NEWSLETTER

INSTITUT CARTOGRÀFIC DE CATALUNYA

YEAR 5 ■ DECEMBER 2000 ■ NUMBER 12

THE ICC HOSTS THE ON-DEMAND MAPPING SEMINAR ORGANIZED BY TWO COMMISSIONS OF THE ICA

On 21-23 September 2000 the Institut Cartogràfic de Catalunya served as the venue for the On-demand Mapping Seminar organized by the Map Generalization and Map Production Commissions of the International Cartographic Association (ICA).

"THE ICC HAS PLAYED AN ACTIVE ROLE IN THE MAP GENERALIZATION AND MAP PRODUCTION COMMISSIONS OF THE ICA SINCE THE EARLY 1990's"

The aims of the seminar were to provide information about technological developments in the area of on-demand map production and distribution, and to show examples of commercial products designed to meet the strategic demands of cartographic institutions and companies. 53 cartographic professionals and scientists from various European and American countries attended the seminar.

12 papers were presented on subjects relating to cartographic generalization applied to data production and distribution, on the role of Internet as an increasingly important tool for the distribution of cartographic products, and on the need to apply the new technologies and tools that are appearing on the market to map production.

"THE MAIN THEME OF THE SEMINAR WAS TECHNOLOGICAL DEVELOPMENTS AND THEIR APPLICATIONS"

The papers were accompanied by practical demonstrations of commercial products for the generalization of toponymy, linear networks and topographic data in general, in addition to demonstrations of specific applications for the distribution of information and services based on georeferenced systems.

A report was given on the evolution of two European research programs concerned with cartographic generalization: the tests carried out by the Organization Européenne pour les Études Photogrammétriques Expérimentales (OEEPE) on the functioning of the cartographic principles applied during the generalization process, and the results of the project Automated Generalization New Technologies (AGENT) for the implementation of procedural knowledge tools applied to generalization.

The possibilities and limitations of the present systems for the publication of maps on demand were discussed, and details were provided about the capabilities of the German data model ATKIS for displaying data through the application of generalization techniques.

During the seminar a visit was organized to the headquarters of the ICC, which offered a presentation on the technical advances in digital cartography applied to the various processes of cartographic production and distribution. A visit was also made to Hewlett-Packard in Sant Cugat del Vallès, which provided an update on the development of large-format ink-jet plotters and new models about to be appear on the market that are particularly suitable for cartographic products.

To obtain more detailed information about the seminar, please consult the following web site:

http://www.geo.unizh.ch/ICA

SUMMARY

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Generalitat de Catalunya
Institut Cartogràfic de Catalunya

CD-ROM GEOTECHNICAL MAP OF BARCELONA

Mapa geotècnic de Barcelona 1:25 000

Institut Cartogràfic de Catalunya; Direcció General d'Accions Concertades, d'Arquitectura i Habitatge; Bosch & Ventayol. Geoserveis; RSE. Aplicaciones Territoriales, SA
1st edition: Barcelona, September 2000
2 496 PTA incl. IVA (15 euros)

Knowledge of the nature of the subsoil is a key factor in the correct development of all public works and building projects. It is on the basis of a satisfactory geological investigation of the land that planners will take the most appropriate decisions to ensure the safety, stability and duration of a construction.

"THE MAP PROVIDES GEOTECHNICAL INFORMATION ABOUT LAND ON WHICH THERE ARE PLANS TO BUILD"

It is in this context that the need has been seen to draw up a general geotechnical map of Barcelona and the surrounding area which, thanks to both the working scale and the information that it contains, will provide a geotechnical frame of reference for every new construction project. The initial idea behind the design of the geotechnical map of Barcelona is that it will mainly be used for the preliminary study in each project, and that it will establish the bases on which the reconnaissance campaign may be planned, prior to formulation of the building project.

The land area covered by the map extends from the mouth of the River Llobregat to the coastal plain north-east of the River Besòs, and inland to the Serra de Collserola.

"THE CD-ROM OFFERS VIEWING OF 10 THEMATIC MAPS AND THE OPPORTUNITY FOR VIRTUAL BORING"

The CD-ROM consists of a technical note, 10 thematic maps and lithological columns of 80 representative borings.

