ICC
Institut Cartogràfic de Catalunya

Generalitat de Catalunya

Newsletter 40

Topographic atlas of Catalonia (4th ed.)

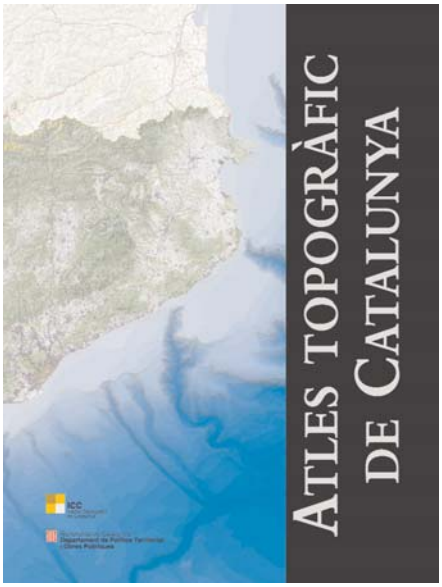
In July 2010, the ICC published the 4th edition of the *Atles topogràfic de Catalunya*.

This edition features 448 pages, 202 of which are devoted to the 1:50 000 topographic map. It has been enhanced with the inclusion of other maps, such as the 1:275 000 road map divided into 12 pages and completed with the enlargement of the main urban areas at 1:130 000, as well as the 1:500 000 municipal and county map, divided into 4 pages.

THE ATLAS IS SUPPLEMENTED WITH RELEVANT INFORMATION ON THE TERRITORY AND POPULATION

The specific cartographic corpus is also prefaced by a chapter of general cartography, circumscribed to Catalan, essentially, and European territories, with maps supplemented with numerical and textual information: population, surface, distances by road, list of main mountain peaks, rivers and lakes, and names given to the people from counties, European countries and their capitals.

Most of the information in the atlas has come from ICC cartographic databases at the same scale. The content of the 1:50 000 map is structured into: altimetry, vegetation cover, planimetry, thematic and tourism information and protected areas. The planimetric information is from the topographic map of the same scale, and the road information is from the Directorate General for Highways (Ministry of Town and Country Planning and Public Works, now Ministry of Territory and Sustainability, TES) and the Ministry of Development. The Long-distance Trails (from the Catalan Federation of Rambling Clubs) have been externally sourced as have the natural areas under special protection



and those forming part of the Areas of Natural Interest Plan or PEIN (TES).

Place names have been transcribed from the *Nomenclàtor oficial de toponímia major de Catalunya* (2nd edition, 2009) published by the Autonomous Government of Catalonia and validated by the Institute of Catalan Studies and the respective local councils.

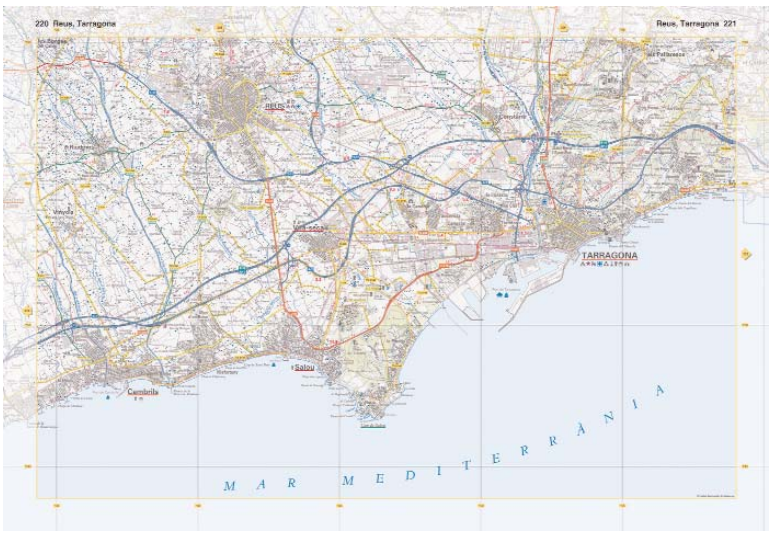
To facilitate the reading of the atlas with territorial continuity, the cartography section has page-to-page overlap.

The other significant part of the atlas is its toponymic index, which is more comprehensive than in prior editions. It has been divided into three parts:

– General: a listing of all the toponyms in the atlas at any scale. It includes 54 316 place names.
– The second index features all of the population entities organized by counties and municipalities. There are a total of 5 271 centres.
– The last index features an alphabetical listing of the 947 municipalities of Catalonia.

The geographic concept, municipality, county, page and scale of the map, and the UTM coordinates are given for each place name.

The atlas offers a vast array of possible uses, and provides accurate resources for the handling of maps as well as for the interpretation of the cartography.



