NEWSLETTER

INSTITUT CARTOGRÀFIC DE CATALUNYA

YEAR 6 ■ DECEMBER 2001 ■ NUMBER 14

CATALAN SPATIAL DATA INFRASTRUCTURE (IDEC)

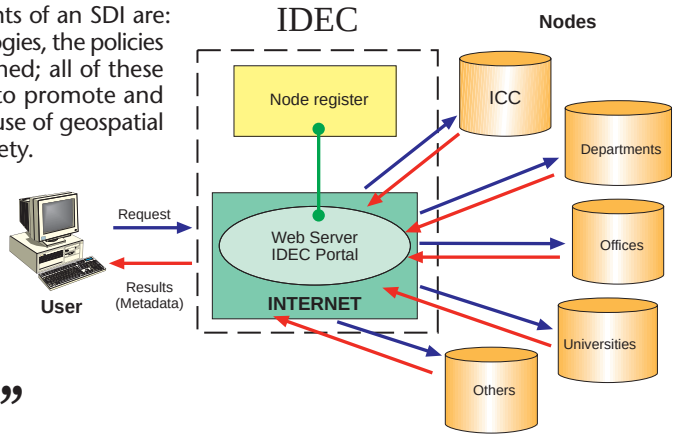
On 26 October 2001 the ICC hosted the Technical Symposium "Creation of infrastructures for the information society: Geographic information", organized by the Secretaria per a la Societat de la Informació and the Institut Cartogràfic de Catalunya with the collaboration of the Asociación Española de Sistemas de Información Geográfica (Catalan Section).

The main focus of the symposium was to make public the pilot project to start the Catalan spatial data infrastructure (IDEC).

"THE IDEC MUST FACILITATE THE SEARCH FOR AND ACCESS TO GEOREFERENCED DATA AVAILABLE AT VARIOUS ORGANIZATIONS VIA THE INTERNET"

The three key elements of an SDI are: the information technologies, the policies and the groups concerned; all of these are necessary in order to promote and consolidate the shared use of geospatial information in our society.

"AN SDI IS CONFIGURED WITH: METADATA, STANDARDS, APPLICATIONS AND THE INVOLVEMENT OF THE PUBLIC AND PRIVATE SECTOR"



All the metadata that describe the spatial information must be organized and classified in a standardized way, in order to facilitate the search for this data. Furthermore, the participating organizations must use common data access applications. Common directives and objectives are fundamental to an SDI.

SUMMARY

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This newsletter is a free publication available in Catalan, Spanish and English.

Year 6 – December 2001 – Number 14 – ISSN: 1137-2370
D. L.: B. 40 970-1996

Generalitat de Catalunya
Institut Cartogràfic de Catalunya

ICA AWARD 2001

During the last August was held in Peking (China) the 20th International Cartographic Conference organized by the International Cartographic Association (ICA).

The ICC played a prominent part in this event. The Gavarnie-Ordesa map of the *Mapa excursionista dels Pirineus 1:50 000* (Hiker's Map of the Pyrenees) was awarded by the ICA Official Committee, in the category of Tourist and Orienteering Maps. It is important to point out that our cartographic products have received awards from the ICA in the last five conferences.

Continuing the ICC contribution to the cartographic generalization ICA tasks in the last years, the paper "Map Names Generalization at the ICC" was presented to the seminar "Progress in Automated Map Generalization", organized by the ICA Commission on Map Generalization.

