Country Profile: United States

Country Profile (PDF)

Country Resources

Topographic

Series	Publisher	Scale	Years	Sheets
Cuba 1:1,000,000 Scale Topographic Map	FCO	1:1,000,000		1
VMAP0 1:1,000,000 Scale Vector Data	NIMA	1:1,000,000	1992	4
USDA Forest Service 1:24,000 Scale Topographic Maps	USDA	1:24,000	1950 – 2016	10,396
USDA Forest Service 1:63,360 Scale Topographic Maps (Alaska)	USDA	1:63,360	1960 – 2016	329
USGS 1:24,000 Scale Topographic Maps (HTMC) – Hawaii	USGS	1:24,000	1952 – 1997	137
USGS 1:24,000 Scale Topographic Maps (US Topo)	USGS	1:24,000	2013 – 2025	65,224
USGS 1:24,000 Scale Topographic Maps (HTMC)	USGS	1:24,000		53,177
USGS 1:25,000 Scale Topographic Maps	USGS	1:25,000	1935 – 2001	929
USGS 1:31,680 Scale Topographic Maps	USGS	1:31,680	1937 – 1953	16
USGS 1:62,500 Scale Topographic Maps	USGS	1:62,500	1887 – 1988	6,775
USGS 1:63,360 Scale Topographic Maps	USGS	1:63,360	1948 – 2000	2,788
USGS 1:100,000 Scale Topographic Maps	USGS	1:100,000		1,808
USGS 1:125,000 Scale Topographic Maps	USGS	1:125,000	1886 – 1959	931
USGS 1:250,000 Scale Topographic Maps	USGS	1:250,000	1892 – 1992	632

Nautical

Series	Publisher	Scale	Years	Sheets
NOAA Nautical Charts (Training Editions)	NOAA	Varies	1941 – 2021	35
NOAA Nautical Charts (All Scales)	NOAA	Varies	2000 – 2020	328

Aeronautical

Series	Publisher	Scale	Years	Sheets
Canada 1:1,000,000 Scale World Aeronautical Charts (WAC)	CCM	1:1,000,000	1994 – 1998	18
FAA IFR Enroute Low Altitude Aeronautical Charts	FAA	1:18,000	2016	37
FAA IFR Enroute High Altitude Aeronautical Charts	FAA	1:37,000	2016	12
FAA 1:250,000 Scale Terminal Aeronautical Charts	FAA	1:250,000	2021	33
FAA 1:500,000 Scale Sectional Aeronautical Charts	FAA	1:500,000	2021	58
FAA 1:1,000,000 Scale World Aeronautical Charts (WAC)	FAA	1:1,000,000	2015 – 2016	19
Canada 1:250,000 Scale Aeronautical Charts	NAVCAN	1:250,000	2015 – 2017	7

Geoscientific

Series	Publisher	Scale	Years	Sheets
Compass Data Global Ground Control Points	CDI	N/A	1997 – 2010	14,278
Mexico 1:1,000,000 Scale Geological Maps	SPP	1:1,000,000	1981 – 1989	8

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 United States census resources.

Global Geography Library

Collection Name	Item Count	Published	Index Map / Title List
Wilderness Mineral Potential (USA, Vol. 1 & 2)	654	1984	title list
NOAA Nautical Charts (Final Editions)	1,023	2000-2024	title list
Tom Harrison Maps	87	2013-2024	title list

Global Resources

Topographic

Series	Publisher	Scale	Years	Sheets
Soviet Military City Plans	VTU GSh	Varies	1944 – 2003	3,020
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

Jump to: **Topographic | 3D/DEM | GIS/Vector | Nautical | Geological/Scientific | Imagery | Soil | Vegetation/Forestry | Thematic | Atlas | Cadaster | Tourist/Reference**

Country Profile (PDF)

Topographic

The mapping of the United States is carried out at both a federal and state level. In addition to the numerous federal agencies which are involved in some kind of mapping or spatial data collection activity, there are also government mapping agencies in each of the 50 states,

which undertake their own mapping or engage in cooperative programs with the federal government. Also at county and municipality level, many local government agencies are involved in spatial data handling. Finally, there are many private mapping companies, some providing custom mapping services, some publishing their own products, and many doing both.

Over the last decade, all aspects of mapping and spatial data handling in the United States have continued to move very strongly into a digital environment. The use of geographical information systems (GIS) has proliferated and has been stimulated by the growing availability of public domain spatial data in digital form. In 1990, a **Federal Geographic Data Committee (FGDC)** was established to coordinate the holdings of digital data at the federal level. A cornerstone of developments in spatial data collection and handling has been recognition of the need to share resources in order to avoid costly and unnecessary duplication of effort, and the consequent formation of partnerships between federal, state and private mapping organizations and institutions. This is being achieved through the development of the National Spatial Data Infrastructure (NSDI), initiated in 1994 to provide a framework of policies and programs for the cooperative collection, integration and dissemination of spatial data. Hand in hand with these developments has been the need to establish standards for digital data exchange, and in 1992, a Spatial Data Transfer Standard (SDTS) was approved, becoming mandatory for federal agencies in 1994.

Federal mapping agencies

The principal federal mapping agency is the **United States Geological Survey (USGS)**, founded in 1879 initially with the task of classifying public lands in addition to surveying the geological and mineral resources of the country. Today it continues to be responsible for the national topographic mapping programme as well as for earth science and certain other kinds of mapping.

