

## Brief note

VISIT TO THE ICC  
BY THE FORMER PRESIDENT  
OF BOLIVIA

In May 2012, the ICC was visited by the former president of Bolivia (2003-2005), his Excellency Mr. Carlos Mesa Gisbert.

The presidency of his Excellency Mr. Mesa, a highly-esteemed intellectual, communicator and politician, coincided with the period in which the ICC collaborated with that country's Instituto Geográfico Nacional de la República.

During his visit to the Institute, he was informed of the recently implemented technologies and the latest productive systems in operation.

President Mesa has close ties with Catalonia, partly due to his family history and also because of the numerous collaboration projects he has seen through with Catalan institutions.



In the center, his Excellency Mr. Mesa.

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## International meeting of experts in new technologies applied to old maps and map libraries

LIBER: [www.icc.cat/gdc](http://www.icc.cat/gdc)  
ICA: [www.xeee.web.auth.gr/ICA-Heritage](http://www.xeee.web.auth.gr/ICA-Heritage)

The ICC played host to the 18th International Conference of the LIBER (Ligue de Bibliothèques Européennes de Recherche) Map Librarians. This meeting, held April 17-18, 2012, was linked to the 7th working session of Digital Technologies in Cartographic Heritage (working commission of the ICA).

LIBER's biannual meeting brings together experts in cataloguing and others responsible for map collection from all over Europe, and includes national libraries, university libraries and archives, among others. This year, 61 persons from 21 different countries gathered for the event.

Under the theme "Map Libraries in a Changing World", 19 presentations were given and discussed over five sessions:

- Distribution of digital collections.
- Photographic materials as geographic documentation.
- Handling special collections.
- Maps of digital origin.
- Map cataloguing.

One of the sessions was held at the headquarters of the Centre Excursionista de Catalunya, which houses a significant map and photograph collection.

The second event, more oriented toward professionals from the world of digitalization and university research who use old cartography, brought together 93 participants from 24 different countries. Thirty presentations on digitalization, technology, map libraries, collections and archives, georeferentiation and cartographic content were given and discussed.



### THE PRESENTATIONS AND ABSTRACTS ARE AVAILABLE ON-LINE

Holding the two conferences consecutively had a positive effect as it made it possible to connect the world of professionals who manage cartographic heritage documentation with that of the experts in digitalization, handling and digital dissemination of this documentation.



## Newsletter 44

Historical topographic 1:50 000 atlas (1st ed.) / Developments in the Digital Map Library / Detection of changes with DMC images and the DSM derived from them / International meeting of experts in new technologies applied to old maps and map libraries / Visit to the ICC by the former president of Bolivia



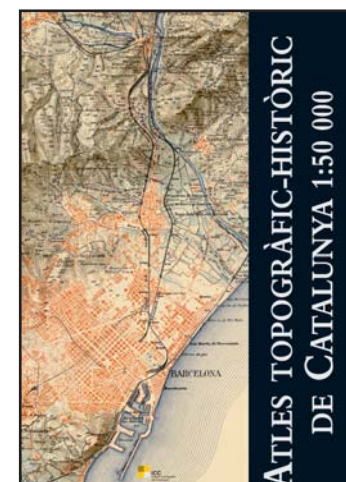
# Historical topographic 1:50 000 atlas (1st ed.)

The ICC published the *Atles topogràfic històric 1:50 000* (1st ed.) in April, 2012. It consists of the first edition of the 84 sheets that cover the territory of Catalonia, and one special sheet on the city of Barcelona from the series *Mapa Topogràfic Nacional 1:50 000*, published by the Spanish government in the 1918-1945 period. The aim of this atlas is to show in a single volume the face of the nation as it appeared a century ago to compare, evaluate and assess the changes that have occurred. The map is an essential document to know the territory, and a record of the elements existing at a given historical time.

### THIS ATLAS INCLUDES THE CATALONIA SHEETS FROM THE 1:50 000 MAP OF SPAIN, MADE NEARLY 100 YEARS AGO

The 1:50 000 map of Spain was created by the Instituto Geográfico y Estadístico (IGE, now called the Instituto Geográfico Nacional), and was the first complete coverage of the entire Spanish territory at that scale, supported by a geodetic network and topographically surveyed. The project was proposed in the mid-19th century, and the first sheet (Madrid) was published in 1875.

In Catalonia, the intervention of the army's cartographic units and the progressive use of new techniques such as aerial photography were decisive to complete the drawing up of the map in slightly over 30 years, though some of the sheets were not published until after the Civil War.



The entire nation of Catalonia was living through a process of industrialization and modernization, for which topographic maps were a necessity. Although the construction of infrastructures led to the drawing up of large scale maps of very small portions of territory, there was not a complete, uniform coverage. The Mancomunitat de Catalunya (Union of Catalonia) tried to overcome this problem with the creation of a cartographic service responsible for drawing up the *Mapa Geogràfic de Catalunya 1:100 000*. The project was never finished, as it was a cabinet map based largely on the generalization of the surveys carried out by the IGE for the 1:50 000 map.

