Country Profile: Spain

Country Profile (PDF)

Country Resources

Topographic

Series	Publisher	Scale	Years	Sheets
Spain 1:25,000 Scale Topographic Maps (MTN25)	IGNE	1:25,000	1984 – 2016	4,124
Spain 1:50,000 Scale Topographic Maps (MTN50)	IGNE	1:50,000	1999 – 2015	1,081
VMAP0 1:1,000,000 Scale Vector Data	NIMA	1:1,000,000	1992	4
Spain 1:100,000 Scale Topographic Maps (Serie C)	SGE	1:100,000	1966 – 2007	291

Nautical

Series	Publisher	Scale	Years	Sheets
Spain Nautical Charts	Armada	Varies	1979 – 2025	601

Aeronautical

Series	Publisher	Scale	Years	Sheets
France 1:500,000 Scale Aeronautical Charts	IGN	1:500,000	2016	6

Geoscientific

Series	Publisher	Scale	Years	Sheets
Algeria 1:500,000 Scale Geology and Mineral Resources Maps	BRGM	1:500,000	1969	3
Spain 1:200,000 Scale Geological Maps	IGME	1:200,000	1980	1
Western Sahara 1:1,500,000 Scale Geological Map	IGME	1:1,500,000	1958	1
Spain 1:1,000,000 Scale Geological Map	ITGE	1:1,000,000	1994	1
Morocco 1:500,000 Scale Geological Maps	MEM	1:500,000	1978	5
Morocco 1:1,000,000 Scale Geological and Mineral Resource Maps	SGM	1:1,000,000	1999	2

Thematic

Series	Publisher	Scale	Years	Sheets
The World 1:30,000,000 Scale Topographic Map Series 1145 (NGA)	DMA	1:30,000,000		2

Global Census Archive: GIS Census Data

East View Geospatial has an ongoing effort to add GIS census data to our Global Census Archive program. Please contact us for the status and availability of Spain census resources.

Global Resources

Topographic

Series	Publisher	Scale	Years	Sheets
Soviet Military City Plans	VTU GSh	Varies	1944 – 2003	3,021

Soviet Military 1:100,000 Scale Topographic Maps	VTU GSh	1:100,000	1947 – 1999	24,897
Soviet Military 1:200,000 Scale Topographic Maps	VTU GSh	1:200,000	1949 – 2009	17,799
Soviet Military 1:500,000 Scale Topographic Maps	VTU GSh	1:500,000	1953 – 1998	3,093
Soviet Military 1:1,000,000 Scale Topographic Maps	VTU GSh	1:1,000,000	1948 – 1994	1,089

Nautical

Series	Publisher	Scale	Years	Sheets
NGA Nautical Charts POD Certified (All Scales)	NGA	Varies	1943 – 2013	4,517

Aeronautical

Series	Publisher	Scale	Years	Sheets
Joint Operations Graphic (JOG 1501A) 1:250,000 – Aeronautical	DMA	1:250,000	1958 – 2007	6,380
Tactical Pilotage Chart (TPC) 1:500,000 Scale – Aeronautical	DMA	1:500,000	1967 – 2006	618
Operational Navigation Chart (ONC) 1:1,000,000 Scale – Aeronautical	DMA	1:1,000,000	1969 – 2001	248
Jet Navigation Chart (JNC) 1:2,000,000 Scale – Aeronautical	DMA	1:2,000,000	1971 – 1999	117
Global Navigation and Planning Chart (GNC) 1:5,000,000 Scale – Aeronautical	DMA	1:5,000,000	1981 – 1999	27

Note: East View Geospatial is continuously sourcing new resources that may not yet be listed in Global Explorer. Please contact us if you have geodata needs beyond what is listed above and we will be happy to discuss available off-the-shelf and custom solutions.

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Historical Country Mapping Information

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Country Profile (PDF)

Topographic

Two central mapping organizations collaborate in the official surveying and mapping of Spain. The civilian official mapping agency is the **Instituto Geografico Nacional (IGNE)**, which was founded in 1870. **IGNE** collaborates with **Servicio Geográfico del Ejército (SGE)** its military equivalent.

There is a long history of mapping at 1:50,000, the first topographic sheets at this scale having been issued in 1875. **IGNE** maintains the *Mapa topográfico nacional*, and **SGE** publishes the *Mapa militar Serie L*. These two maps share similar sheet lines, both now use the UTM projection, Hayford ellipsoid, but employ different sheet numbering systems. Complete coverage in the civilian series on a Lambert polyconic projection was reached in 1968. After 1968 the *Mapa topográfico* was recast onto the UTM projection and redesignated as a five-color map complete in 1,106 sheets, with relief shown by 20 m contours and occasional hill shading. Both old and new series cover the Balearics, and the Canary Islands. The military (Serie L), a seven color map with a UTM grid and 20 m contour interval, was started in 1976 and completed in 1986. From 1992 **SGE** has been compiling a digital 1:50,000 scale map, with the aim of replacing the conventional (Serie L).