USGS has four major divisions, concerned respectively with national mapping, earth sciences, water resources and biological resources. Of these, the National Mapping Division is responsible for the National Mapping Program (NMP).

In spite of the organization's name and its varied concerns, the printed topographic map has long been the USGS's best known product. Systematic topographic survey was initiated in 1882. The scales originally adopted were 1:125,000 and 1:62,500 (a little more than an inch to the mile), and in the early days, progress was quite rapid, 20 percent cover being achieved in the first 10 years. Since 1885, the topographic survey has proceeded through cooperative agreements between the federal survey and state surveys, with shared funding. Most of the country's topographic archive is a product of this cooperation, but it led to unequal progress between states, and by 1950 only about 50 percent of the land area had been covered at the basic mapping scale of 1:62,500. From about this time a shift was made to the preferred scale of 1:24,000 (one inch to 2,000 feet), which had been introduced in the 1930s in a cooperative mapping program with the **Tennessee Valley Authority**, and from the 1960s, revision of the 1:62,500 sheets ceased.

In the 1980s there was a drive to complete the basic scale mapping, with some sheets being issued as provisional 'P' editions, and by 1991, the conterminous United States had been completely covered by maps at the 1:24,000 scale (or in a few areas, by alternative 1:25,000 scale metric maps). In Alaska the basic scale is 1:63,360 (one inch to the mile), introduced in 1948, with some limited mapping at 1:24,000 or 1:25,000 in urban or developing areas. About 57,000 sheets are required to cover the conterminous United States at 1:24,000 scale, while Alaska requires 2,920 sheets at 1:63,360 scale.

The 1:24,000 scale sheets are commonly referred to as 7.5-minute quadrangles or 'quads', since each sheet covers a quadrangular area of 7.5′ latitude by 7.5′ longitude. The projection is Transverse Mercator, and the UTM grid is shown on the face of the map. Contemporary maps use the North American 1983 Datum and GRS 80 spheroid. Sheets are printed in five or six colors, with brown for relief features, black for cultural information and place names, and blue for water. Woodland is in green, and red is used for land division and major roads. Built areas, formerly in screened red, are now shown in grey. Contours are in feet (except on the 1:25,000 scale sheets), with the interval varying according to ruggedness of the terrain on any given sheet. The quads are usually referred to by name, and are accessed on a state-by-state basis.

The conterminous United States are also covered by a 1:100,000 scale quadrangle series, began in 1975, with sheets covering 30′ × 60′ and with metric contours and distances. This series was completed in 1986 for all states except Alaska, to meet a deadline required for the 1990 census, but many sheets were initially only available in a planimetric version. Subsequently these have been converted to full topographic editions. Also beginning about this time, but not for all states, is a series of maps on county sheet lines. These are published at either 1:50,000 or 1:100,000 scale and each county map comprises one or more sheets according to the size of the county. They are derived from the 1:24,000 scale quadrangle maps.

A 1:250,000 topographic series also covers the whole of the United States. This was initiated in the 1950s by the **Army Map Service** (now **NIMA**), but was taken over in 1958 by **USGS** as part of its civil topographic mapping program. 489 sheets cover the conterminous

United States, and a further 153 cover Alaska. The projection is Transverse Mercator, and the sheets are subdivisions of the *International map of the World*, each covering 1° latitude by 2° longitude. Although numbered, sheets are usually identified by name, sheets east of the Mississippi entitled are *Eastern United States*, and those west of the river, *Western United States*. The series has a UTM grid, but also shows township and range on the western sheets. Contour interval varies with the nature of the terrain. Some sheets have been published as satellite image maps, usually with the conventional line map printed on the reverse, and maps covering coastal areas will all eventually include bathymetric contours.

The **USGS** also publishes a series of state maps, usually in three separate editions, comprising a base map, a contoured (topographic) map and a relief shaded map. For most states the scale is 1:500,000, although a few maps are at smaller scales, and some of the smaller states are grouped on a single sheet.

In addition to the standard map series, **USGS** has published an extensive list of specially formatted maps of national parks and monuments. The maps are of varying scales, and many have shaded relief and textual commentary. Since the early years of the LANDSAT satellite remote sensing program, **USGS** has also issued, through the 1970s and 1980s, a range of satellite image maps.

In 1975, as part of its National Mapping Program, **USGS** began to compile a base series of land use and land cover maps (LULC) sourced from aerial photographs. Publication scale was mainly 1:250,000 (some coastal areas are at 1:100,000). LULC maps use a land cover classification of nine general and 37 sub-categories. Sets of five associated maps were compiled at the same scale, showing respectively administrative boundaries, hydrologic units, census county divisions and federal and state land ownership.

With the completion of the basic scale topographic map archive, attention has focused on the problems of revising and maintaining the currency of this series. Most 1:24,000 scale sheets are subjected to a rapid process of 'limited update' sourced from *digital orthophoto quadrangles* (DOQs), but without the field checking necessary to produce 'standard updates'. Eventually a five to ten-year revision cycle is planned. Meanwhile, developments in the production of digital data have continued to evolve rapidly, and the aim is to convert the entire 1:24,000 scale archive to a digital format, as part of the National Digital Cartographic Data Base. Essentially, digitizing and revising the series have become integrated activities. A revised specification for the basic scale mapping has aided the digital process, while advanced cartographic systems installed at Reston have facilitated the digital production of hard copy maps. The first digitally produced quadrangle map appeared in 1993.

