photographs courtesy of Dušan Petrovič

countries, including all six permanently populated continents! Although most of the mountain cartographers from Europe (Austria, Croatia, Czech Republic, France, Germany, Norway, Poland, Romania, Slovenia, Switzerland and UK), and countries such as Canada, Chile, New Zealand and USA were familiar with mountain winter conditions, the participants from India, Turkey, and South Africa had a new experience.

Four participants – Matjaž Štanfel (Croatia), Lukas Neugebauer, Katharina Biedermann (both Austria), and Sebastián Vivero (Chile) – attended the Workshop thanks to the ICA Young Mountain Cartographer Awards, which enabled these gifted young scientists to present their work. In addition, ICA Past President Georg Gartner, participated in the workshop for one-half day.

The Workshop began on Tuesday evening with welcoming remarks from the local organizers, Manfred Buchroithner and Benjamin Schröter, and the Commission Chair Dušan Petrovič. The program continued after dinner with an interesting presentation about the region by Dr Michael Vogel, Director of the Berchtesgaden National Park. During the next two days, 30 oral and two poster presentations were delivered. Sessions covered a broad range of mountain cartography topics, including relief, mountain and hiking, ecology, glaciers, snow and skiing, and history.

Wednesday morning was devoted to the Relief topic and covered the following talks:

- *Free World Elevation Data Services & Live WebGL & OpenGL Rendering Using Those Sources in Tangram* by Nathaniel V Kelso
- *Generalizing Relief Shading in Vector Space* by Patrick J Kennelly
- *Manual Small-Scale Shaded Relief* by Tom Patterson

- *3D Mapping of Mount Rushmore National Monument* by Alex Tait
- *Comparing TLS and ALS Created DTM of Kuzlovec Torrent* by Klemen Kozmus Trajkovski
- *The Creation of Relief Models Over Time in Alpine Areas* by Katharina Biedermann and Karel Kriz
- *Combined Shading Used for Small Scale Photographic Maps* by Jacek Drachal
- a video with live-commentary by Roger Smith

Before lunch we discussed the content and design of our Commission's poster in support of the UN Goals for Sustainable Development. Our theme is *Climate Action* (Sustainable Goal 13). The poster will be presented at the UN Sustainable Goals Exhibition in New York in August 2016.

The afternoon's presentations covered the Mountain and Hiking Cartography:

- *Automatization of Cartographic Generalisation of Contour Lines* by Dražen Tutić
- *NewTopo Mapping in New Zealand* by Geoff Aitken
- *The Canadian National Topographic Database and Mountain Cartography* by Roger Wheate
- an overview presentation of various National Geographic projects by Martin Gamache
- *New Generation of Slovenian Alpine Association's Mountain Maps and Mountain Track Database* by Dušan Petrovič
- *Comparative Geographical Representation of High Mountain Regions by Means of Remote Sensing* by Wolfgang Sulzer.

In addition, two posters were presented:

- *The Creation of an Airphoto Map of Kangchenjunga by Means of Historical Airborne Survey of Schneider/Kostka* by Lukas Schröck
- *Estimating the Effect of Different Influencing*

*Factors on the Spatial Distribution of Rock Glaciers in the Swiss Alps* by Robert Kenner

The intensive day finished with a mountain trivia contest prepared by Tom Patterson. The questions were difficult. Nevertheless, the two best teams – there were four people per team from a mix of countries – managed to score an impressive 16 out of 22 possible points.