A new 1:25,000 scale series was started in 1968 and this is increasingly becoming the national basic scale as coverage advances. The civilian version (MTN 25) is a five-color map on the UTM projection with 10 m contours, and covering a quarter of the area of each 1:50,000 quadrangle. This will require 4,170 sheets for complete national coverage, and the series is progressing at over 100 new maps a year. Since 1986, **IGNE** has been using digital stereo-plotting to capture the geographic objects mapped in the 1:25,000 scale program, and has been building up the *Base cartográfica numérica (BCN 25)* from existing analogue mapping and by using a new digital production flow line. About 2,000 of the 4,170 sheets were available in digital versions towards the end of 1999. A digital terrain model of the whole country on a 25 m grid was completed from digital stereo-plotting by the end of 1997.

SGE is also publishing military 1:25,000 scale sheets in the (Serie 5V), superseding the old *Piano director* at this scale, and has also

issued about 250 1:10,000 scale maps in (Serie 2V).

Most smaller scales of topographic maps are published by **SGE**. At 1:100,000 scale there is complete coverage of Spain in the 296 sheet (Serie C), which shows relief with 40 m contours. **SGE** also publishes a 1:200,000 scale series, the military (Serie 2C), covering the mainland and Balearics in 86 sheets, whose regular sheet lines are used for several thematic series from other publishers. This map has been superseded by the digitally derived 1:250,000 scale (Serie 5L) in 43 larger format sheets. Other series of topographic maps from **SGE** comprise 1:400,000 scale coverage with 200 m hypsometric tints, and 1:800,000 scale coverage with 400 m tints, available as either a two-sheet version or in nine smaller maps.

Institut Cartogràfic de Catalunya (ICC) was established in 1982 as an autonomous commercial, industrial and financial agency responsible for the mapping of the Catalonian region. Extensive investment by **ICC** in basic map scales, in orthophoto mapping technologies and in digital mapping has resulted in Catalonia becoming one of the best mapped parts of Europe, with a single integrated mapping authority publishing topographic and thematic maps and data, on the UTM projection. Basic digital mapping is available in a number of different formats for use in GIS. 1:5,000 scale topographic coverage in 4,268 sheets was completed in 1993, and the second edition is in progress, with 5 m contours. The second edition of this map is being produced in a digital photogrammetric environment in parallel with the creation of a 1:5,000 scale digital database and digital relief model. An orthophoto map at the same scale is complete in 6,330 sheets, with a revised edition well under way. A 1:10,000 scale topographic map in 1,122 sheets has also been started. Small scale derived series include complete black and white, and color versions of a 1:25,000 scale orthophoto map in 304 sheets, half of the region is already covered in the second edition of these data; together with an 83 sheet topographic coverage started in 1997. The 41-sheet full-color 1:50,000 scale *Mapa comarcel de Catalunya* is published as a topographic line map and is also available in atlas format. A second edition of this printed map began in the late 1990s. The third revision of a 1:50,000 scale database was started in the late 1990s. An 85-sheet color or black and white 1:50,000 scale image map is derived from SPOT imagery. Similar ranges of 1:100,000 and 1:250,000 scale image maps are also published, including orthophoto relief mapping derived from LANDSAT 5 Thematic Mapper imagery. The 1:250,000 scale map is also available on CD-ROM, released in 1999 as a second version with new viewing software. A new derived 1:100,000 scale topographic coverage in eight sheets is also in progress. 1:2,000 scale mapping of Barcelona has been completed. Thematic coverages at 1:250,000 and 1:500,000 scale are published for about twenty different subjects, and geological mapping is being carried out at larger scales. Other larger scale themes include 1:50,000 scale coverage in a town planning and land use map at 1:50,000 scale. Many of these maps are brought together with statistics, text diagrams and photographs in the electronic *CD-atles de Catalunya*, published in 1993. **ICC** also publishes tourist maps, sometimes in collaboration with commercial publishers such as **Editorial Alpina** or **Randonnéees Pyrénnéennes** and operates an ongoing overseas mapping program in particular in Venezuela and Andorra.