TOPOGRAPHIC DATABASE AND MAP 1:100 000 OF THE ARGENTINIAN REPUBLIC

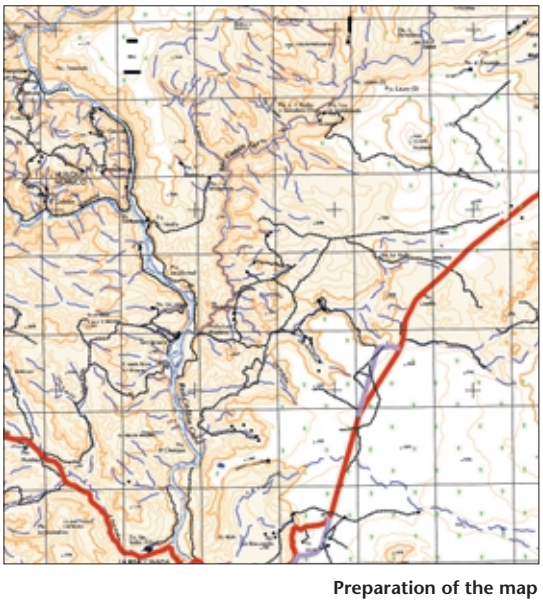
In the year 2000 the ICC commenced a new topographic project at 1:100 000 scale for the Instituto Geográfico Militar (IGM) of the Argentinian Republic. This project will last four years (2000-2003) and will cover the 40% of the Argentinian country (approximately 1 000 000 km^2), including the larger part of the Andean areas (see ICC Newsletter, no. 8).

The project includes the compilation and production of the digital cartographic database at the reference scale 1:100 000 and the generation of 715 maps at the same scale. It also includes the technology transfer to the technical staff of the IGM, in order that IGM completes this series.

Stages of the project

1. Photogrammetric processes:
   - Acquisition of steroscopical satellite images (KFA-1000, TK-350, etc.) for stereoplotting.
   - Acquisition of TM sensor images from the satellite LANDSAT-7.
   - GPS support, triangulation and stereoplotting of the altimetry and planimetry.
   - Creation of the digital terrain model.
   - Generation of LANDSAT orthoimages by rectification of images and radiometric processes.
2. Obtaining the database:
   - Enriching the stereoplotted data adding field and desk information.
   - Topology verification and network generation.
   - Loading the data into the database.
3. Obtaining the topographic map:
   - Selection and generalization of the elements of the database.
   - Symbolization and cartographic edition.
   - Map names placement.
   - Marginalia generation.

Preparation of the database



Preparation of the map

UPDATING OF THE CA

In the year 2000 a collaborative agreement was signed between the Direcció General del Cadastre (Land Registry Office) and the Institut Cartogràfic de Catalunya to update the Catalan rural land registry.

The project, which will be completed in the year 2003, aims to update 158 municipalities of Catalonia (680 314 hectares) and includes dumping the information of the old land registry, investigation of legal ownership, including titles corresponding to farm land and land use, the digitization of this data, the public display and the approval of the new rural land registry.

"By December 2001 24 municipalities in the Catalan rural land registry have been updated"

In addition to bringing the Catalan rural land registry up to date, the final objective is to make dynamic updating tools available for future land registry renewal.

In the near future, it will be possible to consult the database obtained on the Internet, with

RESEARCH AND

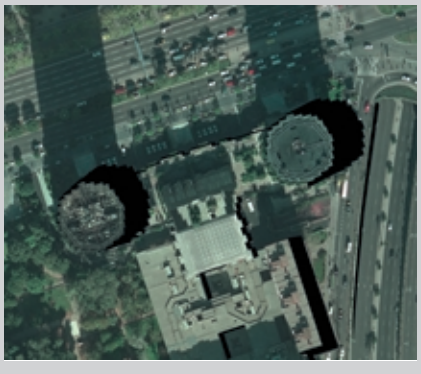
TRUE ORTHO

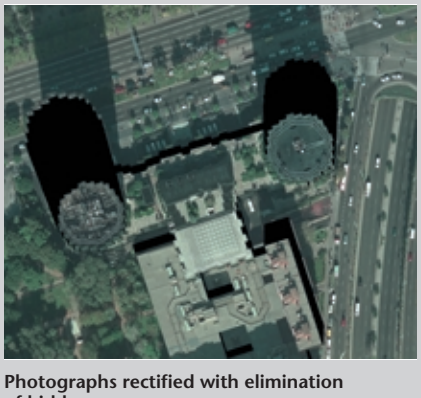
The digital orthoimage is a cartographic product that is widely used, both as an element that complements traditional cartography, when this is not sufficient updated, and also to extract other information that is not usually found on a topographic map.