The Thursday programme featured presentations on a range of topics:

- *Trekking, Liminality and Cartography* by Peter Howorth
- *Mapping the Greater Yellowstone Ecosystem* by Martin Gamache
- *Representing the Complexities of Wildlife Migration in Western Wyoming* by James E Meacham
- *Quantification and Visualization of Periglacial Surface Deformation in the Inneres Hohebenkar Cirque in Ötztal Alps* by Viktor Kaufmann
- *Glacier Surface and Submerged Glacier Forefield Mapping at Ecology Glacier (King George Island, Antarctica) Using Pléiades Satellite Imagery and Bathymetric Data* by Sebastián Vivero
- *Analysis of Snow Line and Albedo Conditions by Means of Time-Lapse Photography on Tapado Glacier, Chile* also by Sebastián Vivero
- *Generation of Cartographic Products for an Andean Helicopter Skiing Region* by Benjamin Schröter and Manfred Buchroithner
- *A Cognitive Approach for Innovative Ski Map Design in the French Alps* by Raffaella Balzarini
- *Avalanche Awareness Accessing Video Clips for Efficient Geo-Communication* by Lukas Neugebauer and Karel Kriz
- a creative presentation *Deville and Laussedat: France's Contribution to Photographic Surveying in the Canadian Rocky Mountains*

by Michael J Fisher

- *Learning to See the Past in an Eroded National Park* by Jeffrey T Howarth
- *Mountain Mapping and Old Toponymy of Maramures as Pretext for Field Work with Tourism Geography Students* by Gabriela and Marin Ilies
- *Automatic Swiss Style Rock Depiction* by Roman Geissthövel
- *Comparison of the Current and New International Specifications for Orienteering Maps* by Matjaž Štanfel
- *A Method for Creating Papercraft Raised Relief Maps from Digital Elevation Models* by the brothers Jürnjakob and Johann Dugge
- *Emotional Mountains - Visualisation of Georeferenced Emotions in the Berchtesgaden Alps* by Benjamin Schröter

The weather on Friday was ideal for outdoor activities. Participants split into several groups to pursue different activities, from hiking to ski touring to mountaineering. Clear skies, warm temperatures, and the fresh snow offered picturesque views of Mount Watzmann and other prominent peaks in the Austrian and German Alps. The day concluded with a banquet dinner offering an alpine menu of roasted deer and chamois, supplemented with dumplings and cabbage. At the banquet, Commission Chair Dušan Petrovič, representing all participants, thanked Benjamin Schröter and Manfred Buchroithner for hosting such a well-organized event.

The ICA Commission on Mountain Cartography also held its business meeting at the Workshop on Thursday. The minutes are available from the Commission website along with the workshop presentations and a selection of photographs. We will publish the workshop proceedings before the ICC 2017 conference in Washington D.C., USA. The next, 11th Mountain Cartography Workshop is planned to take place in spring 2018 in the snow-free coastal mountains on the Croatian island of Hvar (Dalmatia). The final decision about location and the date is an agenda item for the Commission Meeting during ICC 2017 in Washington.

After the workshop, a group of participants went on a two-day post-Workshop excursion. The first stop was Wolfgang Pusch's workshop near Berchtesgaden where we enjoyed magnificent physical relief models, made from gypsum and then hand-carved, of many famous mountains from around the world. The excursion participants then travelled through the Berchtesgaden Alps to the Eisriesenwelt in Werfen, the world's largest ice cave. It was a unique experience. Our reward after walking one hour in freezing temperatures and climbing thousands of stairs cut into ice slabs was seeing many impressive ice formations. That evening and the next night, we stayed in the comfortable apartments of the Stiererhof in Ramsau am Dachstein, just below the famous Dachstein

Massive. Rainy and windy weather on the second day of the excursion forced us to cancel a planned cable car ascent and hike on the Dachstein Glacier with its magnificent views over the Eastern and Central Alps. We instead visited the Schladming Ski Museum to see the world largest lenticular foil map of Dachstein's south face, created by the cartographers at the Dresden University of Technology. We were treated to a private viewing of this exhibit days before the public unveiling. We then visited the famous baroque monastery in Admont, east of Schladming, which houses a famous collection of historic maps in its magnificent ancient library.