Soviet military topographic mapping of the United States is available at the following scales: 1:1,000,000 (91 sheets, complete coverage, published 1950-1993); 1:500,000 (266 sheets, complete coverage, published 1955-1990); 1:200,000 (1,803 sheets, primarily complete coverage, published 1956-1987); 1:100,000 (2,151 sheets, partial coverage, published 1961-1977) and city (1:10,000 to 1:25,000) topographic mapping of 19 major cities from Boston to Worcester published between 1975 and 1985. These products are available in print, digital raster and digital vector GIS formats from **East View Geospatial**.

State mapping agencies

The **New York State Department of Transportation (NYSDOT)** is exceptional in having a long established, detailed mapping program. This includes a 968-sheet series of 1:24,000 quadrangle maps, with all sheets revised since 1990. The program also includes a series of multicolour county base maps, mainly at 1:75,000 scale and derived in part from **USGS** mapping, a series of urban area maps and village atlases, and 1:250,000 scale state mapping available as a four-sheet paper map or in atlas format.

Although not a state survey (it is a federal corporation) the **Tennessee Valley Authority (TVA)** has a regional interest in the whole of the Tennessee river catchment, and is an important source of maps of that area. It established a mapping office at Chattanooga in 1936 and continues to provide a range of mapping, including topographic quadrangle maps in cooperation with the **USGS**, navigational charts and lake recreation maps.

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3D/DEM

Federal mapping agencies

Digital elevation models (DEMs) are gridded elevation data derived from **USGS** topographic maps. A DEM with 3-arc-second or 90 m

ground interval elevation values has been prepared for the whole of the United States from 1:250,000 scale maps. 30 m gridded data are available for 7.5-minute topographic quads.

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GIS/Vector

Federal mapping agencies

Digital line graphs (DLGs) is the name given to vector digitized maps. Initially, stream networks and transportation data were digitized from the 1:100,000 scale quadrangle series to provide digital base mapping for the 1990 census. Boundaries, hydrological and transportation networks were also digitized from 1:2,000,000 national atlas mapping, and national coverage is available. Currently, the vector digitizing of the 1:24,0000 scale basic mapping is well under way. From the mid-1990s, a new enhanced format for digital line graphs, DLG-E, has been introduced. This provides data in a more structured format, suitable for GIS applications.

Digital raster graphics (DRGs) are scanned images of printed maps. In 1996 **USGS** 1:24,000 scale topographic maps began to become available in this format. They are being produced through a partnership between **USGS** and **Maptech**, a company founded in 1989, originally to develop electronic raster charts from **NOAA** nautical charts. Each CD-ROM contains topographic maps for a one-degree block, and in 1999 about half of the United States had been issued in a program which will shortly provide complete cover. The CD-ROMs are complete with viewing and navigation software developed by **Maptech** and now called *Terrain Navigator*. Map views are retrievable by place name, and latitude, longitude and elevation values may be found for any point on a screen display. The software also facilitates the tracing and measurement of routes, and calculation of elevation changes, and can be interfaced with the GPS. Further, customized CD-ROMs, called *Take a hike* are being issued for areas of particular recreational interest, such as National Parks, State Parks and National Forests. **USGS** plans to produce DRGs of the 1:100,000 and 1:250,000 scale map series and of the Alaska 1:63,360 mapping.

In the 1980s, the **United States Census Bureau (USCB)** collaborated with the **USGS** in developing a digital topographical database for the 1991 census called TIGER (Topologically Integrated Geographic Encoding and Referencing); this combined a reference base map with census statistical boundaries.

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Nautical

Federal mapping agencies

The **Office of Coast Survey (OCS)**, operates as part of the **National Ocean Service (NOS)** of the **National Oceanic and Atmospheric Administration (NOAA)**. The **Marine Chart Division** of **OCS** produces and maintains over 900 charts covering the coastal waters and adjacent ocean areas of the United States and its Territories, and of the Great Lakes. Also under **NOAA** is the **Office of Aeronautical Charting and Cartography (AC&C)**. The **Aeronautical Charting Division of AC&C** produces a range of aeronautical charts, including 1:500,000 scale sectional visual navigation charts of the conterminous states and Alaska, and a series of *World aeronautical charts (WAC)* at 1:1,000,000 scale.

NOAA's National Geophysical Data Center (NGDC) publishes a large number of data sets, many of them spatially referenced, and most of them in digital format. Many of these are available on CD-ROM and include global as well as North American data sets. Current CD-ROM products include *Geophysics of North America*, *Global ecosystems data*, *Global relief*, *GLOBE Version 0.1*, *NOS hydrographic survey data* and many more.

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Geological/Scientific

Federal mapping agencies

Earth science mapping is undertaken by the **Geologic Division** of **USGS**, and there is a long history also of joint mapping projects between the USGS and state geological surveys. In 1992, a new Geological Mapping Act was passed by Congress, which recognized the need to improve and increase geological map cover and which authorized a new national program of cooperative mapping between the **USGS**, state geological surveys, academic institutions and private companies. The Act provided for increased levels of funding up until 1996 and envisaged that detailed mapping would continue to be carried out and archived at both state and national level, but that the mapping would also be consolidated to form an intermediate scale digital map database at the national level. Supplementary national databases were to be created for geophysical mapping (at 1:100,000 scale), geochemistry (at 1:500,000), palaeontology and geochronology. Although there have been difficulties in implementing the Act, first in securing the promised funding, and later through delays in reauthorizing the Act, progress is nevertheless being made towards its goals. In 1998, a science strategy for the Geologic Division for the decade 2000-2010 was also prepared. Although essentially a research strategy, it also anticipates increased cooperation with the other **USGS** divisions and with the state geological surveys and other organizations. Mapping products from the science program will include probabilistic hazard maps and interactive data bases.