Instituto Cartografia de Andalucía (ICA) was established in 1993, taking on the mapping responsibilities of the Junta de Andalucía. Its remit is to develop topographic basic and derived mapping programs in the region and to coordinate thematic mapping. Between 1987 and 1992 I**CA** completed the 1:10,000 scale *Mapa topográfico de Andalucía*, in 2,745 sheets, with 10 m contours on the UTM projection. A four-year revision cycle is in operation for this series, using regularly flown aerial coverage. Other basic scales include over 800 1:5,000 scale sheets, covering coastal areas and urban agglomerations, as well as 1:2,000, 1:1,000 and 1:500 scale urban series covering 1,500 built-up areas in the region. Derived series at 1:40,000 and 1:20,000 scales are also published for the whole of Andalucía, as well as a regularly updated 1:800,000 scale regional map. **ICA** is producing an official regional atlas in conjunction with the Universidad de Málaga, the first of a projected four volumes appeared in 1998. It is also collaborating with the French **GEOLITTOMER** in the publication of physiographic mapping of the Andalucian coast. Gazetteers of place names are also published.

The **Comunidad de Madrid** established a mapping agency for the capital region in 1971 and had completed a number of conventional mapping programs by the mid-1980s. These comprised 1:5,000 scale mapping of the whole province, with 1:2,000 scale coverage of urban areas. Digital programs are now maintained, with mapping derived from 1:18,000 scale aerial coverage, and from SPOT ortho-images. Derived mapping is published in hard copy by the **Servicio Cartográfico Regional** in the **Dirección General de Urbanismo** including regularly revised coverage in 17 sheets at 1:50,000 scale, showing relief with 20 m contours and two sheets at 1:100,000 scale. Tourist mapping and 1:200,000 and 1:500,000 scale coverage are also issued.

The **Departamento de Obras Públicas Transportes y Communicaciones (DOPTC)** of the Navarra government acts as the regional mapping agency in Navarre and all of its maps use the UTM projection and grid and the Alicante baseline. Digital cartography and orthophotomaps are held at 1:5,000 scale. Topographic mapping at 1:10,000 scale includes 5 m contours, with 16 published sheets for the area of each 1:50,000 **IGNE** sheet. Over 100 digital orthophotomaps at 1:25,000 scale have been published. Thirty-seven 1:50,000 scale sheets are required for complete coverage of the region. Navarre is also covered in eight locally published 1:100,000 scale maps, derived from **IGNE** data, and showing relief with hypsometric tints and 40 m contours. Single-sheet coverage at 1:200,000 and 1:400,000 scales is also available. In addition to these regional coverages the urban area of Pamplona has been captured at 1:500 scale. 1:10,000 scale

cadastral mapping of Navarre is available in a multi-volume provincial gazetteer and atlas. The regional bank **Caja de Ahorros de Navarra** issued a significant state atlas in 1986, with many multicolor thematic maps.

Soviet military topographic mapping of Spain exists at the following scales: 1:1,000,000 (11 sheets, complete coverage, published 1976-1988); 1:500,000 (28 sheets, complete coverage, published 1979-1987); 1:200,000 (136 sheets, complete coverage, published 1978-1996); 1:100,000 (398 sheets, primarily complete coverage, published 1964-1991); 1:50,000 (5 sheets, limited coverage, published in 1989) and city (1:10,000 to 1:25,000) topographic mapping of 34 major cities from Algeciras to Vitoria published between 1973 and 1991. These products are available in print, digital raster and digital vector GIS formats from **East View Geospatial**.

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Nautical

Instituto Hidrográfico de la Marina (IHM) established in 1943, is the national hydrographic charring agency, maintaining a range of over 400 nautical charts of Spanish coastal waters, the Atlantic Ocean and the Mediterranean Sea.

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Aeronautical

The **Centro Cartográfico y Fotográfico del Aire (CCFA)** compiles and publishes aeronautical charts of Spain for civilian and military flight. These include regularly revised 1:1,000,000 scale coverage in two sheets, conforming to ICAO specifications and single sheet upper and lower airspace charts at 1:2,000,000 scale. **CCFA** also makes extensive use of digital cartographic techniques in the publication of terminal and departure charts.