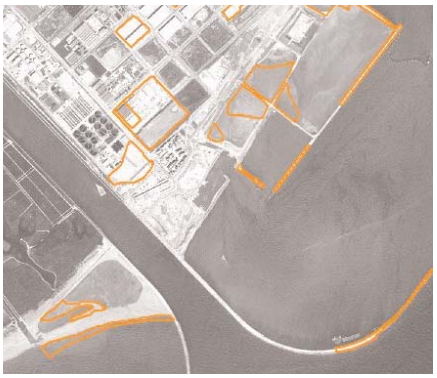
Follow-up of the project “Change detection in artificial covers in Catalonia: Barcelona Metropolitan Area”, 2005-2009

This project aims to identify and locate the major changes in the artificial covers of the six counties of the Barcelona metropolitan area, conduct a systematic, ongoing follow-up of them from a territorial standpoint and obtain statistics on their dynamics. For example, which types of covers disappear and which ones increase their representation throughout the territory.

To do so, and as the data must be collected at least once a year, the work has been based on satellite images, specifically the panchromatic images of the SPOT-5 satellite. This imagery was selected because of the good relationship between footprint and the resolution of the picture, making it possible to identify the land cover.

The summarized results for the 2005-2009 study are:

- Baix Llobregat, Barcelonès, Garraf, Maresme and Vallès Oriental counties show a decrease in the amount of transformations up to May 2007. Around 2008, all counties, except for Maresme and Vallès Occidental, displayed an increase in their transformations. Then, transformation activity dropped again in 2009 in all counties except for Vallès Occidental.
- The covers that have undergone the greatest transformations have been vegetation cover, bare soil and ground-works. These are followed by agricultural and water covers.
- The covers that have increased the most are industrial-commercial, roadways and build-up areas.



This loss of “natural” covers to artificial ones reflects the industrialization of the territory. This involves a higher level of built-up and an increase of transportation networks. More complex considerations (migratory movements, geographic situation, history, etc.) are outside the scope of this study.

Ptolemy’s *Geographia,* now in digital format

The ICC has published Ptolemy's atlas *Geographia*, conserving the format of the original work. It is made up of a collection of maps, accompanied by texts, which have been bound as a book.

This is an edition published by Sebastian Münster in Basel in 1542. The work consists of 446 pages and contains 48 maps from around the world in double-page layouts.

PTOLEMY’S *GEOGRAPHIA* IS ONE OF THE OLDEST WORKS IN CATALONIA’S MAP LIBRARY

To view it, download the free program Silverlight. Once installed, it can be accessed from any operating system.

This project has been conducted in collaboration with ADHOC Synectic Systems.

The atlas can be consulted at:
http://www.icc.cat/esl/Home-ICC/Inici/Cartoteca/Biblioteca-digital

New photogrammetric airplane: More productivity

In January 2011, work began with the B200GT airplane, which arrived at the ICC in December 2010.

This new plane replaced the Cessna Citation I-SP, which the ICC had worked with for 23 years in Catalonia, Spain and South America. In terms of flight altitude and operational versatility, the Cessna Citation-I had been a fantastic resource. It was also highly productive. But its technical obsolescence (its service life spanned over 30 years) made it advisable to seek a replacement.

The operation was meticulously analysed, assessing all the available options. It was decided to acquire the B200GT for its characteristics.

The B200GT is a pressurized aircraft with two newly built turboprop engines. It has been modified with two openings for installation of different sensors. Two GNSS antennas have been vertically installed in the openings to facilitate the georeferencing of the data collected. From an operational standpoint for primary data capture, the B200GT has four significant characteristics:

- Multisensor capacity: The airplane has two openings to make multisensor flights. One of them is of larger-than-average size. In it, two sensors can operate simultaneously. This way, it is possible to make a flight using a set of three sensors: photogrammetric, Lidar and multispectral. This ability and the data merging techniques make it possible to increase the synergy among the various sensors available to the ICC.
- Working altitude: It is a pressurized airplane with a maximum flight altitude of 35 000 feet (approximately 10 500 m), doubling the current capacity of the ICC's flights with non-pressurized aircraft. The B200GT will give the ICC the capacity to fly at high altitudes to collect territorial data at a small scale, and fly at mid-altitudes with no need for supplementary oxygen. With this plane, problems with flights over the Pyrenees will be overcome.
- Higher performance: Its working speed nearly doubles that of the ICC's two other photogrammetric airplanes. This

makes for greater performance, allows the ICC to get more out of good-weather days and saves time spent travelling to the work area. It will also make it possible to work simultaneously in two geographically distant areas, and easily change the area of action according to the meteorological conditions in each zone.
- Flexibility: As a pressurized turboprop airplane, the B200GT can make high-altitude flights as well as low and mid-altitude flights, without the low-altitude flights requiring excessive fuel consumption, as occurs with jet aircraft.