SEISMIC ATLAS OF CATALONIA

Atles sísmic de Catalunya. Volume 1: Seismicity Catalogue

Institut Cartogràfic de Catalunya
1st edition: Barcelona, December 1999
31 x 22 cm. 436 pages. 9 100 PTA incl. IVA (54.69 euros)

The seismicity of Catalonia may be classified as moderate. Historical records and present observations indicate that it is not to be underestimated, and that it should be taken into account with respect to territorial planning, construction projects and the establishment of civil defense measures.

The atlas provides a comprehensive summary of knowledge about the seismicity of the region, the seismotectonic background to this knowledge, and an evaluation of the seismic hazard and risk to be borne in mind, with a view to both seismoresistant construction and the preparation of emergency plans in various areas.

"THE ATLAS APPEARS IN 3 VOLUMES: SEISMICITY CATALOGUE, SEISMOTECTONIC ZONING AND SEISMIC ZONING"

The first volume compiles all the data currently available about the earthquakes that have occurred in Catalonia and neighboring areas and which have been felt by the population during the course of history.

The second volume, due to be published in 2001, will offer a summary of representative data on the structure of the terrestrial crust in Catalonia and the state of tectonic deformation with relation to its evolution. Finally, in the third volume, also planned for 2001, a zoning of the territory will be proposed in accordance with the degree of hazard evaluated by various methods using the data compiled in volumes 1 and 2.

In short, this is a publication aimed at persons who are interested in the geography and history of Catalonia and in disciplines related with the study of the Earth, as well as at professionals (construction groups, industrial safety, civil defense, etc.) who, in order to carry out their work, need to take account of seismic activity as a generator of potential risk.

RESEARCH AND DEVELO

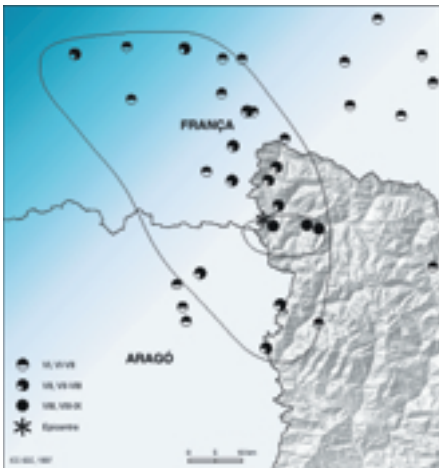
MONITORING OF TERRITORIAL CHANGE

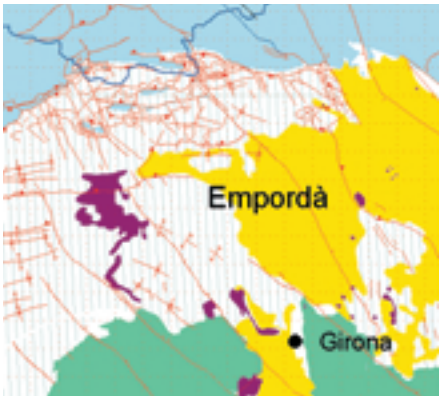
This year, the ICC has begun a new project that aims to use the images of the Landsat-7 sensor in order to detect significant territorial changes and thereby assist in the planning of programs to update the topographic cartography of the ICC.

The ETM images of the Landsat-7 satellite have a set of bands in various zones of the electromagnetic spectrum, with a resolution of 30 m, which can monitor phenological changes in the vegetation. This set of bands is complemented by a channel that is sensitive in thermal infrared, with 60 m of resolution, and a panchromatic channel of 15 m. This last channel is particularly useful for monitoring territorial changes caused by public works.

The ICC will obtain a complete image approximately every three months. A geometric and radiometric correction will need to be made to compensate for the differences in solar illumination. The clouds present and their shadows will have to be located and masked. The radiometric dif-

Date of flight: 1994





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ferences in the images will be analyzed, and having defined a threshold, the areas of change will be established. These areas will need to be labeled, in order to identify the areas in which the changes are due to natural variations in the vegetation: woods or crops. An operator will observe the remaining areas of change and mark the territorial changes, separating these from possible natural variations or defects of the images. These changes will be entered on a file for subsequent monitoring.

Date of flight: 1999

NEW

MAPS AND CARTOGRAPHERS IN CONTEMPORARY CATALONIA (1833-1941)

The Rafael Dalmau, Editor and the ICC have published the book by Dr. M. Carme Montaner i Garcia entitled: *Mapes i cartògrafs a la Catalunya contemporània (1833-1941). Els inicis i la consolidació de la cartografia topogràfica*. Originating from the Ph. D. of the author, this research focuses on the topographic surveys undertaken in Catalonia and the repercussions that these had.