The traditional corpus of **USGS** earth science maps divides into several categories. Most fundamental are the color-printed *Geologic quadrangle* (GQ) maps which use the 7.5-and 15-minute quadrangle topographic mapping as a reference base. The Geologic investigations series supersedes the pre-1996 *Miscellaneous investigations* series, and embraces a more varied range of maps, both in theme and format, including photogeological maps, and also the many planetary maps published by **USGS** for **NASA**. The *Miscellaneous field studies* series is designed for the rapid publication of preliminary results, and includes over 2,000, mostly black and white maps. These also cover a wide range of topics, but with an emphasis on mineral resource assessments and geophysical and geochemical survey. There is also a *Coal investigations* (C) series covering areas where coal is an exploitable resource.

For most states there is a a general single-sheet geological map covering the whole state. Some of these have been compiled by the **USGS** in cooperation with the state surveys, and are part of the I-series of maps.

A series of 1:1,000,000 scale maps of surficial geology has been in progress since 1983 and is planned to form a 51-sheet *Quaternary geologic atlas of the conterminous United States*. A derived map at 1:2,500,000 scale is planned, together with a digital database of the information contained in the principal series.

In 1991 the **USGS** began a program of publishing digital earth science data on CD-ROM. These include a variety of information, ranging from records for the National Geochemical Database, via collections of photographs from the **USGS Photographic Library**, to maps held in digital format, the latter including the *Geology of Nevada*, a geological map of the seafloor in western Massachusetts Bay, and a digital representation of the 1974 1:2,500,000 scale geological map of the conterminous states.

State mapping agencies

Each state government carries out its own local mapping, and mapping activities are usually spread through several agencies. Under the remit of the National Spatial Data Infrastructure, there are moves to integrate data sets and improve the exchange of data at the state, municipal and county level as well as the federal level. So, for example, Florida established a Geographic Information Board in 1996 to coordinate the use and access to geographical data within the state, while in Pennsylvania, the Pennsylvania Spatial Data Access System (PASDA) has been developed by Pennsylvania State University with funding from the **Pennsylvania Department of Environmental Protection** as a node of the National Spatial Data Infrastructure.

The principal government agencies involved in mapping at the state level are usually the State Geological Surveys, and the **Departments of Transportation**. As well as producing geological, geophysical and mineral resource mapping, the geological surveys also cooperate with the **USGS** in the production and revision of the federal topographic map series.

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Imagery

Federal mapping agencies

Digital orthophoto quadrangles (DOQs) are a product of the National Aerial Photography Program (NAPP). This program was the successor of the original National High Altitude Aerial Photography Program, begun in 1980 and completed in 1987. The new program was undertaken by **USGS** in cooperation with several federal agencies, and was completed in 1992, providing complete stereoscopic cover of the conterminous United States in 330,000 color-infrared prints at a nominal scale of 1:40,000. A new program, NAPP II was initiated in 1992, with the aim of initiating a five-year cycle. DOQs are photo images which have been digitally corrected to remove the radial displacement inherent in aerial photographs.

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Soil

Federal mapping agencies

The **National Resources Conservation Service (NRCS)** (formerly **Soil Conservation Service**) is part of the **United States Department of Agriculture (USDA)** and is concerned with the mapping of soils. The program of large scale conventional soil mapping dates from 1899. Mapping has been undertaken on a county basis in cooperation with the state agricultural experimental stations and published by **USDA**. Since 1957, most soil maps have been printed on a photographic base. In 1997, the total number of published surveys was 3,589. Soil survey is coordinated nationally by the **National Soil Survey Center (NSSC)** at Lincoln, NE. The center for compilation and publication of these detailed soil maps is the **National Cartography and Geospatial Center (NCGC)**, located at Fort Worth, TX. In the **NRCS** headquarters at Washington, DC a GIS and Cartography Group has developed a soil information database for the production of computer generated maps at small scale for use in a policy making context. Most of these maps are plotted as required and are not litho printed. The primary current task is the construction of the digital soil layer of the **NSDI**, which is being undertaken by seven **USDA** production units.

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Vegetation/Forestry

Federal mapping agencies

The United States **Fish and Wildlife Service (FWS)** is concerned with the conservation of fish, animals and plants and their habitats, and continues to be involved in a number of mapping projects. Of particular significance is the National Wetlands Inventory Project (NWI) carried out by the **Division of Habitat Conservation** in accordance with the Emergency Wetlands Resources Act, 1986. The wetlands of 90 percent of the conterminous United States and about one-third of Alaska have been mapped, using the color infra-red photography obtained in the National High Altitude Photography Program. **FWS** has also produced a series of coastal ecological inventory maps at 1:250,000 scale, which show the habitats of fish, plants and other wildlife and the location of wildlife refuges and other protected areas. The maps use a **USGS** topographic base, and are available as four series covering the Atlantic, Pacific and Gulf coast and the Lower Mississippi Basin. Each series is accompanied by a narrative report.

