Country Profile: Australia

Country Profile (PDF)

Country Resources

Topographic

Series	Publisher	Scale	Years	Sheets
Australia 1:25,000 Scale Topographic Maps (Queensland)	DNRM	1:25,000	2015 – 2017	10,227
Australia 1:50,000 Scale Topographic Maps (Queensland)	DNRM	1:50,000	2015 – 2017	2,651
Australia 1:100,000 Scale Topographic Maps (Queensland)	DNRM	1:100,000	2015 – 2017	698
Australia 1:50,000 Scale Topographic Maps	GA	1:50,000	1978 – 1999	2,710
Australia 1:100,000 Scale Topographic Maps	GA	1:100,000	1969 – 2014	3,061
Australia 1:250,000 Scale Topographic Maps	GA	1:250,000	1994 – 2014	513
Australia 1:1,000,000 Scale Topographic Maps	GA	1:1,000,000	2012	49
Australia 1:25,000 Scale Topographic Maps (New South Wales)	LPI	1:25,000	2016	757
Australia 1:50,000 Scale Topographic Maps (New South Wales)	LPI	1:50,000	2014 – 2016	221
Australia 1:100,000 Scale Topographic Maps (New South Wales)	LPI	1:100,000	2016	120
VMAP0 1:1,000,000 Scale Vector Data	NIMA	1:1,000,000	1992	4

Nautical

Series	Publisher	Scale	Years	Sheets
Australia Nautical Charts (All Scales)	AHS	Varies	1992 – 2023	534
EVMaritime Vector Data: Australia – Not for Navigation (EVMV)	EVG	Varies	2023	926

Geoscientific

Series	Publisher	Scale	Years	Sheets
Indonesia Wireline Logs	EVG	Varies	2023	3
Indonesia 1:5,000,000 Scale Geological Maps	PPPG/GRDC	1:5,000,000	1996	1
Indonesia 1:10,000,000 Scale Geological Maps	PPPG/GRDC	1:10,000,000	2000	1
Antarctica VSEGI Series 1:5,000,000 Scale Geological Maps	VSEGEI	1:5,000,000	1979	1

Thematic

Series	Publisher	Scale	Years	Sheets
The World 1:30,000,000 Scale Topographic Map Series 1145 (NGA)	DMA	1:30,000,000		2
Freytag-Berndt Oceania Maps and Books	FB	Varies	2017 – 2021	15

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 Australia census resources.

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

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Country Profile (PDF)

Topographic

Responsibility for the topographic and cadastral survey of Australia is divided between federal and state government agencies. Until 1950 there was very little national coordination between the different state surveys. After that date federal and state maps have all been produced on the UTM projection with the Australian Map Grid, and since 1973 all major producers have adopted metric standards. Official mapping relates to the Australian Geodetic Datum 1984, but moves are in hand to change to the Geocentric Datum of Australia (GDA) as the reference datum for all spatial data and map products. The period from 1965 to the close of the 1980s saw a very large effort devoted to the completion of basic scale mapping of the continent, Australia being the last inhabited continent to be mapped to modern standards. Increasingly in the 1990s the private sector became involved in the compilation and production of basic data, and digital capture of data sets to common continental standards.

The **Australian Surveying and Land Information Group** (**AUSLIG**) was a business unit of the **Commonwealth Department of Administrative Services** until 1997, when responsibility passed to the **Department of Industry**, **Science and Tourism**. It is currently responsible for Commonwealth mapping, surveying and land information in Australia, including the publication of hard copy and digital maps, and provision of mapping to other government departments. **AUSLIG** acts as the Commonwealth focal point for the development of a national spatial data infrastructure. It was formed in 1988, after the merger of the former **Division of National Mapping** and the **Australian Survey Office**.

Other small and medium scale federal topographic mapping of Australia was the responsibility of the **Royal Australian Survey Corps** (**RASvy**), which was disbanded in 1996 – military map and chart production are now carried out under Defence commercial support arrangements, **RASvy** residual functions are carried out by the **Royal Australian Engineers**, and standards and specifications are now fixed by the **Directorate of Military Geographic Information**.

AUSLIG maintains the national official basic maps at 1:100,000 and 1:250,000 scales, which were redesignated as the (NATMAP series) in 1995. The 1:100,000 (NATMAP topographic map series) program was started in 1968 and was originally intended to cover the whole country in 3,065 seven-color maps by 1975. However this aim was scaled down to full color mapping of inhabited areas and areas of potential resource development, a total of 1,591 sheets. The remaining 1,474 sheets in the less settled interior were only taken as far as compilation plots, and from 1972 these maps have been available as orthophoto mapping. The last published sheet in the full specification was completed in 1986, while the last orthophoto compilation sheet in the interior was finished in 1988; little revision of these maps has been carried out. The whole of Australia is covered in the 1:250,000 scale (NATMAP topographic map series). Each map is derived from six 1:100,000 scale maps or orthophoto plots, the series was compiled as a joint **AUSLIG** and **RASvy** publication, editions being available either as a Joint Operations Graphic (JOG) military specification, or a conventional **AUSLIG** version. The 1.5° X 1° sheets have 50 m contours and hill shading. The last of the 540 sheets in the new series was published in 1988, but little revision work is being carried out.