Transfer to the ICC of the mapsheets of Catalonia from the first photogrammetric flight over Spain

The Ministry of Defence has transferred to the ICC the 3 600 images of Catalonia from the first photogrammetric flight over Spain (series A), performed by the US Air Force in 1945-1946. These are the oldest existing vertical aerial photographs of the Iberian peninsula. This gives them enormous documentary worth.

The transfer took place at ICC headquarters on February 3, when Spanish Minister of Defence Carme Chacón, and the Catalan Autonomous Minister of Territory and Sustainability, Lluís Recoder, signed a protocol that will allow the ascribed organizations (the CECAF and the ICC) to share the digitalized images corresponding to Catalonia, and the available technical data on the complete photogrammetric flight over Spain obtained in this American project.

THIS TRANSFER MAKES IT POSSIBLE TO RECONSTRUCT THE GEOGRAPHY OF CATALONIA AS OF 1945

This transfer makes it possible to completely reconstruct the geography of Catalonia as of 1945 (with the American flight) up to the present day (with the aerial photos taken by ICC aircraft).

Using these files, the Institute will elaborate a digital orthophotomap of Catalonia. Later, a copy will be given to the CECAF. Catalonia will thus become the first autonomous community to carry out this geographic reconstruction.

Furthermore, according to the protocol signed, the Spanish Ministry of Defence will have access to the work that the ICC performs with this flight and the orthophotographs of Catalonia taken on other flights.

Brief note

THE 2011 CALENDAR, AVAILABLE FOR INTERNET DOWNLOADS

Faithful to tradition, the Institute has prepared its 2011 calendar.

Each year since 1987, the ICC has disseminated a historic map from the Map Library of Catalonia collection as a means of disseminating its historical cartography collection.

The 2011 calendar is not being distributed in print format, as had been the case since the custom began. This year, it is available through the website:

www.icc.es

It is a pdf file, and may be downloaded in the following distribution formats:
– actual size of the calendar:
  44.5 cm x 68.5 cm,
– DIN A-3 size:
  29.7 x 42.0 cm,
– DIN A-4 size:
  21.0 x 29.7 cm.

The map chosen for the 2011 calendar shows a page from a 19th century French topographic drafting manual: *Tableau elémentaire de topographie civile & militaire, à l'usage des ingénieurs géographes & de toutes les écoles*, by G. Tripon F., published in Paris in 1800.

The actual map is 54 x 68 cm, and is registered in the Map Library of Catalonia (RM. 275292).

The map is available on the CTC website:
http://cartotecadigital.icc.cat

Exchange of cartographic information among institutions

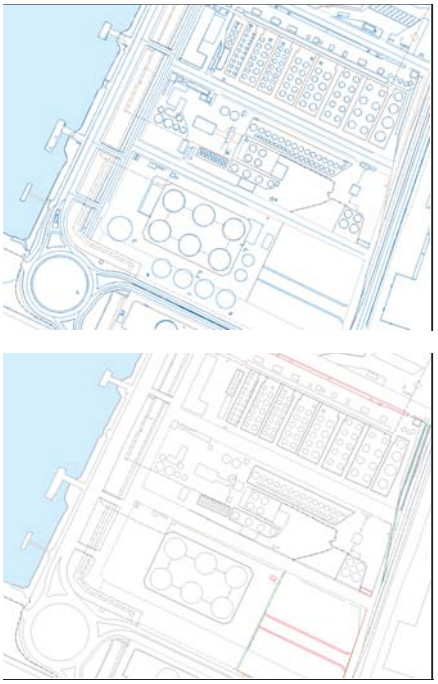
The ICC is participating in two pilot projects to exchange cartographic information among institutions with a view to promoting institutional collaboration to prevent redundancies and make the most of work already done. OGC standards, GML language and WFS specifications are being used to conduct these projects.

One initial example is the pilot project among the ICC, the Port of Barcelona (Barcelona Port Authority, APB) and the city of Barcelona (BCN), to build an automated infrastructure that will make it possible to share the geospatial data between producers and consumers of data, thus enhancing interoperability.

The APB and BCN will be 1:500 cartographic data providers in this project. The ICC needs these data to update its 1:500 topographic database. To share them, the APB will provide its data through a GeoServer WFS while BCN will be using its GeoMedia WFS.

A second example is the updating of the database of the streets of Catalonia. Municipalities are the organizations that have the most updated information on their streets. That makes them the best source from which to gather all the information, and create and maintain the streets database.

Municipalities that have their own management system, and that maintain these data can provide their update to the streets of Catalonia database through a system similar to that described in the previous example. The ICC and a group of municipalities are testing the same technological solution to automate the updating process through WFS servers.



Example of the APB cartography at 1:500 scale with superimposed information from the ICC's BT-5M. In the first image, the result is marked in blue. In the second, it is marked in red and green.

The results of the collaborative update prototype show that the implementation of OGC-based infrastructures, GML language and WFS rules to share cartographic data facilitate and optimise the updating of shared information among institutions.

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

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