The study confirms the idea that in Catalonia, as in other countries, topographic cartography began in earnest with the arrival of the industrializing process, which leads to the transformation and occupation of a territory.

"BEFORE INDUSTRIALIZATION TOPOGRAPHIC CARTOGRAPHY WAS ESSENTIALLY DRAWN UP FOR MILITARY PURPOSES"

The beginning of the production of topographic cartography in Catalonia can be traced back to the decade of the 1850's, a period in which considerable investment was made in construction, the improvement of communication networks and the search for sources of energy. Topographic cartography was given further impetus at the beginning of the 20th century, when the hydroelectric resources of the Catalan rivers were harnessed.

In 1914, when Catalonia established itself as a modern administrative unit with the Mancomunitat de Catalunya (Union of Catalonia), one of the first projects to be promoted was the completion of a topographic map of the whole of Catalonia.

"THE YEAR 1914 MARKED THE CONSOLIDATION OF TOPOGRAPHIC CARTOGRAPHY"

The creation in 1982 of the ICC within the administration of the Generalitat de Catalunya (autonomous government) was the culmination of a process to institutionalize Catalan cartography that had commenced sixty-eight years earlier.

Mapes i cartògrafs a la Catalunya contemporània (1833-1941). Els inicis i la consolidació de la cartografia topogràfica

M. Carme Montaner i Garcia

Rafael Dalmau, Editor; Institut Cartogràfic de Catalunya
1st edition: Barcelona, June 2000
24 x 17 cm. 238 pages. 3 000 PTA incl. IVA (18.03 euros)

Since its beginnings, two of the objectives of the ICC have been to recover earlier works and to promote research into the history of cartography. This first objective materialized in the creation of the Cartoteca de Catalunya (Map Library) in 1986, which has never ceased to augment its resources relating to both Catalonia and the whole world.

With regard to research into the history of cartography, the ICC has given impetus to several initiatives that seek to promote specific studies of this branch of the history of science. In this respect, a study of the political and technical background of topographic cartography was an essential task, one that has been undertaken by M. Carme Montaner, a cartographer at the ICC.

BRIEF NOTES

"SPECIAL ACHIEVEMENT IN GIS" AWARD FOR THE ICC

During the 20th ESRI Annual Users Conference (Environmental Systems Research Institute), held in San Diego on 26-30 June 2000, the ICC received the "Special Achievement in GIS" award.

The ICC was selected from among the 60 000 users of ESRI's Geographic Information Systems around the world in recognition of its ongoing work in this field.

Congratulations!

THE ICC OPENS ITS DOORS TO THE IN OF SPAIN

On 15 May 2000 the ICC signed a collaborative agreement with the Instituto de Navegación (IN – Institute of Navigation) of Spain (http://www.inave.org), as a result of which the headquarters of the IN will be based at the ICC for a period of two years.

This agreement is a response to the mutual interest of the ICC and the IN in the promotion of navigation-related initiatives.

To be specific, the ICC will temporarily offer the IN space for its headquarters at Montjuïc, and it will partially subsidize the initial operations of the IN's infrastructure, in order to assist in its development and to generate common areas of growth.

AGREEMENT WITH CHINA

During the second week of June 2000, an agreement of cooperation was signed between the Geographic Institute of Yunnan and the ICC in the city of Kunming, the capital of the province of Yunnan in the People's Republic of China. This agreement established the following areas of cooperation between the two institutions:

1. Development of common GIS applications applied to environmental and territorial policies.
2. Development of processing information systems from Earth observation sensors that are capable of precisely monitoring natural phenomena, of great importance in the area of the province of Yunnan.
3. Development of systems based on digital cartographic structures and their application to systems based on Internet networks.

The aim of the agreement is to jointly search for the forms of financing required, in order that these three broad areas of cooperation may materialize in specific projects.

