

III. Cartographic databases and large scale topographic cartography

Topographic cartography at 1:5 000 June 2005/Version 2



Partial image of the *Mapa topogràfic de Catalunya 1:5 000*. Vilanoveta sheet.

The ICC creates topographic cartography at 1:5 000 scale to order, without forgetting that its mission is to cover the whole of Catalonia.

The Topographic base of Catalonia at 1:5 000 (BT-5M) is the largest scale digital topographic database that covers the entire territory of Catalonia and the *Mapa topogràfic de Catalunya 1:5 000* (topographic map, MTC-5M) is derived from this. The MTC-5M consists of 4 275 sheets and each one covers approximately 800 hectares.

The first version of the digital MTC-5M was begun in 1985 and was finished in 1995. This was vectorial information captured with photogrammetric systems, and it was orientated towards a paper format.

In 1996, when work was begun to update the first version, changes were introduced in the data model to obtain a database oriented towards GIS applications and also to make it easier to perform generalization tasks in the future, so that derived products at smaller scales could be obtained.

Content of version 2.0

The present database is made up of vectorial information compiled exclusively by photogrammetric stereoplotting.

The relief is represented by contour lines, spot heights at significant points, taluses and margins. The contour lines are at 5 meter intervals, with master contour lines every 25 meters. In extremely flat zones, auxiliary contours are generated every 2.5 meters.

The planimetric data gathers information on hydrography (drawing a distinction between the linear hydrographic network and water masses, and between natural and artificial waters), communication routes (classified as paved and unpaved roads, railways and cable transport); settlement (buildings, constructions, sports fields, fences, enclosures and auxiliary urban elements), and land and vegetation cover (woods, rocky areas, marshes, beaches, sand dunes, flood-prone stream beds, apparent agricultural plots and groups of trees).

Besides updating the existing data, the new database provides a new structuring of the data based on topographic objects, the creation of a totally 2.5D database, the creation of hydrographic and road networks, the polygonation of areas, the incorporation of new concepts and a more detailed classification of the elements.

The database has a dictionary, published on CD-ROM, which describes its technical specifications and the objects used for the representation of the topographic elements. A geometric representation has been established for each element that describes its spatial component (point, line, polygon) and the relationships of connection and priority with the other topographic elements. Information is also given referring to the definition of each element, the attributes that describe them, the classification criteria and the method by which they are obtained, the selection criteria, the possible combinations of attributes, the components of the complex elements and the relationships established for each one.

The data is associated with some metadata, that is to say, it is accompanied by a description of the principal characteristics of the database, the method of preparation, technical data, content, etc.

Updating

Given that this project is primarily based on photogrammetric flights, due to the age of some flights it was advisable to begin to study the updating process of this new version before finishing the coverage of the whole of Catalonia.

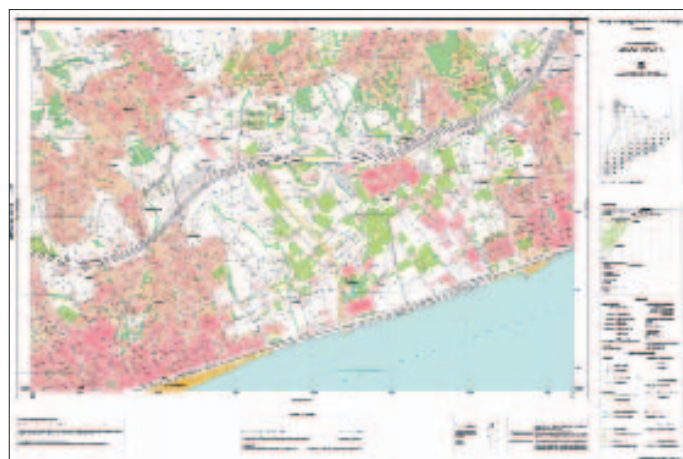
The updating criteria are to work on the zones with the oldest flights or those that have undergone significant changes, and to respect the scale of the original flight in order to guarantee the maximum coherence with the data that has not changed.

As the structure of the data has not changed, the updated sheets are still sheets of version 2.0. What has changed is the edition, for maps on paper, or revision, for digital data.

Distribution

The BT-5M is distributed in various vectorial formats (DGN, DXF and EXPORT), and it includes the toponymy, but not the cover sheet. The metadata associated with each sheet and the data dictionary is also distributed.

The MTC-5M is distributed on paper or in raster form. For distribution on paper, inkjet plotters are used with a resolution of at least 600 dpi. The raster is distributed with the formats GEOTIFF and MrSID free of charge (the only cost is for the medium on which it is supplied and the recording of data). It can also be downloaded free of charge from the ICC web site with MrSID.



El Masnou sheet



Hydrographic network



Road network