Brief note

www.icc.cat/videos

DVD: THE GEOINFORMATION OF CATALONIA AND ITS KEY FIGURES 1982-2012

In October 2012, the ICC has distributed two video series to commemorate its 30th anniversary.

The first series is made up of nine videos on which the ICC's activity is explained. It should be remembered that eight of these chapters began to be distributed in October 2011 (now one year ago, see ICC Newsletter No. 42). What is new about this series is a chapter that addresses the cartography of Catalonia prior to the creation of the ICC (from Antiquity up to the creation of the Institute in 1982).

The main theme of the second series of videos is the ambition behind this step. Six figures who have played a decisive role in the geoinformation of Catalonia in the 20th and 21st centuries share their thoughts in interviews.

With these videos, available for viewing on the ICC website, the Institute hopes to further disseminate its activities and leave a record of testimonials from the leading geographic information figures of Catalonia.

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

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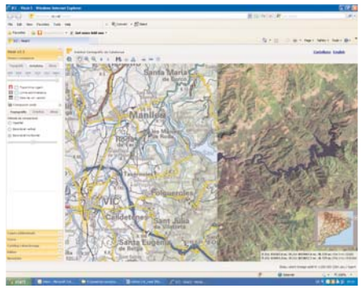
Antique aerial photos and other functions in the ICC viewer

www.icc.cat/vissir3

As of July 2012, it has been possible to use VISSIR3 to view orthophotos from different years (1956, 2008 and 2011) and compare them against each other. This new function makes it possible to analyze the evolution of the territory-or simply discover how it was years ago-using a single web application. The new version of VISSIR also allows comparison between orthophotos and topographic maps.

On the tab marked "Other", devoted to thematic geoinformation, the NDVI and orthophoto layers can be consulted in false infrared color, which is especially useful in the realms of forestry and agriculture.

With a view to facilitating access to all of the ICC's geoinformation, the existing viewers are being integrated. The inclusion of these layers and functions, already available in the ortoXpres (www.ortoxpres.cat) into VISSIR3 makes for a major advancement.



This version of the VISSIR3 also benefits from improvement, among other items, in the information on the products that can be downloaded, facilitating access to supplementary files and technical specifications that make possible comprehensive use of the products.

ICC Seminars on the Agenda

www.icc.cat/cat/Home-ICC/Recerca-i-docencia/Esdeveniments

The Agenda of the ICC's activities is now published online to give it broader dissemination.

Among the purposes behind the creation of the Institute (1982) is the promotion of educational activities:

– To participate in the training of the staff members working for the public administrations of Catalonia who perform cartographic tasks in the course of their duties.
– To support and promote public and private cartographic services, and the research, teaching and technological development in the field of cartography.

The activities that the ICC carries out to meet these objectives, and make known its cartographic production and the technologies used, are conducted through the organization of conferences, technical seminars, work meetings, tours, etc.

With the aim of spreading more information on this activity, in September 2012, a regular publication was released listing the activities planned for the September-December period of this year (as was done in the May-June quarter).

For each activity, the Agenda, published every four months, includes the title of the presentation; the place, date and time; the program and an indication as to whether it is open to the public.

It bears mentioning that the Agenda, given the constant efforts to bring in new informative activities, is a dynamic product, and as such, should be regularly consulted on the ICC website.

ICC Institut Cartogràfic de Catalunya

30 anys 1982-2012

Generalitat de Catalunya

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Three decades of ICC: 1982-2012 / Research and development projects. Volume of ICC activity, 2008-2011 / ICC production figures, 2008-2011 / Antique aerial photos and other functions in the ICC viewer / ICC Seminars on the Agenda / DVD: The geoinformation of Catalonia and its key figures 1982-2012

Three decades of ICC: 1982-2012

If the ICC was born in the 1980's (specifically, 1982), and grew up in the 90's, then the first decade of the 21st century has been that of its maturity.

And maturity has a number of implications: production under efficiency criteria, territorial selectivity and European standardization. It also means responsibility when it comes to facing challenges; like taking the European Geoinformation Act as simply another opportunity, not an onerous duty. It also means serenity in everything necessary to revamp the institution, and therefore, people. This means that, in the face of the fastest technological acceleration in the history of geoinformation, we have had to fight all the harder against obsolescence, and knowledge is the very first thing to go obsolete. Programs and methods must also be updated. And this is only possible through a continuous refreshing of our people's knowledge.