The **USDA Forest Service (FS)** is responsible for the management and conservation of the National Forest System, and in 1975 established a **Geospatial and Technology Service Center** at Salt Lake City as its mapping center. The **Forest Service** maintains a *Primary base series (PBS)* based on **USGS** 1:24,000 scale topographic quads, and a smaller scale *Secondary base series (SBS)* at a scale of a half-inch to the mile (1:126,720). A series of *National forest visitor maps* are derived from the latter. Full digital specifications have been prepared for all these series, and since 1989 data have been manually digitized from all 10,600 quads covering the National Forest System. An inter-agency agreement with the **USGS** has resulted in the production of single-edition topographic maps which combine the specific needs of the **FS** with the **USGS** standards. The **Forest Service** now maintains those **USGS** quads which cover areas of National Forest and among its additions are improvements to road classification, trail information, and selected tourist features.

The **National Parks Service (NPS)** publishes brochures of all the United States national parks, each one incorporating a map. **NPS** is currently working with the **USGS Biological Resources Division** on a cooperative vegetation mapping program. This is part of a long term Inventory and Monitoring Program for the national parks. The database will include **USGS** DLGs, DEMs and DOQs together with data on soil, geology, and air and water quality. The vegetation component includes mapped distributions, species lists and metadata.

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Thematic

Federal mapping agencies

The main map products of the **Water Resources Division** are an extensive series of *Hydrological investigations atlases* (prefixed HA-), comprising multi-colored or black and white maps, mostly at large scales, incorporating various geohydrological data. A multi-sheet *Ground water atlas of the United States* has also been in progress, with maps at scales ranging from 1:2,500,000 to 1:100,000 showing the location of aquifers, and groundwater quality. *Hydrologic unit maps* are another product. These four-color maps are published at 1:500,000 scale for each state and depict the outlines of drainage basins greater than 700 square miles in a hierarchical nested system. Each basin is identified by a numeric code. A more recent endeavour has been the development of a national hydrography data set (NHD), resulting from cooperation between the **USGS**, the **US Environmental Protection Agency** and numerous state agencies.

In 1972, the **Defense Mapping Agency (DMA)** was formed from a combination of military agencies, and in 1996, the **DMA** itself was assimilated into a broader unit, as the new **National Imagery and Mapping Agency (NIMA)**. The agency provides imagery, mapping and other geospatial resources to meet national security needs.

The **Central Intelligence Agency (CIA)** has been involved in mapmaking since its foundation in 1947, and continues to publish useful, mostly small format maps of individual countries, including for example maps of the post-Soviet republics, and also some city maps.

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Atlas

Federal mapping agencies

The *National atlas of the United States of America* was published by the **USGS** in 1970 as a bound volume of 765 maps. Recently, **USGS** has been planning a new, electronically-based national atlas. This will be produced in cooperation with other federal agencies and with non-government partners. In 1999, a partnership was signed with **Lexon Technologies Inc** to develop the atlas in a variety of electronic formats.

The recording of place names and of geographical features is the responsibility of the **United States Board on Geographic Names (USBGN)**, which has both a Domestic Names Committee and a Foreign Names Committee. Publication of domestic names is undertaken by the **USGS** through its **Geographic Names Office**, in the Mapping Applications Center, National Mapping Division. A number of products have been issued as part of the Geographic Names Information System (GNIS). Publication of a series of printed official state gazetteers, which include most names from the 1:24,000 topographic map series, has been in progress since 1982, but only nine states have appeared in their fully published format. Features are located by state, county and geographical coordinates. They collectively form *USGS Professional paper* 1200. Other states have been released as *Interim products*. In 1990, a concise *National gazetteer of the United States of America* was published including a selection of 42,000 names and outline maps of all the states and counties. The whole GNIS archive, comprising about two million names is also available on CD-ROM, and this product includes both the National Geographic Names Data Base (NGMDB) and the Antarctica Geographic Names Data Base (AGNDB), together with viewing, searching and exporting software.

The **Environmental Protection Agency (EPA)** is concerned with issues of environmental quality and sustainability and in 1997 it established a **Center for Environmental Statistics (CEIS)**. **CEIS** is developing an *Environmental atlas* which provides access to maps constructed by **EPA**. The *Environmental atlas* divides into a *State atlas*, providing similar collections of digital maps for each state.

The *Agricultural atlas of the United States* comprises some 300 maps derived from the 1992 **Census of Agriculture**, with statistical data mapped at the state or county level. It is produced by the **Agriculture and Financial Statistics Division** of the **Census Bureau**.

The **Bureau of Transportation Statistics (BTS)** of the **US Department of Transportation** has a *North America transportation atlas* (NORTAD) CD-ROM containing transportation facities and network data for Canada, Mexico and the United States.

State mapping agencies

Many states have their own thematic state atlas, often produced by universities with state support or, less commonly, by private publishers. Many of these are now in electronic form. The first electronic atlas of this kind was the *Atlas of Arkansas*, available in both digital and analogue form. Many more electronic state atlases have appeared subsequently, and some paper ones, such as the *Atlas of Georgia*, have been revised and published in digital format.

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Cadaster

State mapping agencies

The **Bureau of Land Management (BLM)** publish public lands in the western states and in Alaska. Its paper-based products include 1:100,000 scale *Surface management* and *Surface/mineral management* maps. The former show land ownership status on a **USGS** base, while the latter show the status of federal mineral rights ownership. Some **BLM** maps have been adapted for recreational use and show trails and campsites.