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Geological/Scientific

Instituto Tecnológico y Geominero de España (ITGE) is the national earth science mapping agency. Founded in 1849 it is responsible for the compilation and publication of geological, hydrological and minerals mapping of Spain. The basic-scale geological survey is the 1:50,000 *Mapa geológico national* for the mainland, with 1:25,000 scale mapping being published for islands. The second series basic mapping (Proyecto MAGNA) was started in 1972 and completed in 1996 and covers Spain in 1,081 sheets, a remarkably rapid completion of a major modern earth science data collection programme. Maps use topographic sheet lines and are published in color with accompanying sheet memoirs. Since 1995 these memoirs have incorporated additional geomorphological mapping. Other 1:50,000 scale coverage is being compiled for hydrogeology and for environmental planning geology of urban areas. There is complete coverage of Spain in various 1:200,000 scale series, using the (Serie 2C) sheet lines. *Mapa síntesis geológica* gives complete chrono-stratigraphic coverage, and geotechnical and metallogenic mapping are also complete, with new editions being published for some sheet areas. A hydrological series is complete, as are two new geological series are replacing earlier sheets. Complete terrestrial coverage is planned in the *Mapa geológico*. Eight different earth science themes are published at 1:1,000,000 scale. **ITGE** also published 1:25,000 scale urban geological mapping, as well as small scale single element maps and an increasing number of applied regional maps, often in association with regional authorities, and including four geoscientific regional atlases.

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Imagery

In the 1990s **IGNE** published orthoimage maps of Spain, giving complete coverage and using simulated true-color LANDSAT data. Three

resolutions are available: 1:500,000 in 12 sheets, 1:250,000 in 49 sheets, and a 1:100,000 scale series complete in 177 sheets. This largest scale is regularly updated and includes place names on the satellite image base. However **IGNE** publishes most of its smaller scale series mapping as conventional line maps on provincial or regional sheet lines. A 1:200,000 scale topographic provincial map is complete in 48 maps (including Ceuta and Melilla). These maps are updated regularly and show relief with 100 m contours and hill-shading. The BCN200 digital database has been captured from this series. This comprises seven layers, available by sheet or province and is updated in biannual cycles: a new digital series of provincial maps is being derived from this data. A digital terrain database with a resolution of 200 m has also been derived from this source. A series of maps at scales between 1:100,000 and 1:400,000 is also published for each of the 17 autonomous regions in the country. 1:500,000 scale coverage of the Iberian peninsula conforming to World series 1404 specifications is also issued.

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Soil

Soil mapping in Spain has almost all been carried out in local initiatives, rather than in centrally sponsored programs. Detailed surveying of many of the provinces was sponsored by the **Consejo Superior de Investigaciónes Cientificas (CSIC)** and carried out by the **Instituto de Edafolgía** with maps published at 1:200,000 scale in conjunction with local research centers. Around 40 1:200,000 scale sheets were published from the 1960s. A national soil map at 1:1,000,000 scale prepared in the 1960s.

Soil mapping has been carried out by **ICONA** in conjunction with local Universities. The most notable large scale initiative has involved the **University of Murcia** and is designated *Proyecto LUCDEME*. This has resulted in soil mapping at 1:100,000 scale for the entire provinces of Murcia and Almeria and adjacent parts of Andalucía, published with accompanying descriptive texts. Nearly 50 sheets have been published since this project started in 1986 and correspond to 1:50,000 scale topographic sheet lines.

The regional government in Valencia is collaborating with **MAPA** and local universities in soil mapping of the region and has also compiled significant digital topographic coverage. Among other university institutes active in map publication are the **Servicio de Cartografía Universidad Autónoma de Madrid (SCUAM)** established in 1987.

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Vegetation/Forestry

Ministerio de Agricultura Pesca y Alimentación (MAPA) carries out national agricultural and land use mapping as well as a variety of local resources mapping programs. **MAPA** also collaborates with other resources mapping agencies and distributes their maps. 1:50,000 scale map series were started in 1974 by the **Dirección General de la Producción Agraria (DGPA)** within **MAPA**, and use the topographic map as a base. Two series are in progress. The *Mapa de cultivos y aprovechamientos* is a colored land use map, indicating over 20 basic types and supplemented by land management information as a point and area symbol overlay. This series is accompanied by agricultural resource booklets for each sheet area and gives complete coverage of the country. A parallel agricultural land classification series is still in progress. 1:200,000 scale provincial agricultural land use mapping was started in 1982 and a generalized version of these data gives single sheet national 1:1,000,000 scale coverage. A national agroclimatic atlas was also issued in 1986, including six different themes of 1:500,000 agroclimatic maps.

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Thematic

Published thematic coverage includes two series of forest maps, the first at 1:200,000 scale started in 1990 on (Serie 2C) sheet lines, the second at 1:250,000 scale provides a provincial inventory for the period 1986–95, each mapped province being accompanied by a detailed descriptive monograph. An erosion risk series at 1:400,000 scale was compiled in the late 1980s, and published in four themes, with an accompanying text.