**Dušan Petrovič, Tom Patterson, Manfred Buchroithner and Benjamin Schröter** | Chair / Vice Chair / Members | ICA Commission on Mountain Cartography | *Slovenia / USA / Germany* ■

## Use, User and Usability Issues

[cartogis.ugent.be/kooms/uui/](http://cartogis.ugent.be/kooms/uui/)

### Meeting in San Francisco, CA, USA

Three ICA Commissions – on Cognitive Issues in Geographic Information Visualization, Visual Analytics, and Use, User and Usability Issues – organised joint sessions at the Association of American Geographers (AAG) Annual Meeting, which took place from March 29 - April 2 2016 in San Francisco, California, USA. In total 20 high quality presentations were given during four well attended sessions, which took place in one of the larger conference rooms.

### Research Agenda Development

Four ICA Commissions on Cognitive Issues in Geographic Information Visualization, Visual Analytics, Map Design, and Use, User, and Usability Issues, are preparing a special issue

for the *International Journal of Cartography (IJC)* that will include multiple Research Agenda papers conceptualized around the general theme of *Envisioning the future of Cartographic Research*. As a result of the pre-ICC 2015 workshop in Curitiba, three main topics were selected:

- Research Methods in Cartography & Geovisualization
- Designing across Human Abilities and Map Use Contexts
- Representing & Interacting with Big Data

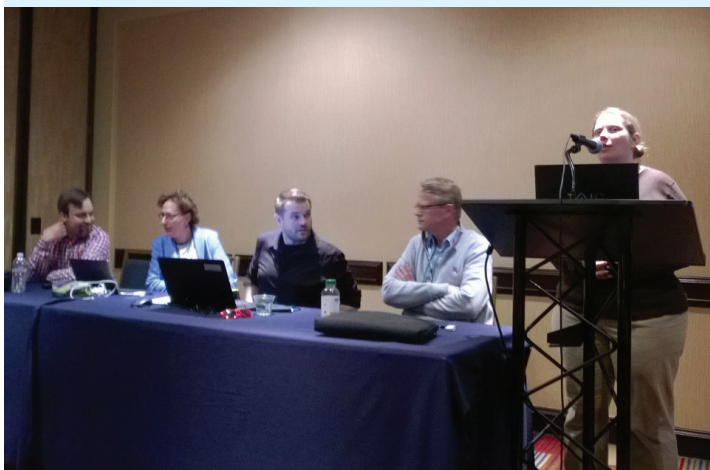
Each of these topics will be covered in a separate paper, drafts of which were recently subject to an early review by prominent ICA researchers (thank you to Muki Haklay, Alan MacEachren, Corné van Elzakker, Gennady Andrienko and Dan Montello).

The next step took place at the AAG Annual Meeting in San Francisco, where each agenda paper was revised based on an early review feedback. This session was attended (in person or virtually) by many of the associated co-authors. Furthermore, during a panel session at AAG, the structure and general contents of each draft paper was presented to receive additional input from the audience. The panel was chaired by Amy Griffin (ICA Commission on Cognitive Issues in Geographic Information Visualization) and included Menno-Jan Kraak (ICA President), Sara Fabrikant (ICA Vice President), Anthony Robinson (Visual Analytics) and Robert Roth (Use, User and Usability Issues).

All of this valuable feedback has been processed and the papers will be submitted in early summer to the *IJC* for full review. The goal is to finish the special issue, so that it can be published in the first volume of 2017. The associated ICA commissions will provide updates on their websites to promote this issue once it becomes available.