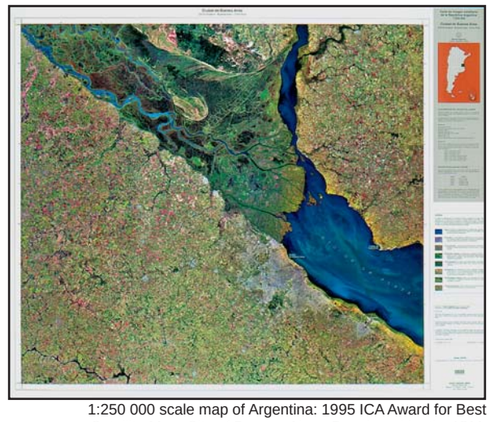
THE FIGHT AGAINST OBSOLESCENCE HAS BEEN THE INSTITUTE'S FOREMOST PRIORITY

The maturity acquired by the ICC over its career has brought two direct consequences with it:

The first, efficiency. Today, we provide a governmental and public geoinformation service that, beginning with a situation of secular backwardness and imposed limitations, such as military censorship, can now be considered comparable to countries of the same geographic magnitude (Belgium, Holland, Switzerland, etc.) with production traditions that date back over several centuries.

The second is notoriety. Catalonia is known for its cartographic history-essentially its nautical cartography and the Portolans of the 15th and 16th centuries-but also its contemporary activity. This was acknowledged in the Congress and Assembly of the International Cartographic Association in 1995, held in Barcelona. It has also been proven through the awards received over the years, totaling near 30.

This notoriety has had a beneficial effect: industrial acknowledgement. Our international activity, taken in terms of knowledge transfer and productive projects, has been extensive. In Latin America, especially Argentina and Venezuela, in the 1990's, major projects were carried out, which were always begun out of the notoriety of Catalan products' quality. This same effect is what is now underlying current projects in the Middle East and South-east Asia.



1:250 000 scale map of Argentina: 1995 ICA Award for Best Satellite Map, City of Buenos Aires. Developed by the IGM, created and edited by the ICC.

This is a summary of the vision and mission that have led us into our years of maturity. It must be said that implementation of ideas into programs and projects has been done under efficient criteria of public service, and service to our government.

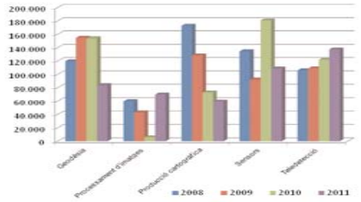
1:50 000, Gavarnie-Ordesa Pyrenees Mountain hiking trail map: 2001 ICA Award.

Research and development projects. Volume of ICC activity, 2008-2011

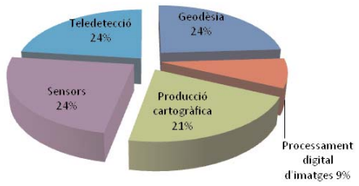
The ICC performs research, development and innovation activities to have its own technology, disseminate and implement new work methods, create new products and services and gather the knowledge necessary to be one of Catalonia's centers of excellence.

The following paragraphs contain quantitative information on some of these projects.

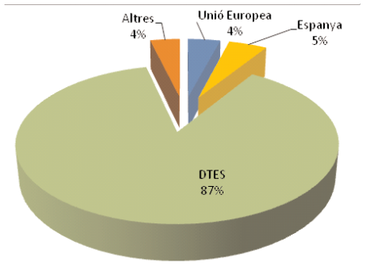
Cost of the development projects by thematic area, 2008-2011

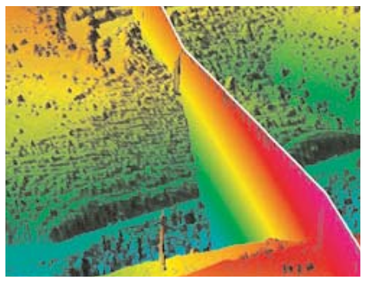


Distribution of research project costs by areas, 2008-2011



Origin of funding for the R&D&IT program, 2008-2011





The following landmarks were reached in the 2008-2011 period:

Geodesy

Most relevant accomplishments:

– Analysis, evaluation, determination, dissemination and support for the change from the ED50 to the ETRS89 reference system.
– Development and implementation of virtual GPS station service.
– Completion of the airborne gravimetry project (GAST).
– Characterization of behavior and data use of the sensor movement stabilization platforms in navigation solutions and development of v2 of the SISA system for determination of CASI hyperspectral sensor orientation.
– Development of the TASI geometric model.

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Transfer to products:

– Virtual GPS station service for the SPGIC user community.
– Production of new versions of GeoTex software begun.
– Operating process for version 2 of the SISA orientation system.