Larger scale topographic surveys have been carried out by different state mapping agencies, and sometimes by **RASvy**. Scales and coverages vary from state to state.

Smaller scale topographic mapping is also carried out by **AUSLIG**. 1:1,000,000 scale coverage complying with the *International map of the World* (*IMW*) specifications and covering Australia in 49 sheets was withdrawn following the **AUSLIG** merger, but sheet lines are still used by several thematic series and in commercially published atlases.

Soviet military topographic mapping of Australia exists at the following scales: 1:1,000,000 (56 sheets, complete coverage published 1973-1977); 1:500,000 (160 sheets, complete coverage, published 1964-1975) and city (1:25,000) topographic mapping of Adelaide, Brisbane, Canberra, Perth and Sydney published between 1981 and 1985. These products are available in print, digital raster and digital vector GIS formats from **East View Geospatial**.

State organizations

The last decade has seen a proliferation of different kinds of state-based organization concerned with the production of spatial databases and mapping to cover their particular states and organizational remits; a very great diversification from the 1970s and 1980s standard of a state mapping agency based in a lands department. All manner of agencies are now engaged in mapping activities, but the importance of larger scale standardized map series production in the different states has declined. In contrast the emphasis has shifted to coordination between the different agencies to ensure the provision of compatible data sets, with particular attention increasingly being paid to Web-based metadata interfaces, and to specific user-driven mapping programs. Cooperation between agencies takes place under the aegis of the **Australia and New Zealand Land Information Council** (**ANZLIC**) and the **Intergovernmental Committee on Surveying and Mapping** (**ICSM**) attached to AUSLIG. Cadastral, urban and earth science mapping continues to be undertaken by state agencies, and it is the mineral exploration sector which has seen the most active data collection and publication programs over the last decade.

Australian Capital Territory

Large scale mapping of the Capital Territory was established by the **Australian Survey Office** in 1972. It was responsible for the compilation of a number of topographic and cadastral map series covering the territory at scales between 1:2 500 and 1:25 000. The **ACT Land Information Center** (**ACTLIC**) within **Planning and Land Management** is now **ACT's** lead agency for the capture, management and dissemination of land information. Urban areas are covered in topographic and orthophoto series, but these maps have been superseded by digital data sets held in the *ACTMAP* land information system, which is linked to attribute textual cadastral data in the *Planning and lease manager* relational database. Since 1992 *ACTMAP* has evolved from being a digital cadastral database, into a comprehensive and very current land information system, held as a distributed database and supporting many planning and land administration functions in the ACT government. F ourteen graphical database themes are used for mapping purposes by the **ACT Mapping Office** within **ACTLIC**, and each year a hard copy version of the database is published as the *Canberra by suburbs atlas*. The digital map data from *ACTMAP* comprises five major interrelated themes: street address, administrative geographies, urban and rural cadastral boundaries and a roads database. Other data sets include water features, 40 m gridded terrain data, various utilities data and a topographic database.

Other smaller scale mapping of ACT is issued by **AUSLIG** including a single-sheet 1:100,000 scale topographic map, a LANDSAT TM satellite image map coverage of the territory, and an image poster of Canberra. **AGSO** publishes geological and hydrogeological mapping of the Capital Territory.

New South Wales

The most important state mapping agency in New South Wales is the **Land Information Centre** (**LIC**) in the **Department of Conservation and Land Management**. **LIC** was established as the **Central Mapping Agency** (**CMA**) in 1947, relocated to Bathurst in the 1970s and by 1988 had completed standard map coverage of the State, comprising 1:4,000 scale cadastral coverage of urban areas, 1:25,000 scale mapping of the more densely populated eastern seaboard, (including recent parallel image mapping of areas between Sydney and Newcastle), 1:50,000 scale mapping of the central band of the state and 1:100,000 scale maps of the more sparsely populated western areas. These maps conform to Commonwealth mapping standards and are on the UTM projection. **LIC** also publishes small scale touring maps, 23 town and district maps, five waterways maps and six national park maps, as well as smaller scale maps of the state as a whole and an official indexed road directory of New South Wales.

LIC has been at the forefront of state digital developments in the 1990s, and unlike most other state land and mapping agencies has been actively involved in overseas technical aid projects, in a number of Southeast Asian and Pacific nations. Digital data sets are held in a state-wide digital cadastral database, with topographic coverages maintained in a digital topographic database. Digital terrain data for all the areas mapped at 1:25,000 and 1:50,000 scales, customized slope and aspect maps are generated from this data.

Northern Territory

The **Department of Lands Planning and the Environment** (**NTDLPE**) is the territorial mapping agency.

Queensland

The most important surveying and mapping organization in **Queensland is the Department of Natural Resources** (**QDNR**) which was created in February 1996 following the merger of the previous **Department of Lands** with components of the **Department of Primary Industries** (**QDPI**). The **Department of Lands** had itself only been established in 1989 following a merger of four constituent bodies, including the **Department of Surveying and Mapping**. **QDNR** continues to be the principal agency in the state carrying out topographic mapping, and acts as the cadastral mapping agency for the state. It also instituted an integrated state-wide Land Information Strategy, to maximize benefit from different government digital land information databases.