**Kristien Ooms** | Chair | ICA Commission on Use, User and Usability Issues | *Belgium* ■

(from left) Panel session at the AAG meeting discussing the contents of the upcoming Research Agenda; presentation of ICA President Menno-Jan Kraak at the panel session | *Photography Kristien Ooms*





## Marine Cartography

### Working Group Activities

During the previous period, priority has been given to communicating with the Local Organizing Committee for ICC 2017 and fulfilling ICA contribution to the work of the FIG/IHO/ICA International Board on Standards of Competence (IBSC) for hydrographic surveyors and nautical cartographers. Thus far, nominations for membership of the ICA Working Group on Marine Cartography (WGMC) have been few and nominations from interested people are welcomed and encouraged. It should be noted that the WG works primarily by correspondence, so there is no immediate or direct financial commitment if you are interested in the work of the Group. A meeting will be called for those present and interested while

at ICC 2017 in Washington, D.C. National member teams compiling the national entries to the International Cartographic Exhibition are encouraged to communicate with their national hydrographic and marine agencies seeking to include nautical charting and marine cartographic products, digital and traditional, in their national entries.

In April 2016, Chair Ron Furness and Vice-Chair Prof Lysandros Tsoulos attended, as long-standing members representing ICA, the 39th meeting of the IBSC. The meeting, conducted over two weeks, was hosted by Service Hydrographique et Océanographique de la Marine (SHOM), the French national agency, at their Brest facilities. At the meeting, one new course in nautical cartography was recognised. It will be conducted by the University of Technology Malaysia at its Johor Bahru campus. Seventeen hydrographic

surveyor programmes were reviewed, as well as one national accreditation programme.

Significantly, also during the meeting, the IBSC completed its work on revising the hydrographic surveyor Standards of Competence known as IHO Special Publication S-5 for Categories A and B. The Board has now turned its attention to the proposed revision of the nautical cartographer standards of competence. This significant work is anticipated to be completed by early 2017 (for more information on nautical cartography standards, see *ICA News*, No 62, June 2014, p 5-6).

The Terms of Reference for the WGMC can be found on the ICA website [icaci.org/working-groups/](http://icaci.org/working-groups/). As mentioned above, nominations for membership are welcome.

**Ron Furness and Lysandros Tsoulos** | Chair / Vice Chair | ICA Working Group on Marine Cartography | Australia / Greece ■

## reports cartographic meetings and events

### Mapathon in Belgium Inspired by IMY



On Saturday April 16, 2016 more than 200 volunteers gathered at seven universities all over Belgium to map areas in Kivu and Swaziland in Africa to support humanitarian aid organizations. It was possibly the biggest operation ever (of this type) and everyone involved was very happy with the attendance. The national Mapathon was set up by all Geography Departments of Belgian universities in the context of the International Map Year. Volunteers from OpenStreetMap (OSM) offered their help to ensure a smooth progress of the event. The call for this do-it-yourself humanitarian aid did not only attract students and researchers from the participating universities, but also many enthusiasts from all ages and backgrounds.

All teams, spread over seven locations in Belgium, focused on mapping buildings to support efforts in estimating population densities quickly and efficiently. On the island of Idjwi on Kivu-lake in South-Kivu (Congo), an epidemic of measles broke out recently. To prevent the epidemic from spreading further, 95% of the population needed to be vaccinated as soon as possible. In places

such as Idjwi, no detailed map material is available to trace the exact location of all these people.

In the context of the Missing Maps project ([www.missingmaps.org/](http://www.missingmaps.org/)), Doctors Without Borders requested the Humanitarian OpenStreetMap Team (HOT) to procure the necessary map data as soon as possible. HOT is the "humanitarian" arm of the OSM ([hotosm.org/](http://hotosm.org/)). The purpose is to present freely licensed cartographic data to humanitarian organizations. This project bridges the gap between humanitarian needs and contributions from the OSM-project volunteers. Less than a week later, thanks to the effort of all volunteers, they now have access to a data set comprising

more than 23,244 buildings for the island, where there had been practically no mapping undertaken before.

During a video conference at noon, Pete Masters – representing Doctors Without Borders UK – clarified that the new maps for Kivu would be used in the field immediately after a final check of the volunteers' work by experienced mappers, in order to guarantee the quality of the data. Partial checking was already undertaken during the event itself.