The 1:50 000 map was the first document to define the limits of municipalities. For that reason, in 1988 the ICC signed a collaboration agreement with the IGN to reproduce all of this documentation. As the body responsible for the official cartography of Catalonia, it had to know the municipal limits in the territory and the accuracy of their location to coherently portray them in its cartographic databases and documents.

### THE MUNICIPAL DIVISION OF THE SHEETS REPRODUCED IN THIS ATLAS WERE THE STARTING POINT FOR THE MUNICIPAL DELIMITATION TASKS CARRIED OUT BY THE ICC

The goal of this atlas is to contribute to the history of Catalonia's territorial evolution, but also the evolution of the techniques used. Therefore, the introductory study of the Atlas was commissioned from geographers Francesc Nadal and Luis Urteaga of the University of Barcelona, to shed light on how and by whom the map was authored.

This work received the economic support from the Ministry of Economy and Knowledge, through funding provided by the savings banks of Catalonia.



# Developments in the Digital Map Library

<http://cartotecadigital.icc.cat/cdm>

The first half of 2012 saw the implementation of several improvements and innovations in the Digital Map Library:

- Incorporation of new document collections.
- Recollection of the ICC collections at Europeana.
- Software improvements.
- Opening of a pilot project devoted to georeferencing maps of the Digital Map Library, with the aid of users.

## 6 807 PRINTED MAPS OF THE ICC CAN NOW BE VIEWED IN THE DIGITAL MAP LIBRARY

Starting in May, 2012, the Digital Library offers users the chance to consult 6 807 printed ICC cartographic products. This figure is bound to progressively rise until making the maps printed up to the present for free distribution available to citizens. In other words, over 10 000 cartographic documents. This new incorporation has been grouped under the collection entitled “ICC Production (1982...)”, in commemoration of the 30th anniversary of the Institute.

The Institute’s cartographic production over these 30 years is characterized by the amount of products published, the diversity of scales used, the variety of geographic areas represented and the technological evolution apparent in their generation. Today, the first editions of the following collections are now available in the Digital Map Library:

- 1:500 000 (satellite images and thematic maps).
- 1:250 000 (topographic and thematic maps, and satellite images).
- 1:100 000 (topographic maps, satellite images and orthoimages).
- 1:50 000 (thematic maps).
- 1:25 000 (topographic maps, orthophotomaps).
- 1:5 000 (orthophotomaps, 1st ed.).
- Miscellaneous products: Livingston Island, Namibia, stereoplotting of facades from Catalan cultural heritage...
- Exhibition, conference and dissemination posters.

Making the printed map production publicly available in digital format is another effort that the ICC makes to bring its activity closer to citizens as the end users and beneficiaries of our work.



Furthermore, starting in June 2012, the photographic collection of geographer Pau Vila will be available for consultation. It features over 900 related photographs with educational facets.

## SINCE ITS LAUNCH IN 2007, OVER 16 000 DISTINCT USERS HAVE DOWNLOADED OVER 120 000 ARCHIVES FROM THE MAP AND PHOTOGRAPH COLLECTIONS OF THE DIGITAL MAP LIBRARY

Another innovation is Europeana’s first-ever link-up with the Digital Map Library collections, through OAI, the international protocol for content harvesting. The efforts have been conducted as part of a joint effort promoted by the CBUC (Consortium of University Libraries of Catalonia) and coordinated by the Library of Catalonia. More than 10 000 documents of the Digital Map Library are currently available through this European portal. This new means of accessing the Digital Map Library collections supplements the presence on international portals begun in prior years with the Worldcat and Hispana aggregators.

In terms of actions carried out on software, the Digital Library application has been updated with improved search capability, content viewing and the possi-

bility to comment on, rate and tag images. This new version has made it possible to offer users a pilot program to georeference thousands of cartographic documents from the Map Library’s collections, which will make it possible to improve geographic descriptions of the documentation with the assignation of coordinates contributed by users and implement graphic search tools for all of the collections.

It is an easy-to-use on-line tool oriented to the general public, which makes it possible to assign coordinates to old maps from one’s own computer, resulting in the display of these maps over actual territory. It is a simple, fun process, in addition to an excellent means of familiarization with the territory and geography, while also serving as a first step toward a new concept of interaction between the Digital Map Library and its users, in a way that allows knowledge to be contributed and shared.

<http://cartotecadigital.icc.cat/cdm/Georeferenciacio/>

In fact, the Digital Map Collection has long benefited from the participation of its users, as the comments they send us allow us to improve the descriptions of our collections on an ongoing basis.

# Detection of changes with DMC images and the DSM derived from them

Up to now, the generation of ICC change detection maps (see ICC Newsletter no. 40) has been based on the comparison of multispectral or panchromatic images, and the attempts to improve the process with the incorporation of lidar sensor-derived altimetric data have shown incompatibilities in combining data from two different sensors.