QDNR's current topographic production concentrates upon a program of 1:25,000 scale mapping. Data are captured from aerial coverage, and an active digital mapping program is generating hard copy true-color ortho-image maps, with some limited line enhancement, including 5 m contours, roads, the UTM grid and place names. About 500 sheets are available. Other new mapping is in, digital orthophoto mapping programs of 1:2,500 and 1:5,000 scales, carried out in the mid 1990s, for urban local authorities, chiefly in the southeastern parts of the state.

The **Resource Information Group** of the **Department for Environment Heritage and Aboriginal Affairs** (**DEHAA**) is the state mapping agency responsible for collection and provision of data relating to South Australia's land resources. Its standard mapping program includes hard copy topographic, cadastral and scale-corrected orthophotomaps for urban and closely settled areas, with the more remote parts of the state mapped in uncorrected photomaps. **DEHAA** is no longer involved in the active revision of most of this series mapping. Emphasis has shifted to on-demand digital mapping. Existing series are, however, still available and date in the main from the 1980s. A 1:50,000 scale map is produced in accordance with the national six-color specification, to cover all the settled areas of the state and the North Flinders range, in about 400 sheets. In addition a large block of the unsettled parts of the state are covered in **AUSLIG** published editions. A version of the 1:50,000 map data is available for 350 quads, overprinted with cadastral; the cadastral data are also separately available. Some sheets from this map have been revised. The most significant recent project has been the production of 1:25,000 scale orthophotomapping and digital terrain data for the Murray-Darling Basin Commission. An older 22 sheet 1:25,000 scale topographic series was produced in the late 1980s for the Adelaide area. Adelaide is also covered in dyeline 1:1,000 cadastral mapping. All the urban areas in the state are mapped in a 1:2,500 scale series, comprising about 1,300 sheets. These topographic-cadastral editions have 2 m contours and are sometimes published on an orthophoto base, or as a dyeline. 1:10,000 scale mapping with 5 m contours covers metropolitan Adelaide, rural towns, and irrigation area. Sheet numbering is derived from the 1:100,000 scale quadrangle: there are 50 1:10,000 for every 1:100 000, and 16 1:2,500 for each 1:10 000. **DEHAA** also publishes a popular range of tourist maps, as well as mapping for other state agencies. Place name data are available in hard copy or in digital versions.

Tasmania

The **Land Information Services Division** (**LISD**) in the **Department of Environment and Land Management** is responsible for the development of an integrated and centralized land information service for the state. **LISD** and its predecessors have been active in the

production of their own hard copy and digital maps and unlike other states there has been very little Commonwealth mapping activity. **LISD** programs include two 1:100,000 scale series. A topographic map conforming to national specifications and with relief shown by hill-shading covers the state in 47 sheets, most dating from the 1970s, but some revision has taken place since the mid 1980s and 13 new editions were published between 1990 and 1996. A 1:100,000 scale (Land tenure index series) covers the state in 40 sheets, (marginal sheet lines from the topographic map are rationalized), and is revised on a five-year cycle. It uses a topographic base with property, forest and reserve information overprinted. The 1:25,000 scale topographic series started in 1980 has extended to most of the state: King Island was completed in 1996, Flinders Island was under production in 1997 and only a block of the southwest of Tasmania remains to be mapped. This full-color series shows both topographic and cadastral detail. A digital production flowline was started in 1995, and conversion of existing mapping is well advanced. Digital data is available for hydrography, contours, roads, cultural detail and cadastral information and a digital elevation model has also been captured. Graphical production of 1:25,000 editions is limited due to greater demand for digital data, but the map continues to be used as a base by other thematic mapping agencies in the state. Other smaller scale coverage of Tasmania compiled by **LISD** includes four-sheet 1:250,000 scale mapping (also available in digital form) and a single sheet tourist map. 1:500,000 scale digital coverage of road, rivers, coastline and lakes is also available. Larger-scale coverage of Hobart and the bigger towns is available as 1:5,000 scale orthophoto maps, overlaid with 5 m contours and property boundaries. This data are also being made available as digital contours, road center lines and cadastral information. In 1996 plans to set up a state digital cadastral map base were started, which will provide a seamless digital map of Tasmania's cadastral boundaries to act as a graphical interface to various state property databases. **LISD** also compiles a dyeline 1:100,000 scale land systems map and publishes a regularly revised Street atlas to Tasmanian towns.

Victoria

All the formerly separate agencies in Victoria responsible for the publication of maps and spatial data were merged in 1996 under the single parent body the **Department of Natural Resources and Environment** (**DNRE**). Many of its mapping projects are now delivered through its *Land management and resource information program*, including the collaboration of several formerly separate agencies. The **State Mapping Agency** (**VICMAP**) used to be responsible for surveying and mapping of Victoria; since reorganization surveying functions have been carried out by the **Office of the Surveyor General**, most other mapping functions have passed to **Geographic Data Victoria**, renamed late in 1997 as **Lands Victoria** (**LV**). All fall under the **DNRE** umbrella.