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Tourist/Reference

State mapping agencies

Mapping is also a feature of most state **Departments of Transportation**. Besides the ubiquitous, annually revised official state highway map, these departments also produce county maps showing road classifications, surface quality and traffic flows. Such maps are usually on sale to the public and have been used by some state authorities as a basis for the production of specially tailored products such as cycling maps (e.g. Illinois, Florida, Minnesota) or more general tourist mapping. Most **DoTs** now operate geographical information systems to handle the wealth of highway and traffic data.

In some states the **Departments of Environmental Protection** or of **Natural Resources** provide significant mapping for wildlife conservation or for recreational purposes. For example, the **Minnesota Department of Natural Resources** has a series of 51 *Public recreation information maps (PRIMs)*.

Commercial publishers

The private mapping industry in the United States is multi-faceted and includes a huge number of companies and consortiums, both large and small.

Rand McNally is perhaps the best-known commercial map maker in the United States. Founded in 1856, the company was bought in 1997 by **AEA Investors Inc**, but continues to supply a wide range of cartographic products to the educational and popular market. The annual **Rand McNally** (Road atlas of the United States, Canada and Mexico) now based entirely on digital data, is one of its most familiar products, and the massive *Commercial atlas and marketing guide*, also revised annually, is particularly valuable for its detailed indexes, presented state by state. The company produces numerous variants of its road atlas, a complete collection of folded state maps (41 sheets covering the 50 states), and numerous city street maps and guides. **Rand McNally** began digital mapping in 1992, and CD-ROM products were introduced in 1994 with *TripMaker*, designed for route planning in the United States, and now include *StreetFinder* for address location. Products for the educational market include a range of World atlases, among them *Goode's world atlas*, the flagship *New*

international atlas, produced by an international team of cartographers, and the *New millennium World atlas* on CD-ROM. **Rand McNally** has also moved into the European mapping arena, forming a joint venture with the Italian company **De Agostini**, and badging the products of European mapmakers such as **Hallwag**. The well known names of **Champion Map** and **Gousha**, are now part of the **Rand McNally** group. **Champion** publish sectional wall maps of the United States as well as a large range of street atlases and maps.

Universal Map Inc are another large map publisher, who both publish in their own imprint and undertake custom mapping. They have a large range of regularly updated road atlases and maps, wall maps and street maps.

The **National Geographic Society (NGS)** has been a prolific publisher of maps, including some exceptional ones, such as the 1988 map of *Mount Everest* and relief maps of the floors of the oceans. **NGS** has made all its maps available on CD-ROM. **NGS** publications also include a number of atlases, including a World atlas, road atlas and travel planner of the United States and a historical atlas of the United States. In 1997, the **NGS Cartographic Division** formed a partnership with **GeoSystems**, now **MapQuest.com**, and is now called **National Geographic Maps**. **NG Maps** has a for-profit Product Division, as well as a not-for-profit Mapping Services Division. New and innovative products are beginning to appear. The first *National Geographic road atlas* was published in 1997 for 1998, and is to become an annual edition. The most innovative product to come out of the partnership with **MapQuest** is the *Trip Planner Platinum 2000* CD-ROM, which covers the USA and Canada and includes street-level mapping for major cities, trip routing software from **NavTech**, travel guide, hotel and restuarant information, and links to teal-time travel information on the Web.

MapQuest.com Inc (**Geosystems** until 1999) provide a print and electronic mapping service to numerous publishers besides **NGS**, and have developed a hugely successful, comprehensive interactive mapping service which provides users with customized maps and routing information. The company also owns **Interarts Ltd** which publish a range of educational maps and atlases, but are especially well known for their map-decorated 'wearables' and tote bags made of Tyvek.

DeLorme Mapping have specialized in the production of user-friendly mapping packages on CD-ROM, and latterly DVD. Their principal products are *AAA Map'n'Go*, a route planning package for the whole of North America, *Street Atlas USA*, a street level database of the United States which has sophisticated search and display features and also allows users to customize maps by creating their own overlays, *DeLorme Topo USA™2.0*, which provides topographic mapping on six CD-ROMs or a single DVD, and *Phone Search USA* which can be used with the route planning and street level programs. They have also begun publishing CD-ROMs for each state *3-D topo quads* containing raster images of **USGS** 7.5-minute quads together with **DeLorme's** own street level data. **DeLorme** have also published a hard copy state atlas and gazetteer to cover every state. These contain detailed mapping most commonly at 1:150,000 scale and derived mainly from the **USGS** 1:100,000 topographic map. Most atlases now also include a GPS grid. Detailed road atlases of several states are also published by **Shearer Publishing**, but these atlases are based mainly on Transportation Department mapping and lack the relief and off-road detail of the **DeLorme** atlases.

Large-scale city mapping, at the level of individual parcel boundaries and building outlines, has been undertaken by **The Sanborn Map Company**. The company was established in 1866 to provide fire insurance maps, and some 12,000 US cities have been covered. Forty of these are revised annually, and many more at less frequent intervals. These highly detailed maps are published in black and white or color as paper prints or as digital files. **Sanborn** now offer a customized service for GIS users to create a digital parcel-level database. In 1996, the company became a wholly owned subsidiary of **E Data Resources Inc** who have invested in the digitizing of the entire map archive.