Although it had been planned to reserve a whole day for the Kivu project, this task was already finished by noon thanks to the large attendance. This is the reason why another 25,000 buildings in Swaziland were mapped during the afternoon to assist the Californian University Global Health Group in supporting the local government with the extermination of malaria in the country. The malaria project encompasses the follow-up on new cases, sprinkling of contaminated houses and provision of mosquito nets. Without maps, which allow to locate each dwelling, this project would never be able to reach 100% of the population. At this moment, no other project enables the production of such volumes of cartographic data in so little time!

**Frank Canters and Kristien Ooms** | Chair / Secretary | National Committee of Geography | Sub Committee on Cartography and GIS | Belgium ■

### Bulgarian Postcard for IMY

April 14, 2016 marked the release of a pictorial postcard entitled "2015-2016 International Map Year". The event took place at the Museum of Communications in Sofia, Bulgaria. The card was officially validated by placing the first commemorative postage stamp by Deputy Minister of Transport, Information Technologies and Communications Mr Valery Borisov, President of the Bulgarian Cartographic Association Prof Temenujka Bandrova and the artist of the postcard Mr Georgi Pavlov.

The Bulgarian Cartographic Association initiated the project and organised this event by issuing invitations to its members, guests and philatelists who had the opportunity to acquire the unique postcard



(from left) Temenoujka Bandrova, Valery Borisov and Georgi Pavlov apply the first stamp on the International Map Year 2015-2016 postcard issued by the Bulgarian postal service | Photograph courtesy of Temenoujka Bandrova

edition – the first of its kind in the world dedicated to the International Map Year 2015-2016.

**Temenoujka Bandrova** | Bulgarian Cartographic Association | Bulgaria ■

## Bulgarian Government Supports Cartography and IMY

Two Parliamentary Committees of the National Assembly of the Republic of Bulgaria, one on the Economic Policy and Tourism chaired by Mr Petar Kanev and the other on Culture and Media Committee chaired by Ms Polina Karastoyanova, hosted a meeting with the Bulgarian Cartographic Association (BCA) represented by the leading Bulgarian scientists and researchers. The meeting, held on 27 April 2016, was the highlight of a series of events organised in Bulgaria on the occasion of the International Map Year (IMY) 2015-2016.

The discussions focused on the utilisation of geospatial information in the economic and cultural development of the country. Both Committees supported the idea of organising a cartographic exhibition at the National Assembly building as part of the IMY celebrations. The exhibition will present the achievements of the Bulgarian cartography and its place in the world, and outline cartography as an important pillar in the human knowledge. They also accepted the invitation to participate in the 6th International Conference on Cartography and GIS that will take place in Bulgaria in June 2016, and committed to the inclusion of this biennial Conference in the calendar of Bulgarian EU Presidency in 2018.

The establishment of a National Committee for coordination of the Group of Earth Observations' (GEO) objectives and the implementation of a strategic plan to build a global system for Earth observation (Global Earth Observation System of Systems, GEOSS) was fully supported by the Parliamentary Committees. The idea was also embraced by scientists, experts and politicians who attended the meeting. The participants were also convinced about the need for amendments to the law of geodesy and cartography that would lead to improvements in the quality and competitiveness of the Bulgarian cartographic products.

BCA proposed to establish a Bulgarian cartographic heritage fund. The Committees fully supported its establishment acknowledging cartography being a part of the cultural heritage of Bulgaria. Consequently, a BCA representative will be consulting the Parliamentary Committee on local

names during the development of a knowledge base on geospatial information.

At the end of the meeting, BCA donated maps and atlases to the National Assembly Library. This is the second time BCA donated cartographic products to the community. The first donation was made to the Library of the United Nations in New York.