Substantial areas of Victoria were mapped at 1:25,000 scale in the **VICMAP** topographic mapping program published in hard copy as a five-color line map series. Sheets mostly cover 7.5′ latitude by 7.5′ longitude, though some cover double this area. The series ranges in date from 1980 through to 1992, with the best coverage available for southern and eastern areas of the state. About 800 sheets are maintained. Other published **VICMAP** paper products include 1:50,000 scale coverage of the more remote parts of the state: only a block of about 40 double 1:50,000 sheet areas in the northwestern parts of Victoria remains to be published. Other printed products include a series of specially formatted 1:25,000 scale outdoor leisure maps of tourist and recreation areas in the state, electoral mapping of the provinces and districts and small scale coverage of Victoria at 1:500,000 in four sheets, and at 1:1,000,000 scale.

Western Australia

The **Department of Land Administration** (**DOLA**) is the most important mapping agency in Western Australia, and has responsibility for all legal, geographic and administrative aspects of the use of land in the state, including cadastral and topographic surveying. It relocated to purpose built headquarters in 1993. Conventional mapping includes a four-color topo-cadastral 1:50,000 scale series of the farming areas in the southwest of the state, complementing **RASC** topographic coverage at this scale for northwestern parts of the state, and about 200 six-color 1:25,000 scale orthophoto maps of the coastal plain for areas to the south of Geraldton. 1:25,000 scale cadastral coverage available in paper for southwestern areas. State large scale series have been compiled for urban areas, including selective 1:5,000 scale orthophoto coverage of the metropolitan area and country towns, showing relief with 2 m contours, and black and white 1:2,000 and 1:1,000 scale maps with 1 m intervals. The *StreetSmart* range of tourist maps is published, with indexed city and town maps of the main urban areas in the state, as well as 16 smaller scale touring maps covering most of the developed parts of Western Australia. 1:3,000,000 scale state maps are published showing topography, local authority and pastoral lease boundaries, as well as English and Japanese language versions of a development projects map. A nine-sheet 1:1,000,000 scale topographic state series was updated to 1993 and the southwest of the state is covered in a boundaries edition at 1:1,000,000 scale.

Back to top

GIS/Vector

In 1991 a major change of direction for national mapping was authorized by federal government. This saw the rapid implementation of a program to capture digital map data, supported through public interest funding. By 1994 the majority of **AUSLIG** Public Interest effort was being devoted to the *GEODATA* digital program. Vector products are available in ARC/INFO, GINA, MapInfo, DXF and AS2482-1989 formats, on a variety of different media. Two versions of 1:250,000 data are available. The first, captured from published National Topographic map sheets, is a vector version of its main topographic features: data are tiled in the same format as hard copy maps and edge matched to adjacent sheets. National coverage was completed in 1994 and data have been updated since then, using SPOT and LANDSAT TM imagery. Areas which change rapidly may be revised every year, other tiles may be revised every ten years, about 100 tiles a year are updated. A second version of the *TOPO-250K* program adds data such as vegetation, contours, morphology and additional point symbols. *The TOPO-100K* data set comprises a selection of 1:100,000 scale maps scanned and processed according to similar specifications to the *250K* data sets. Other *GEODATA* data sets include a low cost, low resolution vector product captured from the 1:10,000,000 map, a coastline attributed vector data set and the *Australian Maritime Boundaries Information System* (*AMBS*). In addition a *9 second digital elevation model* has been compiled in conjunction with the **Australian Geological Survey Organization**, with height data values every 250 m, and made available from 1995 on CD-ROM or exabyte tape, with associated extraction software for PC Windows. They are derived from the *GEODATA TOPO-250K* digital map product. Two land tenure databases are also maintained: *Australia land tenure 1:5,000,000 and the National public and aboriginal land* database based upon a nominal map scale of 1:250,000. In 1996 **AUSLIG** issued the first interactive CD-ROM atlas of Australia's natural and manmade features, in association with Space-Time Research. This allows users to customize their own maps of the continent and was released in 1999 in a revised version as *Australia unfolded 2*.

A digital version of these data is available in ARC/INFO format, published with two accompanying online and hard copy textual descriptions of the mapping units. The **National Resource Information Center** (**NRIC**) is an independent scientific bureau in the **Department of Primary Industries and Energy**, analysing sustainable development issues and using advanced computing techniques to model and visualize these processes for policy makers. **NRIC** maintains the *Australian spatial data directory* the most important of these meta databases.

Since 1991 the **Environmental Resources Information Network** (**ERIN**) of Environment Australia has also maintained a directory of Australian environmental spatial data sets. This provides a valuable finding aid for the diversity of resources data held by many different state and federal environmental agencies. Amongst the data sets available at this source is the *National wilderness inventory* established by the **Australian Heritage Commission**, which classifies areas on a 20 point scale. The first stage in mapping these data was completed in 1996. Information is held in ARC/INFO and customizable mapping may be displayed over the Web, for themes such as wilderness quality, biophysical naturalness and land cover. Other customizable maps accessible from the ERIN environmental databases page include species mapping and the *EnviroMaps* integrated environmental mapping data, as well as metadata about topographic mapping.