NEW SCENARIO FOR RASANT

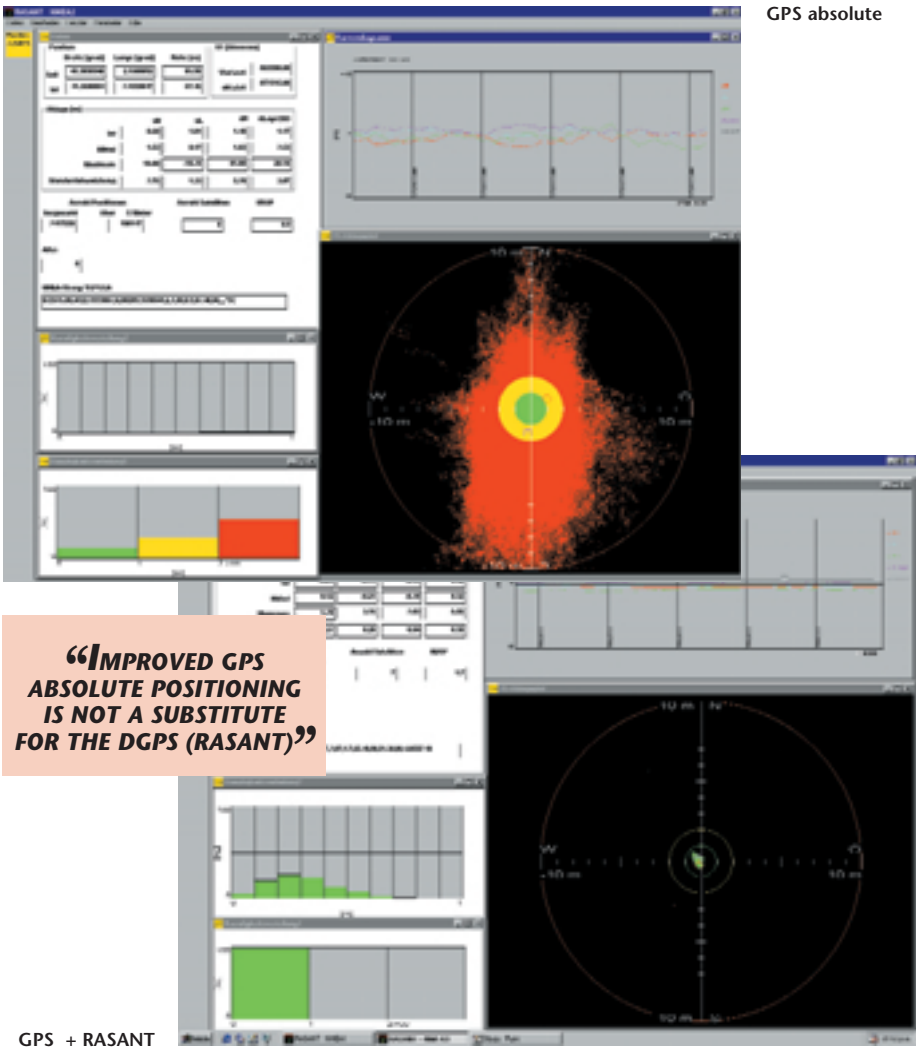
On 2 May 2000 the government of the United States disconnected the SA (Selective Availability) of the GPS system and absolute positioning based on GPS showed a substantial improvement. Currently, the accuracy obtained with a quality receiver (optimum conditions) is 3 m, while with DGPS (RASANT) differential corrections accuracy of 0.5 m is obtained.

This new scenario means that a large part of the navigation market obtains sufficient precision with absolute positioning, and therefore for differential systems the mass market that it reached is reduced.

However, despite this, the critical precision navigation market and professionals that require submetric positioning will continue to need the DGPS (RASANT) system, for, due to the fact that it is monitored, it can guarantee positioning quality. It should be remembered that the absolute GPS system can show long periods of time (>10 minutes) with an error of more than 7 meters.

The attitude of the world organizations that have differential systems is to continue providing service. This is the case, for example, of OMNISTAR and RASANT (Germany) and the U.S. Coast Guard, which will continue the deployment in the interior of the country.

To sum up, the DGPS (RASANT) differential system still offers a substantial improvement in positioning with respect to GPS absolute positioning in a factor of 5-6; furthermore, since it is monitored, it provides guarantees with respect to the integrity of the system. The ICC believes that it is important to maintain the infrastructures that transmit differential corrections with a view to possible regional connections of the SA and to deployment in the future of high-precision telematic differential correction systems currently under development. Moreover, as a result of the disconnection of the SA, the RASANT differential corrections have a much longer period of validity, since they are much more stable, and this increases the robustness of the system.



GPS absolute

"IMPROVED GPS ABSOLUTE POSITIONING IS NOT A SUBSTITUTE FOR THE DGPS (RASANT)"

GPS + RASANT

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