"The geometric precision of an orthoimage depends on the quality of the digital terrain model and the correction algorithm used"

It has been proven that the results obtained from high-resolution work by means of standard procedures on complex terrain, such as urban areas, are unsatisfactory. Firstly, the digital terrain models (DTM) normally used are derived from the existing cartography, which represents the terrain at ground level without showing the structures that exist on it (trees, buildings). Secondly, the buildings will normally produce hidden areas, that is to say, areas that should be present in an orthogonal projection of the terrain, but which are hidden by a building on the photograph to be corrected. Thirdly, we also find a regular data storage structure (grid) with fixed grid separation (sufficient to resolve the standard case with precision).

For these reasons, in order to produce a true orthoimage, an approach that differs from the standard one is sugges-





Photographs rectified with elimination of hidden areas.

Mosaicking of previous images. This is a True Ortho.

ATALAN RURAL LAND REGISTRY

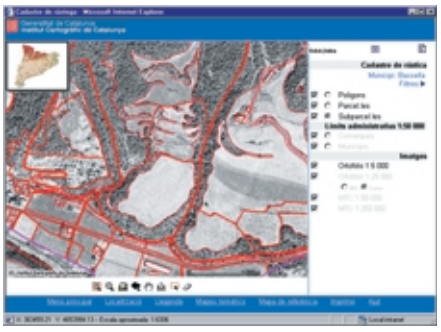
restricted access, by means of a map server. This access will support interactive inquiries and viewing of the information on top of the orthophotographic cartography of the ICC.

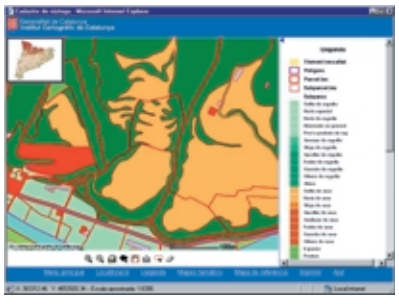
Project to update the rural land registry

	Municipalities	Hectares
2001	24	109 194
2002	58	290 011
2003	76	281 109
Total	**158**	**680 314**

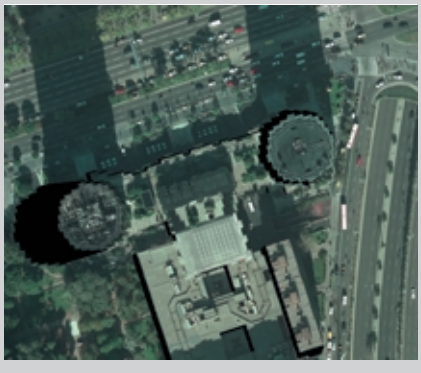
Distribution of the municipalities updated by the end of 2001

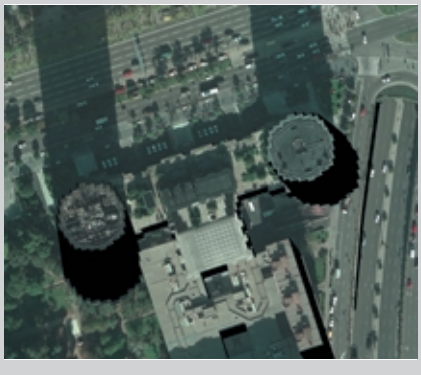
	Municipalities	Hectares
Province of Barcelona	14	26 271
Province of Girona	6	35 730
Province of Lleida	3	26 314
Province of Tarragona	1	20 879
Total	**24**	**109 194**





DEVELOPMENT





ted, which uses a three-dimensional model of the existing structures to determine the hidden areas on each photograph. Since it is expected that any point of the orthoimage can be seen from at least one of the images, the mosaic of the set of images of the same place obtained from various observation points provides a product free of hidden elements (True Ortho).