Victoria

Most effort is, however, devoted to the maintenance and provision of digital land data sets, in a number of different formats. The state digital map base comprises three major components. The digital topographic base comprises digital data captured from 1:25,000 scale mapping. A cadastral base provides a current state-wide land parcel and property framework for Victoria, merging formerly separate rural and metropolitan reference frameworks, and is used to derive a separate local government area data set. The third component is the *State digital road network*, with a spatial accuracy of 5 m in urban areas and 25 m in rural parts of the state, supplemented with overlain contextual data such as digital boundaries, water features, text and railways. Digital relief data are also available for Victoria, digital place name data may be acquired, and small-scale digital map data, designated VICMAP, and captured from 1:500,000 scale mapping are also available. These comprise Victorian electoral boundaries, local government area boundaries and other administrative detail, as well as cultural and hydrological detail. Line plots may be acquired as output from VICMAP, digital data from all the products are available on CD-ROM and other media in a number of different output formats.

Western Australia

In 1994 **Fugro Survey Pty** won a DOLA contract for the first stage of the State Land Information Capture Program. This involved digital photogrammetric data capture, with final color map production at scales of 1:2,000, 1:25,000 and 1:50,000, the digital data being made available in Microstation DGN format. About 600 digital 1:50,000, and a similar number of digital 1:25,000 scale quadrangles had been

captured by the end of 1997. Data are distributed as relief information and planimetric detail. The DOLA *StreetSmart Perth street directory* is updated on an annual basis and output from digital data; the data themselves are available and are also packaged in an electronic urban atlas *StreetSmart* express.

Back to top

Nautical

Another directory providing a finding aid for marine and coastal data sets and is maintained by the **Australian Oceanographic Data Centre** (**AODC**). In 1999 this Marine and Coastal Data Directory (the *Blue pages*) included information about 1 500 data sets, also available on the Web at URL http://www.aodc.gov.au/amidi.html. **AODC** itself was established as a separate agency in 1993 and is the national data centre for the acquisition, archiving and management of Australian physical oceanographic information. It was formerly part of the **Royal Australian Navy Hydrographic Service** (**RANHS**) which has carried out hydrographic charting of Australian coastal waters since 1946, and also publishes charts of waters around Papua New Guinea, and Australian territories in the Antarctic and Pacific. About 400 of a planned total of 635 hydrographic charts required for coverage of Australian areas of interest had been published by 1997 and 162 of these had been produced digitally. **RANHS** is increasingly publishing chart data in ECDIS vector format and internationally standardized raster versions, and all new charts conform to the WGD 1984 horizontal datum. The first release of a raster chart on CD-ROM took place in 1997, and a complete digital update service designated *Seafarer* maintains these data. The **RANHS** home page offers routine delivery of notices to mariners disseminating chart updates.

The Division of National Mapping used to publish the 1:250 000 Bathymetric map series, but following the establishment of **AUSLIG** in 1988 responsibility passed to **RANHS**. This programme was initiated in 1971 with the intention of covering the Australian continental shelf and mapping all areas with sea depths of less than 300 m in 278 sheets. The specification uses 10 m isobaths, with different layer tints every 100 m. Progress on the publication of the series slowed dramatically in the 1980s and early 1990s, but the survey is nearing completion.

Western Australia

Transport Western Australia produces a range of regularly revised hydrographic charts for use by recreational and commercial vessels. Detailed coverage of the coast from Port Denison as far south as Cape Clairault is available, mostly at 1:25 000 scale; isolated coverage of more northern harbours is also published.

Back to top

Aeronautical

Aeronautical charting of Australia conforming to TPC, ONC and JNC specifications is compiled by the **Department of Defence** (**Air Force**). The *World aeronautical chart* (*WAC*) at 1:1,000,000 scale is the only topographic coverage of the continent at this scale currently published.

Civilian aeronautical charting of Australia is carried out by **Airservices Australia** with military charts published by the **Royal Australian Air Force**. A range of visual, instrument and planning charts is maintained, which forms part of the *Australian Aeronautical Information Publication*, and since 1996 **Airservices** has compiled new editions of its *en route charts* using an automatic chart production system. A new series of *visual navigation charts* is being produced to cover the continent on a 1:500,000 topographic base, in addition to 1:1,000,000 coverage conforming to *World aeronautical chart* specifications.

Back to top

Geological/Scientific

Federal earth science mapping of Australia is carried out by the **Australian Geological Survey Organization** (**AGSO**) part of the Commonwealth Department of Primary Industries. Until 1992 AGSO was known as the Bureau of Mineral Resources Geology and Geophysics. The organization was established in 1946, to assist state geological surveys to undertake systematic geological and geophysical mapping of the continent. It has been based in Canberra since 1965, and now has a remit to 'build a vigorous, client driven national geoscientific mapping effort to encourage economically and environmentally sustainable management of Australia's minerals, energy, soil and water resources'. A diversified and applied role has developed following completion of national geological mapping programmes, including a continuing contribution to technical aid programmes notably in Argentina, Fiji, Oman, Papua New Guinea and Vanuatu.