Instituto Nacional Meteorología (INM) publishes climatalogical maps, including a national climate atlas. Hydrographic mapping in Spain has been carried out by two different agencies. The **Instituto Español de Oceanografía (IEO)** founded in 1914 publishes thematic oceanic maps and fishing charts.

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Atlas

In addition to these topographic maps and data **IGNE** publishes the national atlas. This is divided into 13 thematic sections, which usually include the best available small scale thematic coverage. These sections are either available in 47 separate parts or as six bound volumes and together comprise over 2,000 pages and 4,000 maps. Multimedia versions of these are also in progress, the first electronic theme to be issued on CD-ROM covers *Organización del Estado*. Digital administrative boundary data derived from 1:25,000, 1:50,000, 1:200,000, 1:500,000 and 1:1,000,000 scales are also separately available. A small-scale digital database of the country (BDN 1000) is available in four separate layers. **IGNE** also publishes maps for the tourist market, including larger format topographic coverage of national parks and of tourist areas in the *Mapa guía* series, and a series of plastic raised relief maps.

A cancer atlas has been coordinated by the **Servicio de Epidemiología del Cáncer**, Madrid, and presents mortality mapping for different tumours over the period 1975-86. This is available in English or Spanish versions.

Two firms concentrate upon the publication of major reference atlases. **Aguilar's** large range of atlases includes the regularly revised and prestigious *Atlas gráfico*, including 1:250,000 topographic coverage, town maps, thematic mapping and a 50,000 place name gazetteer. Regional atlases have also been published as well as a gazetteer of place names. The other significant publisher of atlases is **Planeta**, Barcelona, whose most significant release is the seven-volume *Gran atlas*, with each volume concentrating upon a region of the country and giving in depth thematic and topographic coverage.

VisualGIS Engineering was established in 1993 and publishes electronic atlases in its *VisualMap* series, which extended late in 1999 to 13 European cities. National electronic atlases of 11 European nations are also maintained. In Spain their product range includes electronic street atlases of Madrid, Barcelona, Valencia, and Seville, a tourist multimedia atlas of the Pyrenees and an electronic route finding atlas of the country as a whole.

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Cadaster

Until the late 1980s **IGNE** was also responsible for the cadastral surveying of Spain, including the publication of uncontoured land ownership maps at 1:5,000, 1:2,000 and 1:1,000 scales. The **Centro de Gestión Catastral y Cooperación Tributaria (CGCCT)** was set up in 1987 to take over these cadastral responsibilities and the **Dirección General del Catastro** has successfully completed urban cadastral mapping at 1:500 and 1:1,000 scales, with digital mapping maintained for 793 towns across Spain. Rural data capture uses orthophoto mapping at 1:5,000 and 1:2,000 scales, with boundaries superimposed onto image bases.

In Galicia the regional mapping agency is the **Sociadade para o Desenvolvemento Comarcal de Galicia (PDC)** in the Xunta de Galicia. **PDC** supports planning and integrated territorial development of the region, including the newly designated 53 comarcs or administrative regions established from 1997. It has developed the SITGA land information system for the region since 1992, with georeferenced databases containing cartographic and alphanumeric data in digital form and captured from existing mapping, aerial photography and satellite image data. These data are stored in three separate databases, relating to the environment, socio-economic data and infrastructural information. A 1:50,000 scale digital land model, boundary data relating to all units of 100 inhabitants and above, road center line data and a digital model of the stream network form the main basis of the database. 1:25,000 scale land use and land designation maps are supplemented by a number of layers of earth science information. Resource planning is supported by socio-economic data layers. Urban areas are available at higher resolutions, with digital 1:5,000 and 1:10,000 scale orthophoto map coverage.

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Tourist/Reference

Editorial Alpina publishes an extensive range of walking maps of the Pyrenees and the coastal cordilleras of Catalonia, usually at a scale of 1:25,000 or 1:40,000 and accompanied by walking and climbing guides. **Firestone Hispania** publishes a range of tourist mapping, including road mapping and 1:200,000 *mapas turísticos*, printed with street maps of major cities in the area, on the reverse of the map sheet.

Almax Editores publishes town mapping, including six different map products for Madrid. A similar range is available from **Telstar Distrimapas (Telstar)**, who also issues mapping of tourist and holiday destinations. **Editorial Everest**, Leon also issues town mapping. **Editorial Pamies**, Barcelona also publishes street guides to major cities, concentrating upon the Catalonian region.

Edigol Ediciones SA, Barcelona concentrates upon the publication of educational wall maps.

The **Ministerio de Obras Públicas, Transportes, y Medio Ambiente (MOPTMA)** publishes an annually revised road map, at scales between 1:250,000 and 1:400,000.

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