"In order to generate true orthoimages very precise modeling of the terrain is required, in addition to a specific process to eliminate the hidden areas"

Two storage properties of the information about the relief are needed for the correct generation of true orthoimages: adaptive density of the information, and capture and storage in a vectorial mode. The TIN models (triangular irregular network – see ICC Newsletter, no. 9 and 11) respect both these properties.

During the mosaic process a number of problems must be solved: radiometric matching of the set of images, effects due to the imperfections on the DTM, objects not properly modeled (small structures: trees, street furniture, etc.) and moving objects. The current solution to these problems requires manual work by an expert operator and the use of a set of images with considerable transversal and longitudinal overlapping.

NEW

THE FIRST PRINTED MAPS OF CATALONIA

Last September, to coincide with the exhibition "Maps of the territory of Catalonia during a period of two hundred years, 1600-1800" (see ICC Newsletter, no. 13), the Institute published a catalogue, with the same name, which includes the background information, news and observations about the 64 maps which were exhibited.

The maps exhibited and included in this catalogue are the first known editions of the maps of Catalonia printed in the 17th and 18th centuries.

The catalogue, which contains reproductions of all the maps exhibited, accompanied by comprehensive cartobibliographic information which identifies and explains the various forms of the maps during this period, is supplemented by some introductory studies on the main theme of the exhibition. At the back, there are a number of indexes for the purpose of quick inquiries, and an appendix which explains the relationship between the numbering established in this catalogue and the cartobibliographies of maps of Catalonia of Mn. Colomer and maps from the IMCOS exhibition of 1986 (also organized by the ICC).

In short, this is a practical guide that systematizes the scattered information to be found in the best-known reference works, and it is aimed at librarians as a helpful tool that describes the documents to be found in their collections, and also at those interested in the subject as a basic tool for obtaining initial information about the documents, or for providing clues prior to a more detailed study of the maps.

Els mapes del territori de Catalunya durant dos-cents anys, 1600-1800
Institut Cartogràfic de Catalunya
1st edition: Barcelona, July 2001
36,06 euros incl. IVA (6 000 PTA)

BRIEF NOTES

DIGSA VISIT

On 28 September 2001 the ICC received the visit of the directors of geographic institutes in South America, Spain and Portugal, an event that formed part of the XVIII meeting of DIGSA in Madrid.

Guided visits were organized by the ICC, including one to the exhibition "Maps of the territory of Catalonia during a period of two hundred years, 1600-1800", and three papers were presented: "Digital cameras: State of the art and development at the ICC", "Production systems: Visual Factory Suite" and "Advanced display systems: Geoshow".

The visit was brought to a close by the Minister of Regional Planning and Public Works, Mr. Pere Macias i Arau.

OPEN DAYS

In October 2001 the ICC organized two open days aimed at the Land Registry Office and the Department of Regional Planning and Public Works.

The common objective of these open days was to familiarize visitors with the activities, services and products of the ICC.

The various geodetic positioning tools in operation at the ICC were described; the cartographic databases of the ICC were presented, to be specific, the BCN-50M v.1 and the BCN-5M v.2; further presentations were made of the general technical specifications of large-scale municipal cartography, the new techniques for orthorectification of images by means of surface models, the initiatives that are being taken in the field of the study and prevention of natural risks, and finally, information was given about aspects relating to the diffusion of the products and services of the ICC.

The sessions ended with a debate.

9TH ANNUAL IMTA CONFERENCE

On 22-23 February 2002 the 9th Annual Conference of the International Map Trade Association (IMTA) will be held in Barcelona. The ICC, ESRI Europe, Altair, Lovell Johns and Nilsson & Lamm will all participate in the organization of this event.

In the course of the conference, seminars and a technical exhibition will be held, a visit will be made to the headquarters of the ICC and of ESRI, and a prize will be awarded for the best map published by members of IMTA in Europe, Africa and the Middle East during 2001.