Sensors

Most relevant accomplishments:

– Precise geometry characterization of digital photogrammetric cameras.
– Organization of radiometric test in Banyoles for EuroSDR and results assessment.
– Development of geometric models for numerous satellite sensors.
– Characterization of the calibration model and procedures for the ALS50-II laser altimeter.
– Geometric model and geometric and radiometric calibration for the TASI thermal hyperspectral sensor.
– Initiation of the HUMID Project for detection of moisture in soil from the radiation of microwaves emitted by the earth.

Transfer to products:

– Production of the new ALS50-II begun.
– Integration of digital photogrammetric camera calibration into the orientation phase software.
– Integration of satellite-borne sensor models in the ICC's process software.
– Production of temperature and emissivity map generation chain begun.

Digital image processing

Most relevant accomplishments:

– Development of algorithms for radiometric image normalization, processing bodies of water to prevent reflections and continuous overall radiometric adjustment.
– Compensation of atmospheric effects in digital images captured with digital photogrammetric cameras and the CASI sensor.
– New mosaic generation algorithms that take terrain elevations into consideration.
– Extraction of objects in digital images.
– Improvements in orientation phase procedures with the design of new flows based on automatic point correlation.
– Development of in-house software, based on a dense correspondence algorithm, for the conversion of clouds in correlation points into an MDS, and in results analysis, for detection of changes.

Transfer to products:

– Automatic generation of true orthophotos for large-scale projects (pixels of 10 cm).
– Overall radiometric adjustment and reflection processing tools.
– Software to compensate the effects of the atmosphere.
– Increased reliability and robustness of automatic orientation phase processes.

Remote sensing

Most relevant accomplishments:

– Development of tools for improved detection and monitoring of subsidences through differential radar interferometry with L band images and based on polarimetric and high resolution capacities of radar sensors installed on satellites.
– Algorithms for non-topographic applications of airborne laser altimeter data and advanced classification techniques based on the combination of laser data and hyperspectral data.
– Development of a method for monitoring territorial changes based on satellite data.
– Implementation tasks for the TASI sensor.
– Evaluation of cartographic potential of radar images from the TerraSAR-X satellite.
– Development of an evapotranspiration indicator based on simultaneous data from the CASI and TASI sensors.

Demonstration projects:

– Pilot studies with airborne laser: individualization and determination of tree height, flights for estimation of water resources in snow-covered areas (with the IGC) and annual follow-up of changes in Catalonia's beaches and coastlines.
– Pilot studies based on the combination of data from the laser altimeter and multispectral and hyperspectral images: determination of parameters relevant to forest inventories, automatic detection of crop classes, generation of soil use maps.
– Viability projects for the CASI and TASI hyperspectral sensors for optimization of resources in agriculture.

Transfer to products:

– Application of advanced differential radar interferometry tools in the annual generation of subsidences in Catalonia, and detection and monitoring of subsidences with L band radar images in the city of Bogotá.
– Annual map of territorial changes produced from satellite images.

Cartographic production

Most relevant accomplishments:

– Monitoring of advancements made in automatic generalization, participation in the EuroSDR project for commercial generalization software and implementation of new production tools.
– Development of data model 2.2 for 1:1 000 cartography.
– Participation in the development of directives for data standardization in the implementation of the INSPIRE European directive.
– Cooperative topographic cartography maintenance project with the Barcelona municipal government and Port of Barcelona.

Demonstration projects:

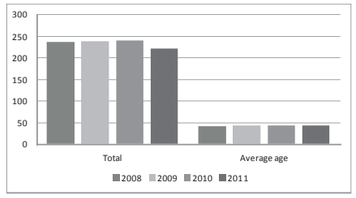
– European project GIS4EU: Development of common data model, harmonization and interoperability of different topographic and thematic databases from different countries and scales to validate INSPIRE standards and implementation rules.
– Adaptation of 1:1 000 urban cartography data (model 2.2) to develop a 3D virtual model.

Transfer to products:

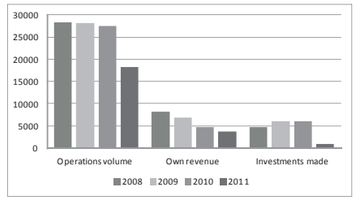
– Automation of 1:10 000 and 1:25 000 cartography production through planimetry and altimetry generalization tools (elevations and contour lines).
– Production of 1:1 000 cartography according to 2.2 data model begun.