**Temenoujka Bandrova** | Bulgarian Cartographic Association | Bulgaria ■

## The World of Maps in Italian

Italian geographers and cartographers, and members of the Italian Cartographic Association, have translated *The World of Maps*, a book to accompany the International Map Year ([mapyear.org/the-world-of-maps-overview/](http://mapyear.org/the-world-of-maps-overview/)), into Italian. Giuliano Petrarulo, a geography teacher at a high school in Milan, in collaboration with Maria Ronza, a researcher in Geography and Professor of Cartography and GIS at the University of Naples Federico II, completed the translation. The Italian version *Il mondo delle carte geografiche* is freely available from [mapyear.org/il-mondo-delle-carte-geografiche/](http://mapyear.org/il-mondo-delle-carte-geografiche/).

**Giuseppe Borruso** | Italian Cartographic Association | Italy ■

## New National Map and Poster Highlight IMY in Switzerland

As Switzerland's national centre of expertise for geodata and resources, the Federal Office of Topography swisstopo is organising a wide range of campaigns and events as part of its active involvement in the International Map Year (IMY) – for more information, please visit [www.swisstopo.ch/IMY/](http://www.swisstopo.ch/IMY/).

### New National Map 1:10,000

The highlight in the International Map Year is the launch of the new National Map 1:10,000. For the first time, a new map of the entire country is to be produced automatically each year and published together with the latest available data from swisstopo's topographic landscape model (TLM). This product, which features a very high standard of cartography, forms the ideal basis for a variety of uses in the public administration, private businesses, scientific research and by the general public.

Following the re-compilation of the set of national maps, it is now possible to automatically produce a detailed 1:10,000 national map.

> 18

A reduced sample of the new Swiss National Map 1:10,000 | Map image courtesy of swisstopo





This new version represents a milestone in the history of Swiss cartography in that it combines the unique quality of conventional maps with innovative and advanced production processes. What began in the previous century with the aid of copperplate engraving is now being continued exclusively on the computer and has become fully automated. With this new development, swisstopo is responding to the growing importance of geodata for a society in transition.

The new map perfectly complements the existing set of maps and is ideally suited for use in digital applications, as well as on mobile devices. The map is available at [www.map.geo.admin.ch](http://www.map.geo.admin.ch) (at appropriate zoom level) and it can be printed up to A3 size.

## Poster of Jungfrau Region

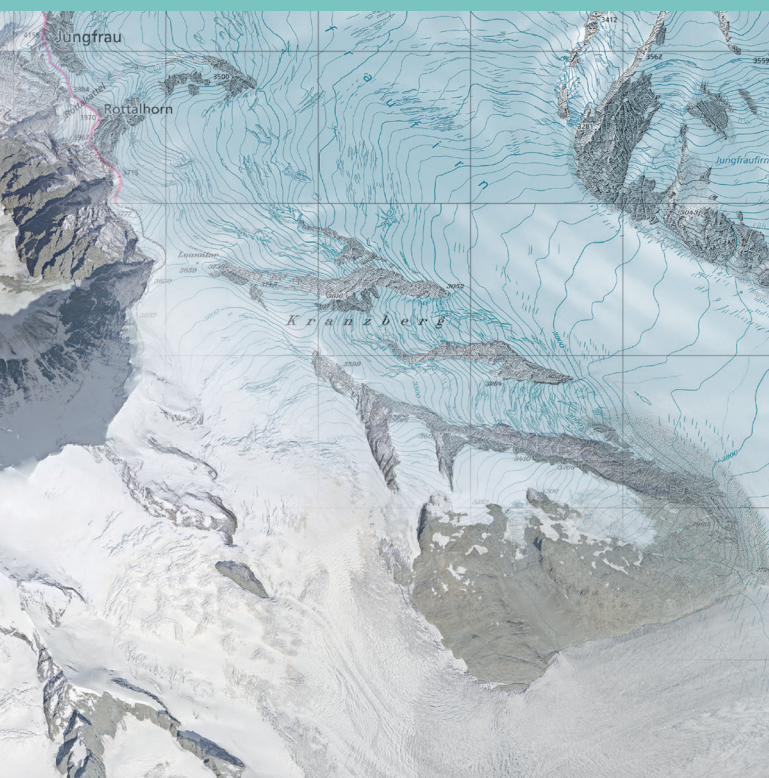
swisstopo produced a poster of the Jungfrau Region. It shows the main part of the United Nation World Heritage "Swiss Alps Jungfrau-Aletsch", which provides an outstanding example of the formation of the High Alps, including the most glaciated part of the mountain range and the largest glacier in Switzerland.