AGSO co-operates with the various state geological surveys and mining authorities to maintain national 1:250 000 scale coverage, published on the same sheet lines as the topographic map and using it as a base. Each sheet in this series is published with explanatory notes. Complete coverage of the continent is available, over half of the sheets being federal editions, while South Australia, New South Wales, Victoria and Tasmania are covered by locally published mapping. Nearly 100 sheets have been issued as second editions and digital colour plots are available for Tasmania, Victoria and parts of Western Australia. Major digitizing programmes are capturing data from this series and making them available for use in GIS applications, for example for Northern Territory and Northern Queensland (see below). Increasingly a range of more applied mapping is being carried out at this scale and conforming to the same sheet lines. For example the *Murray basin hydrogeology series* has involved collaboration between **AGSO** and the geological surveys of Victoria, New South Wales and South Australia.

In areas with mineral potential a variety of larger scale geological series has been published by **AGSO** and the state surveys. 1:100 000 scale geological coverage has advanced substantially in the last decade – there are now about 500 standard sheets published (including most of South Australia in digital versions). Some sheets are available as photoscale compilations only. In addition over 50 larger format regional geological maps at this scale are also issued. Larger scales are issued for selected areas by some of the state surveys. **AGSO** also publishes 1:500 000 scale coverage in conjunction with the states, to give about 50 per cent coverage of Australia in 55 sheets, as well as 43 1:1000 000 scale regional maps giving almost complete overlapping coverage. These maps accompany bulletins and reports.

Geophysical mapping of Australia has also been carried out by **AGSO** in conjunction with the different state geological surveys. These data are derived from the **AGSO** gravity and airborne geophysics databases. 1:250 000 scale aeromagnetic and gravity map series are available on topographic sheet lines and offer almost complete coverage: both hard copy series were compiled jointly with the **Mines and Energy South Australian** (**MESA**). The aeromagnetic maps show magnetic intensity contours and are also available as digital data. The gravity series presents Bouguer anomaly contour data over a controlled planimetric base. Gamma ray spectro-metric data are also available in digital form on the same sheet lines. Other geophysical data are available at 1:1 000 000 scale. Complete continental coverage is maintained for gravity, and airborne magnetic data (as gridded output from image processing, or alternatively as contoured mapping). Data sets from these geophysical programmes are available for points, conventional sheet line tiles or for other grid intervals. In addition an offshore resource map series is in progress in 32 sheets: four themes are in the programme, contoured bathymetry, seismic lines, exploration wells, and sea-bed samples.

New South Wales

The **Department of Mineral Resources** (**DMRNSW**) carries out data collection and dissemination in support of mining and petroleum exploration in the State. It continues to collaborate with **AGSO** in the publication of 1:250 000 scale geological coverage and a metallogenic series at this scale is available for some mineral-rich areas. Patchy larger scale mapping includes 1:100 000 coal mining and prospecting maps, as well as some 1:50 000 scale gold deposit mapping. Recently, emphasis has shifted towards digital capture of earth science data: 1:500 000 scale petroleum data packages are available for seven basins and the *Discovery 2000* project has seen a major investment in digital geophysical data capture for the central belt of the state. A very wide variety of output is available in this programme: black ink plots onto film, HP Designjet colour images, photographic quality output on standard DMR sheet lines, and digital data. A number of different scales are supported and up to seven themes may be available across the range of gravity, magnetic and radiometric data. In addition to these data smaller scale hard copy coverage of the state is also published for geology, tectonics and minerals.

Northern Territory

The Northern Territory Geological Survey is based in the **Department of Mines and Energy** (**NTDME**) and collaborates with **AGSO** in the publication of 1:100 000 scale mapping. Nearly 100 sheers are now available, as compilations, or full multicolour printed maps. In addition a major collaborative project (NTData) between NTDME, **AGSO** and the Central Land Council is capturing 1:250 000 scale

geological maps covering the whole territory in digital form. The emphasis of the programme has been the conversion of repmat by scanning, vectorizing and attributing, and data are available in sheet tiles in ARC/INFO, MapInfo or Microstation DGN format. Other digital products include gridded airborne geophysical data for many 1:100 000 and 1:250 000 quads, with colour geophysical map plots for a number of different geophysical themes for these areas. NTDME also publishes small scale petroleum and mining maps of the state.

Queensland

The **Department of Minerals and Energy** (**QDME**) manages mineral and energy resources in the state. There is complete 1:250 000 coverage, published in association with **AGSO**, as well as much more partial 1:100 000 scale coverage. A single-sheet 1:2 500 000 state map was completed in the 1970s and is also available as a structural elements overlay. Groundwater resources are also mapped at this scale. QDME has developed the comprehensive *Mineral and energy resources location and information network* (MERLIN) as an interactive management tool incorporating spatial ARC/INFO-based data and ORACLE-based textual and attribute information. MERLIN also supports full-colour geological mapping with minerals and petroleum resources data. Vector geological data are available for about 100 1:100 000 quadrangles, and as a digital version of the single-sheet state map. Raster scanned 1:250 000 scale TIFF files are also available for the whole state.

Mines and Energy South Australia (**MESA**) publishes and sells sheets for the state in the 1:250 000 regional geological mapping programme. All printed sheets in the series are output from digitally held data coverages, and on-demand cartography is becoming increasingly used by MESA customers. MESA is the most active state earth science survey in terms of its contributions to national mapping. Geophysical and geological series at 1:250 000 are listed under Australia, since these maps conform to federal specifications. A substantial block of the state is also mapped in a 1:100 000 scale series, output as digital colour plots. Incomplete 1:50 000 coverage is in progress and a variety of smaller scale series are also published. Since 1991, however, an increasing effort has been devoted to the development of key digital data sets, provided as intelligent spatial coverages for use in GIS applications in the mining and exploration industries.