For further information:
imtaeurope@compuserve.com

III ANNUAL MEETING OF THE PYRENEAN AVALANCHE PREDICTION CENTERS

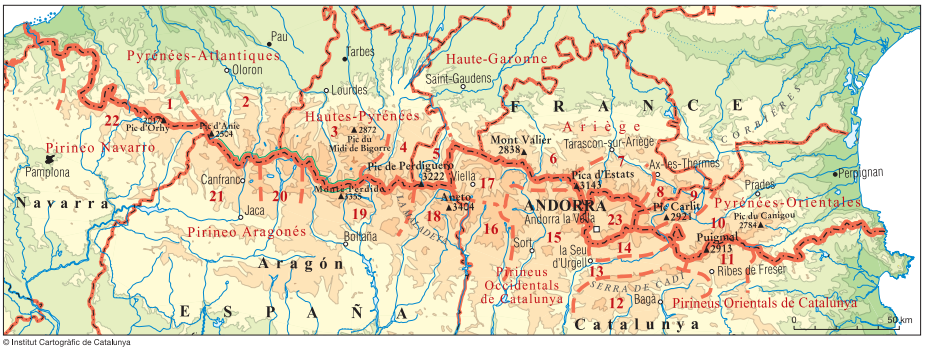
In May 2001 the annual meeting of the Pyrenean avalanche prediction centers was held in Toulouse, in order to plan the action to be taken as part of the public service provided in the prediction of avalanche risk for the 2001-2002 season. The meeting was attended by the members of the avalanche prediction centers in Catalonia, Aragon, Andorra and France; Catalonia being represented by the ICC Avalanche Prediction Center.

With the aim of improving the quality and the accuracy of the predictions, and of standardizing and coordinating the information to make it more accessible to winter sports enthusiasts, in the course of the meeting it was agreed that there should be joint access to and use the meteorological data obtained by the networks of automatic stations and meteorological observers at each center.

As a result of this agreement, during this winter of 2001-2002 users have various facilities available through which they may make avalanche risk inquiries about any area of the Pyrenees.

By Internet. The web site of each center has two maps produced by the ICC: a first map that links the avalanche area with the web site of the center that manages it (so it is not necessary for the user to know how to access each center in order to obtain the information required), and a second map with the meteorological data associated with each automatic station.

In paper form. In conjunction with the Instituto Nacional de Meteorología, the Government of Andorra and Météo-France, the ICC has published an information sheet in Catalan, Spanish and French on avalanche prediction in the Pyrenees and the safety guidelines that must be taken into account when skiing in the mountains, on or off the ski-run, or when pursuing any type of sports activity in areas of virgin snow. This information sheet has been distributed at the beginning of the 2001-2002 winter season.



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FRANCE

Pyrénées-Atlantiques
1. PAYS BASQUE
2. ASPE-OSSAU

Hautes-Pyrénées
3. HAUTE-BIGORRE
4. AURE-LOURON

Haute-Garonne
5. LUCHONNAIS

Ariège
6. COUSERANS
7. HAUTE-ARIÈGE
8. ORLU-ST.-BARTHÉLEMY

Pyrénées-Orientales
9. CAPCIR-PUYMORENS
10. CERDAGNE-CANIGOU

ESPAÑA

Catalunya

Pirineus Orientals de Catalunya
11. TER-FRESER
12. PREPIRINEU
13. VESSANT NORD CADÍ-MOIXERÓ
14. PERAFITA-PUIGPEDRÓS

Pirineus Occidentals de Catalunya
15. PALLARESA
16. RIBAGORÇANA-VALL FOSCA
17. ARAN-FRANJA NORD PALLARESA

Aragón

Pirineo Aragonés
18. ALTO ÉSERA
19. ALTO SOBRARBE
20. ALTO GÁLLEGO
21. ALTA JACETANIA

Navarra
22. PIRINEO NAVARRO

ANDORRA
23. PIRINEU ANDORRÀ

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