Concerning the vision of swisstopo *Geo Knowledge – for a Changing Society*, the region is a symbol not only of the beauty of the Alps, but also of the ongoing climate change and the enjoyment of the Alps as a natural playground for tourism activities and mountaineering.

The poster is a mix of different geodata which are produced by swisstopo. In the northern part, the new topographic map 1:25,000 is shown. These maps are produced by GIS and the vector data are stored in a database (Digital Cartographic Model). The representation of the rocks and the hill-shading is added from the former National Map 1:25,000 which is also represented in the eastern and south-western part of the poster. On the left hand side and in the middle, the SWISSIMAGE orthophoto is shown. The south-eastern area depicts data from the National Geological Atlas 1:25,000.

**Olaf Forte** | Bundesamt für Landestopografie swisstopo | Switzerland ■

Middle-top part of the Jungfrau Region poster (reduced); the poster can be downloaded from [www.swisstopo.admin.ch/internet/swisstopo/en/home/current/events/international-map-year.parsysrelated1.19016.DownloadFile.tmp/plakatimy610x900internet.pdf](http://www.swisstopo.admin.ch/internet/swisstopo/en/home/current/events/international-map-year.parsysrelated1.19016.DownloadFile.tmp/plakatimy610x900internet.pdf) | Poster image courtesy of swisstopo



## IMY Events in United Arab Emirates

**Map Design Thinking Workshop** – on 9 May 2016, Dr Naeema Alhosani from the United Arab Emirates University (UAEU) delivered the *Map Design Thinking* workshop to UAEU students, as part of the International Map Year (IMY) 2015-2016 celebrations. The students enjoyed the workshop and benefited from the program by actually designing a map!



(from left) A table with IMY bags and gifts; a souvenir globe, one of many distributed amongst faculty staff at the United Arab Emirates University | Photographs courtesy of Naeema Alhosani

**The Meaning of IMY Event** – on 11 May 2016, a group of UAEU students invited different classes to the IMY event booth *The Meaning of IMY*. The event program included discussions about the importance of IMY and cartography, and a display of maps and drawings devoted to IMY. At the end, students provided the audience with IMY bags, flowers, chocolates and water. Participants were invited to refer to the IMY 2015-2016 flyer for more information. The event was full of fun and lovely prizes.

**Come and Celebrate with Us** – on 15 May 2016, a group of UAEU students made a number of IMY souvenirs to be distributed at the College of Humanities & Social Sciences, UAEU. They met with the faculty staff and informed them about the IMY initiative. All faculty members were impressed with the wonderful idea of students' work and their IMY promotion campaign.

**Naeema Alhosani** | National Coordinator for International Map Year | United Arab Emirates ■

## 53rd Annual Conference of the Italian Cartographic Association

The 53rd annual Conference on *Cartography, Promotion of Places, Smart Cities* organised by the Italian Cartographic Association (AIC) was held between 11-13 May 2016 in San Benedetto del Tronto. It was opened by ICA president Prof Menno-Jan Kraak. The programme featured six sessions covering four broad themes: historical cartography, Geographical Information Systems, new frontiers in Cartography, and Smart Cities.

The Conference gathered scholars, academics, representatives from national mapping agencies and private companies, map makers, students and other participants interested in cartography and maps. It presented an opportunity to showcase the state of the art in Italian cartography and map production. In addition, the Interactive Cartographic Exhibition was organized from 7 to 12 May 2016, involving several pupils from primary and secondary schools of Marche Region.