Tasmania

Mineral Resources Tasmania (**MRT**) is responsible for geoscientific research and mapping in support of mineral resource management and exploitation across the island. A full colour 1:50 000 scale map is replacing earlier 1:63 360 scale mapping in the Geological atlas series; 48 of the 87 sheets required to cover the island were available in 1997 and explanatory notes were published for 31 sheets. New 1:25 000 scale digital mapping on LISD topographic series sheet lines is being published with over 50 sheets available in 1997. Packages of geology, structure, mineral deposit locations, stream sediment geochemical and rock chemistry sampling locations and drill hole data are available, with the mapping in a number of GIS formats, and inkjet output maps of geological and structural coverages are printed on demand. This programme is part of a comprehensive digital data capture plan started in 1994. 1:250 000 scale digital geological coverage is available to fit the four-sheet topographic map, and comparable thematic packages for GIS are available at this resolution. A new single data set at 1:500 000 scale and derived from the 1:250 000 scale coverage was issued in 1996. A range of geophysical data are available from MRT, in addition to exploration and mining lease data sets, and smaller scale tectonic structural and minerals coverage.

Victoria

The Geological Survey of Victoria is now also part of the DNRE, and earth science mapping of the state is carried out from **Minerals and Petroleum Victoria** (**MPV**). Its mapping programmes date from the 1860s and have resulted in complete 1:250 000 scale coverage, larger scale mapping of areas of mineral interest, including goldfield maps, parish plans and metal detecting maps. There is an active conversion programme generating *complete* two-sheet digital 1:500 000 scale geological mapping of the state, as well as 1:250 000 scale digital geological mapping. There is also an active publication programme of new digital 1:100 000 and 1:50 000 scale mapping of parts of the state. A range of smaller scale single-sheet, state-wide published hard copy maps is also available.

Western Australia

The Geological Survey of Western Australia was established in 1886, and its activities now form part of the **Department of Minerals and Energy** (**WADME**). Geoscientific map publication continues to play a central role in WADME's remit of supporting exploration and development of the state's mineral, petroleum and groundwater resources. Complete 1:250 000 scale geological coverage is maintained by WADME and an active revision programme is in progress, with some sheets now in their third edition. Two other 1:250 000 scale programmes on the same sheet lines were started in the late 1980s. Twelve hydrogeological maps were available or near to publication early in 1997, covering areas where an understanding of the groundwater regime is important. A 1:250 000 *Regolith materials series*

began in 1994 with about 40 element distribution maps for each mapped area, as part of a Regolith Geochemistry GIS project. A new 1:100 000 scale series began in 1988 for areas of active mineral exploration interest: collaboration with AGSO has seen a total of 85 sheets published by 1997, with another 30 in preparation or available as preliminary colour line plots. 1:50 000 urban and environmental mapping covers the developed areas of the coastal plain around Perth and some other coastal settlements in 34 published sheets. Other WADME mapping accompanies geological project reports. Since 1992, geological series and project maps have also been published in digital format, and manual production methods have been phased out. Geological data packages on CD-ROM are being prepared for 10 1:250 000 quadrangles. The TENGRAPH system, completed in 1996, holds all mining tenement information on-line in a digital mapping system accompanied by cadastral, topographic and administrative information. Colour or black and white output is available for purchase and digital data may also be acquired. Aero-magnetic, gravity and seismic structure coverages are in progress and available in hard copy or digital form for key basin areas at 1:100 000, 1:250 000 or 1:1000 000: the seismic series is most extensive covering most coastal areas and the Canning Basin at 1:250 000, about a third of the state. In addition WADME publishes six themes as single sheet 1:2 500 000 scale maps, and issues an atlas of mineral deposits and petroleum fields.

Back to top

Soil

New South Wales

Another branch of the Department of Conservation and Land Management, the **Soil Conservation Service** (**SCS**), is publishing 1:100 000 and 1:250 000 scale soils mapping. The 1:250 000 scale mapping programme is planned to cover eastern and central parts of the state, areas under greater land use pressure are to be mapped at 1:100 000. Digital data relating to these sheets are also available, and reports are published to explain patterns.

Western Australia

Agriculture Western Australia is also involved in resourses mapping of the state including the preparation of a statewide digital soils map updating the atlas of Australian soils and released in 1999, a number of local natural resource atlases, and agricultural land cover change mapping at a scale of 1:100 000. Digital cadastral data of holdings in the state are also maintained.

Back to top

Vegetation/Forestry

Northern Territory

Small scale vegetation mapping of the territory was published early in the 1990s by the **Northern Territory Conservation Commission** (**NTCC**).

Tasmania

Forestry Tasmania (**FT**) produces 1:25 000 scale Native forest type maps, incorporating base information from the Tasmap topo-cadastral series, which are available as dyeline prints. Plantation and administrative mapping is also carried out, and data from this process are stored as a layer in an ARC/INFO-based forest management GIS. Coloured 1:500 000 scale published mapping is also available, including maps of rain forest distribution, vegetation and land tenure.