## THE INTEREST IN DERIVING DSM FROM DMC IS BASED ON SIMPLIFICATION OF THE PROCESS: CHIEFLY, A SINGLE SENSOR, SYNCHRONOUS DATA AND A SINGLE GEOREFERENTIATION

In 2011, a study was carried out to assess the contribution of digital surface models (DSM) obtained by photogrammetric correlation through the DMC photogrammetric digital camera, in the detection of artificial changes in the territory. It must be remembered that many of the changes in the territory cause alterations in height (urban, industrial and road infrastructure expansion, clearing of forests and elimination of woody areas or fruit orchards) and the altimetric variable can be a good measurement.

The study focused on the analysis of two methodological approaches: automatic (or near-automatic) sensing and photointerpretation. Two image collections were used for evaluation purposes: the first over the area of Vic with MPT of 22.5 cm, flown in June 2009 and July 2010. The second is the area of Salou with MPT of 9 cm, flown in October 2007 and July 2008.

The images above are from subscenes of DMC images recorded in the Vic area with the DMC, in 2009 and 2010. The images below show the relevant DSM files.

**Automatic sensing.** To map the changes between the two years, the file of DSM differences was prepared and classified in five levels (from changes in areas considered stable to changes in very dynamic areas). The results obtained were compared with those attained by photographic interpretation of the original DSM images. The changes related with urban dynamics (new construction, demolition) were perfectly detected. From this study, it was deduced that the pictures corresponding to the years studied should be taken in similar seasons, and following the same flight plans. It was also shown that color changes caused by real modifications of terrain (paving roads, preparing lots), erroneously went unnoticed.

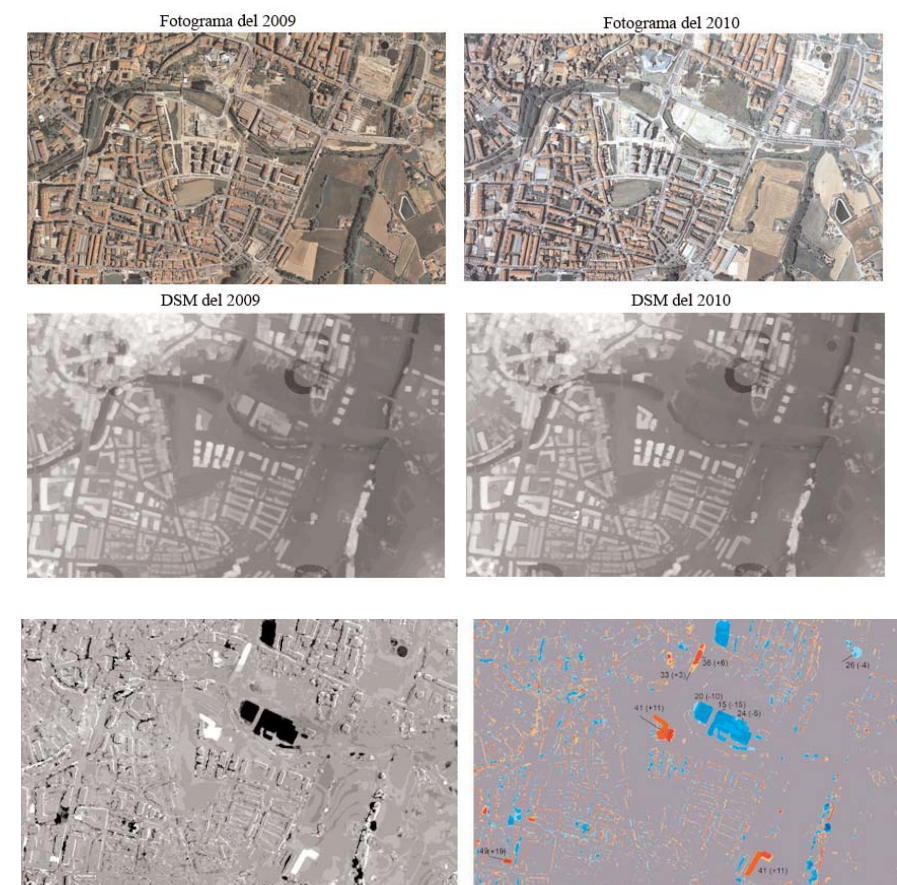
**Sensing by photographic interpretation.** The contributions of DMC and DSM images derived in the detection of changes in the Vic area were evaluated.

Using the typology of changes of interest (based on those of the study from which the map of changes that the ICC

has been developing since 2005 is made), the changes detected with the DMC (on a planimetric level) and the DSM (on the altimetric level) are shown.

## THE RESULTS OF THE STUDY SHOW THAT BOTH SENSING SYSTEMS COMPLEMENT EACH OTHER

In short, the results obtained show the complementary nature between the DSM data derived from the DMC digital photogrammetric camera and the multispectral or panchromatic images. Whereas the first precisely detects the changes that result in volumetric alterations, but not surface transformations (new roads, paving of streets and highways, construction in barren lots, preparation of lots), the second allows surface transformations to be mapped.



The first image represents the file of DSM differences between 2009 and 2010 for the aforementioned subscenes. The second shows the classification.