**Giuseppe Borruso** | Italian Cartographic Association | Italy ■

# calendar

## june 2016

**26-27: RIMMA 2016: Interdisciplinary Workshop on Risk Information Management, Risk Models, and Applications** (in cooperation with the ICA Commission on GIS and Sustainable Development) | Berlin | Germany | [rimma2016.net](http://rimma2016.net)

## august

**31-02 September: GeoCart'2016 / 4th ICA Regional Symposium on Cartography for Australasia and Oceania** | *Unfolding the Map* | Wellington | New Zealand | [geocart.cartography.org.nz/2016/](http://geocart.cartography.org.nz/2016/)

## september

**01-02: ICA Commissions on Atlases & Education and Training Joint Workshop | Atlases and Education – Concepts for the Future** | Zurich | Switzerland

**14: Advancing GIScience with Open Source Technologies** (workshop organised by the ICA Commission on Open Source Geospatial Technologies) | Albuquerque, New Mexico | USA | [www.unm.edu/~sfreunds/autocarto2016/ICA\\_Commission\\_Meetings.html](http://www.unm.edu/~sfreunds/autocarto2016/ICA_Commission_Meetings.html)

**26-28: Geomatics Atlantics 2016** | Fredericton, New Brunswick | Canada

**27: Understanding Spatial Data (Big and Small) with Visual Analytics** (workshop organised by the ICA Commission on Visual Analytics) | Montreal | Canada | [viz.icaci.org/SpatialVA2016/](http://viz.icaci.org/SpatialVA2016/)

## october

**13-14: 6th International Symposium on the History of Cartography** (joint event of the ICA Commissions on the History of Cartography, Map Production and Geoinformation Management, and Use, User and Usability Issues) | Dubrovnik | Croatia | [www.histcartodubrovnik2016.com](http://www.histcartodubrovnik2016.com)

**18-21: Joint 3D Athens Conference 2016** | Athens | Greece | [3dathens2016.gr/site/](http://3dathens2016.gr/site/)

**19-20: Geomatics 2016** | Montreal, Quebec | Canada | [www.geomatique2016.com/en/](http://www.geomatique2016.com/en/)

**27-31: International Conference on Cartographic Visualization of Big Data for Early Warning and Disaster/Crisis Management | Methodology, Techniques and Applications** (co-organised by the ICA Commission on Cartography for Early Warning and Crisis Management) | Rio de Nanjing | China | [www.ew-cm2016.org](http://www.ew-cm2016.org)

## november

**14-16: 13th Conference on Location-Based Services** (organised by the ICA Commission on Location-Based Services) | Vienna | Austria | [lbsconference.org](http://lbsconference.org)

## july 2017

**02-07: 28th International Cartographic Conference** | Washington, D.C. | USA | [www.icc2017.org](http://www.icc2017.org)

# ica affiliate members

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**Land Information New Zealand** | *New Zealand* |

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Attn: National Topographic Office | [media@linz.govt.nz](mailto:media@linz.govt.nz)

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**and Architects, Chamber of Surveying and**

**Cadastre Engineers (UCTEA-CSCE)** | *Turkey*

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**United Nations Geospatial Information**

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# children's map gallery 2015 winners



Liao Zhiyuan | 15 | *A World of Lotus, a World of Harmony*  
[in Chinese, 'lotus' has similar pronunciation to 'harmony'] |  
Xiangtan | China

Andraž Umek | 8 | *The Whole World is on the Same Boat* |  
OŠ Antona Martina Slomška  
Vrhnika | Slovenia

Maria Piątkowska | 12 | *Europe is My Home* | Szkoła Podstawowa im. Jana  
Pawła II: Szczodrzykowo | Poland

Adristi Hita Andani | 8 | *Our Earth and Pollutions* | SDK Manahan  
Surakarta: Surakarta | Indonesia

Aleksandra Garkova | 5 | *The Animals of the World* | Art School Akvarel:  
Burgas | Bulgaria