A number of companies specialize in the production of cadastral or 'plat' maps, often assembled in the form of county plat books, with listings of land ownership. **Rockford Map Publishers Inc** are a leading provider of such mapping in the Midwest, and since 1944 have published plat books for 600 counties. These maps are now available in raster format on CD-ROM, and increasingly, structured vector mapping is becoming available. Also based in the Midwest, the **Sidwell Company** has, since 1927, specialized first in the production of customized street and real estate maps, and later in producing modern cadastral mapping with numbered parcels, and their product *Aer-O-Maps*, which use an air photograph base. The company now has a facility for digital ortho-photography, and has branched into the development of turnkey GIS systems for the handling of land ownership data by local government, and a range of new mapping applications with GIS, including 911 emergency mapping, and farm assessment mapping for land valuation purposes. The long-established Seattle-based **Kroll Map Company** provides a variety of mapping services, including the production of plat map books for the real estate industry in Washington state, and street and arterial route maps. **Land Data Associates Inc** are located in New York state and produce tax maps of New York counties both printed and on CD-ROM.

The **American Geographical Society (AGS)** was formerly an important publisher of both general and thematic maps. Some sheets of the 1:1,000,000 *Hispanic America* series are still available, as is also the 1953 map of *The Americas*, and seven sheets of the original 17-

sheet 1:5,000,000 series of *The World*.

The **Geological Society of America (GSA)** has published a number of geological and bathymetric maps, including a series produced for the Decade of North American Geology. Its publications may be purchased on-line via its Web site.

The **American Geophysical Union (AGU)** has published a few maps of oceanic areas, mainly on geological, tectonic or geophysical themes. **PennWell Books** publishes a number of maps relating to the energy industry, including continental scale maps of oil and gas resources, and maps of oil, gas and electric power distribution systems, mainly in the United States. The **American Association of Petroleum Geologists (AAPG)** has published some maps, including the *Tectonic map of North America* and a popular series of *Geological highway maps*, covering the conterminous US in 11 sheets. Geological highway maps of the states of Colorado, Wyoming and Kansas, all at 1:1,000,000 scale, are also published by **GTR Mapping**, Canon City CO, who also publish a series of topographic recreational maps of individual western states at 1:792,000 (1 inch to 12.5 miles).

The road navigation software company **Etak Inc** have compiled accurate digital road network data for the United States (and also the United Kingdom) for use in in-car navigation systems, and address location. These data are also used by other companies in the production of digitally based street mapping. Street, postal and census data bases for use mainly in GIS business applications are the concern of **Geographic Data Technology (GDT)**, which incorporates **Wessex Inc**. **WER The Information Connection Inc** specialize in demographic and zip code mapping.

Among publishers of maps for the educational market, **Hubbard-Scott Scientific Resources**, a division of **American Educational Products Inc.**, specializes in the production of vacuum-formed 3D relief maps, including **USGS** 1:250,000 scale series maps of the western states and of the Appalachians. **Nystrom** specializes in publishing maps, atlases and globes for education, as does **George F. Cram**. Other globe manufacturers include **Spherical Concepts**, which specialize in the production of acrylic celestial and earth spheres, and **Replogle**. **Geo Learning** specializes in geographical teaching aids, including many ingenious map products.

The **American Map Corporation**, part of the **Langenscheidt Publishing Group**, are well known for wall maps and business maps. **ADC The Map People**, also owned by **Langenscheidt**, have an east coast bias, and publish a wealth of carefully researched city and county street maps and atlases. Several other commercial publishers have also been acquired by **Langenscheidt**, including **Hammond Inc**, publishers of the *Hammond World atlas*, **Hagstrom**, whose products include street maps and county atlases of New York, New Jersey and Connecticut, **Creative Sales/ American Map**, specializing in maps of the Chicago area, **Arrow Map**, with a New England bias, and **Trakker Maps** of Florida.

A regional bias can be found in the products of many other map publishers. **Thomas Brothers Maps** began publishing street maps in 1915. Conventional products include *Classic Thomas guides* comprising street maps of Californian counties and parts of some other western states, and maps with overprinted zip code or census tract numbers and boundaries. In 1986, the company began building a digital mapping system and this is now used to produce their products, using a detailed digital street centreline database, and a wide variety of digital map data products are now also available. In addition the company markets *Geofinder*, a PC software program for locating addresses and customizing digital maps using the Thomas Brothers maps on CD-ROM.

Compass Maps publish street, road, and recreation maps of California, including a bike map of Santa Barbara, and ski and winery maps. **Marshall Penn-York Co Inc** produce a variety of street maps, regional and state maps and atlases of the Northeastern United States under their *Visual encyclopedia* trade mark. Mapping is digitally based and digital mapping systems have been created for many municipal authorities. Increasingly, products are provided in soft rather than hard copy format. **Mapsco** of Dallas, TX, produces maps and guides of Texan cities, and offers a custom mapping service. Maps are now digitally produced and some products are available on CD-ROM. **Pierson Graphics Corporation** of Denver publish maps and street atlases of Colorado, Utah and Wyoming, and also offer a custom mapping service for the Rocky Mountains region. The **Pacific Coast Map Service** has a substantial list of city street maps, mainly of California. **Pittmon Map Co** produce county and city maps of Oregon and Washington states. **JIMAPCO** has maps and atlases of New York state and vicinity. **Northern Cartographic** publishes maps and atlases of Vermont and New Hampshire, and also offers a contract mapping and GIS service. The **Cleveland Map Company** mainly produces custom mapping, but has its own map of Cleveland (and a noteworthy transportation map of Mozambique). **Patton Maps** produce county road maps and atlases for Pennsylvania and New Jersey. **Dolph Map Co** publish county and city streets maps of Florida.