ICC production figures, 2008-2011

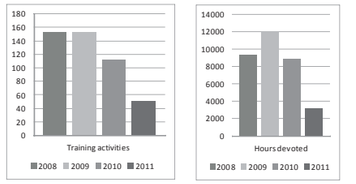
Headcount, 2008-2011



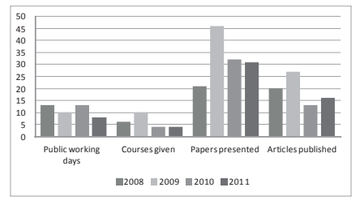
Economic activity (thousands of euros), 2008-2011



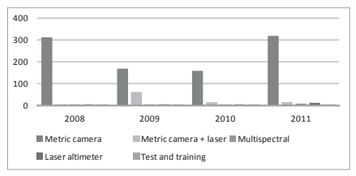
Knowledge received (training), 2008-2011



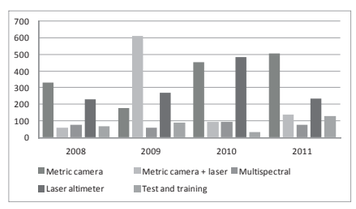
Public knowledge given, 2008-2011



Primary data capture (projects), 2008-2011



Primary data capture (hours), 2008-2011



Cartographic databases

	2008	2009	2010	2011	Total
MUC-1M v2.2 (municipalities)	169	209	125	64	100%
BT-5M v2 updates (4 275 sheets)	828	865	860	909	100%
MTC-10M v1.1 (1 121 sheets)	237	201	214	308	90%
BT-25M v1 (304 sheets)	50	45	30	25	100%
ORTO-5M v6 flight 2010 (4 275 sheets)	0	0	0	3 196	75%
ORTO-5M v6 flight 2009 (4 275 sheets)	0	0	4 275	0	100%
ORTO-5M v5 flight 2008 (4 275 sheets)	0	4 275	0	0	100%
ORTO-5M v5 flight 2007 (4 275 sheets)	2 315	0	0	0	100%
ORTO-25M v6.1 flight 2010 (305 sheets)	0	0	0	229	75%
ORTO-25M v6.0 flight 2009 (305 sheets)	0	0	305	0	100%
ORTO-25M v6.0 flight 2008 (305 sheets)	0	305	0	0	100%
ORTO-25M v6.0 flight 2007 (305 sheets)	165	0	0	0	100%
ORTO-25M v6.0 flight 2006 (305 sheets)	139	0	0	0	100%
ORTO-25M v6.0 flight 2005 (305 sheets)	138	0	0	0	100%
ORTO-25C v3.3 flight 2010 (4 275 sheets)	0	0	629	3 646	100%
ORTO-25C v3.3 flight 2009 (4 275 sheets)	0	0	4 275	0	100%
Cartographic series					
MTC-25M v1 (77 sheets)	3	1	4	14	29%
MTC-50M v5 (41 sheets)	0	4	16	6	64%
MTC-50M v4 (41 sheets)	10	6	0	0	100%
MTC-100M v1 (relief) (41 sheets)	3	4	5	0	32%
Thematic series					
Thematic maps	96	1	8	4	
Geologic maps	5	3	20	28	
Activities for the DTES	15	17	39	1	
Atlases					
Atlases	3	4	3	1	
Gazetteer	0	1	0	0	

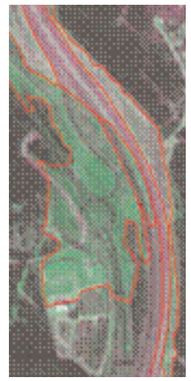
Geographic databases

Themes: historic and forest fires, night lighting, crops, detection of changes in land, SIOSE, DinSAR.
Geographic: toponymy, territorial delimitation.

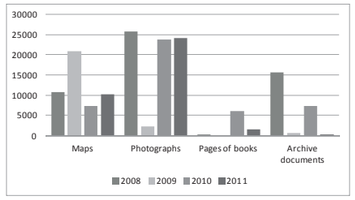
Geodesy

	2008	2009	2010	2011
utilitarian network of Catalonia (points)	273	207	15	159
Users registered in CODI, RTKAT, RINEX	560	771	681	716
Aerial triangulation:				
Images	43 695	59 873	89 197	79 555
Points used	8 389	5 463	5 887	5 929
DTM lidar (0,5 p/m²)				
ha processed	265 283	356 738	1 144 400	619 859

Fiducial stations active in real time : 15 stations
Accumulated users: 716 users
DTM lidar (ha processed): 2 902 191 ha



Map library digitalization, 2008-2011



Internet downloads, 2008-2011