MapEasy Inc is one of a number of providers of street maps aimed specifically for tourists. This company produces a growing range of colourful, hand-drawn annotated guidemaps, originally focusing on American cities, but now including some Canadian and European ones, and a series of country and regional guidemaps. **Streetwise Maps Inc** publishes street maps and metro maps of New York and

other, mainly east coast cities, and also have a series of *Artwise* museum maps, which include European destinations. **Travel Graphics International** publishes a range of *Place maps* and posters showing landmark building in elevation. Several publishers have issued striking axonometric maps of the high-rise downtown areas of American cities. **Pearson Graphics** have axonometric maps of Denver and Chicago, while **David Fox** has produced perspective aerial drawings and axonometrics of mainly east coast cities. A range of similar maps by **Ludington Ltd** are distributed by **Interarts**.

The **H.W. Wilson Company** produces packages of up-to-date state and city maps, designed for use in libraries.

Although primarily a software developer for GIS and image processing systems, **Terra-Mar Resource Information Services** have published a series of city posters compiled from LANDSAT™ imagery. **Computer Terrain Mapping Inc** specializes in the production of landscape visualizations for land planning applications, using DTM and remotely sensed data. Founded in 1994, **Space Imaging Inc** produce high resolution image products from the IKONOS and other satellites. Their products are sold under the brand name CARTERRA. **Spaceshots** produce a range of satellite image posters and aerial panoramic views of cities. **Magellan Geographix** provide on-line mapping via a subscription service called *MGExplorer*, which is used in news, weather and sports broadcasting.

Recreational maps, especially maps for hikers, are published by a number of specialist companies which make use of **USGS** topographic mapping as a base to which hiking trails and other relevant and up-to-date information are added. Such a company is **Trails Illustrated**, of Evergreen CO, established in 1978. Their maps cover all the major US National Parks as well as numerous other recreation areas, and there is an extensive Colorado Series at a scale of 1:40 680. The additional map features are carefully researched in the field, and the maps are updated annually or biennially. They are printed on a tearproof, weatherproof plastic. In 1997, **Trails Illustrated** became part of **National Geographic Maps**. Recent products include mountain bike maps, and *Trailsmart* – CD-ROMS containing **Trails Illustrated** maps together with trip planning information and interactive planning and GPS features. **Wilderness Press** also make use of **USGS** topographic maps, which are reformatted to cover larger areas, and to which are added up-to-date trail and trailside information and copious written description and advice. They also produce *Road/trail maps* which are much less detailed but provide information on trail access, particularly for off-road vehicles. **Tom Harrison Maps** produce beautifully reworked **USGS** maps for use by hikers and mountain bikers in Californian wilderness. Other similar trail maps are produced by **Earthwalk Press** and **Geo-Graphics**. A superb recreational map of Mt. Ranier National Park has been published by **Stanley Maps**. **USGS** -based recreational maps of Alaska are produced by **Alaska Road and Recreation Maps**.

Fishing Hotspots Maps have become the major publisher of freshwater fishing maps with more than 500 titles. The maps include bathymetry and fishing information and are compatible with GPS. Another prolific publisher of fishing maps is **Kingfisher Maps**, with waterproof maps of more than 150 lakes in 21 states. Canoeing maps of northern Minnesota and the Boundary Waters Canoe Area are published by **W.A. Fisher Co**.

Jeppesen Sanderson pioneered the development of products required for air navigation, and publishes its own range of flight charts.

Molenaar Landform Maps are oblique view, hand-painted pictorial maps covering scenic and geologically interesting areas in the Pacific Northwest. The reverse of the maps present a wealth of descriptive and geological information. The **Superior Map Company** is a small custom mapping corporation specializing in local street maps, but has also developed a method of producing shaded relief maps by diffusing the contour lines of **USGS** topographic maps. Graphic renderings of the floors of the oceans were created by the oceanographic cartographer **Marie Tharp**.

A number of publishers specialize in the use of digital terrain models to construct perspective maps. **Terragraphics** produces computer generated panorama maps of skiing areas in the United States and Canada, and has also produced a number of bicycling guides which incorporate 3D perspective maps and route profiles.

The **Buckminster Fuller Institute** publishes various fold-up versions of the Dymaxion map which was developed by **Fuller**, and a *Spaceship earth satellite map*.

Numerous US companies provide a customized mapping service using existing digital data sets. **Chalke Butte Inc** specializes in the production of colour shaded relief maps using digital elevation models. They have published several impressive wall maps, using the **USGS** three-second digital elevation data to show landforms and drainage of parts of the United States. They also market CD-ROMs of colored, shaded relief maps, which include maps of the World as well as of the USA and its regions in orthogonal and oblique perspective. **Raven Maps and Images** produce maps of many individual states with shaded and layer colored relief. These are mainly at 1:500,000 scale, and based on **USGS** mapping.

A consortium of the companies **East View Map Link**, **Allan Cartography** and **Eureka Cartography** have began to produce a series of high quality state road atlases under the imprint of **Benchmark Maps**.

Cartographers Ltd specialize in the production of small, but high quality folded four-colour maps of Caribbean islands with tourist information.

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