Victoria

Forest and recreation mapping of the state was compiled by the Forest Commission Victoria, (now the **Forest Service** (**VFS**) DNRE). Black and white one-inch coverage of eastern parts of the state went out of print in 1997 but colour maps of state forest and tourist areas are available through the DNRE **Outdoors Information Centre**. Regional map guides promoting national park tourist attractions are compiled by Parks Flora and Fauna.

Western Australia

The **Department of Conservation and Land Management** (**CALM**) is responsible for the management of conservation and forest areas in the state. Since 1988 it has been involved in data collection at a scale of 1:25 000, with the aim of integrating a number of different data sets into a resource management GIS. This is used for the generation of CALM Operational Graphic maps, used as rapid response maps for timber production and fire control. Another of the outcomes of this process has been the publication of new four-colour process printed 1:50 000 scale *Land management series* maps, which are replacing an earlier conventionally published larger format series at this scale. The new 1:50 000 scale series will cover the developed areas of the state. Other initiatives include the publication of 'track maps' for the tourist market.

Vegetation mapping of the state was carried out in the Vegetation Survey of Western Australia. The University of Western Australia Press published a seven-sheet 1:1 000 000 series of the whole state, and **Vegmap Publications** continues to distribute the 1:250 000 scale mapping of the southwestern settled parts of Western Australia, which was compiled by J.S.Beard in the 1970s. CALM has captured these data in digital form and updated them. Digital 1:250 000 scale data covering the southwest of the state was published in 1999.

Back to top

Thematic

In its commercial programme **AUSLIG** publishes a number of small scale reference maps of Australia and the Pacific, maps of Australia's external territories, and some single-sheet thematic coverage, for example a double-sided postcode map and a land tenure map. A 1:5 000 000 scale thematic series is issued: 16 different themes have so far been mapped. At 1:10 000 000 scale other smaller maps are also published, so far mainly concerned with agriculture, land use, population, geology, and climate. These maps are derived from material prepared for the Third Series *Atlas of Australian resources*. Ten bound thematic volumes in this national atlas are planned, so far six have been published. A new version of the 1:2 500 000 scale reference map of Australia was published late in 1997.

AUSLIG publishes place name listings in a number of formats. The *Master names file* of Australian geographic names appearing on 1:100 000 and 1:250 000 scale topographic maps is available as digital data and may also be searched on the **AUSLIG** Web site; these data are also published on fiche. The more detailed digital *Gazetteer of Australia* data, compiled in association with state mapping agencies, are available as local products for each state, usually as digital data. Postcode boundary data have also been digitized by **AUSLIG**, and are available in three levels of detail. In addition **AUSLIG** publishes tactile atlases for blind and partially sighted people; guides to tactile mapping and tactile symbol design and a variety of materials explaining the Australian geodetic bases. A complex and well designed home page on the World Wide Web includes a metadata search engine giving access to a great diversity of **AUSLIG** products.

At 1:2 500 000 there is a regularly revised four-sheet geological map, as well as magnetic coverage. 1:5 000 000 mapping depicts crustal elements, geology, gravity, hydro-geology, magnetic variation, metamorphic and metallogenic rocks. A new gravity map of the Australian region was released in 1997, to show onshore Bouguer gravity anomalies and offshore free-air anomalies. Full colour pixel image maps are printed at 1:5 000 000 or 1:25 000 000 and the 1.5′ gridded data set is available in ASCII or ERMapper format. AGSO also publishes the 1:10 000 000 scale *Earth science atlas of Australia*: 18 themes and explanations are available. In addition AGSO has recently published a CD-ROM product, for the education market, *The geology of Australia*, which brings together geological and topographic mapping at a number of different scales, along with mappable data sets, photographs and text, to provide an interactive introduction to the geology of the continent. AGSO began working in 1997 on the compilation of an electronic atlas of national geoscience data sets. This was completed late in 1998 and is available with 27 image and vector data sets published on two CD-ROMs, offering GIS data for these themes in ARC/INFO, MapInfo and ArcView formats, as well as postscript files of the more popular base maps. Five of these data coverages are also available on the AGSO Web site.

Since 1990 under the National Geoscience Mapping Accord plans have been implemented to upgrade mapping using integrated approaches drawing upon the use of remote sensing, gravimetric and geochemical work, digital cartography and GIS. From 1998 AGSO has adopted the new Geocentric Datum for Australia. An increasing diversity of data sets is available, to support mining related activities, including regional GIS packages, such as the North Queensland Digital Atlas project. Earth science mapping continues to be the most dynamic sector of the surveying and mapping industries in Australia. Access to AGSO publications and data was improved with the launch in mid-1997 of the Data Locator Service on the excellent AGSO Web site, which allows users to construct zoomable map views of

products, databases and sample sites. The range of GIS functions delivered over the Web from the AGSO home page is likely to grow and increasing attention is being given to modelling in 3D Australia's geology at depth.

A recently established federal mapping initiative is being carried out by the **Murray Darling Basin Commission**. The Commission is responsible for the regulation and rehabilitation of the whole of the Murray Darling catchment, which comprises 20 per cent of the Australian land area, and in support of this goal is moving towards an active programme of digital mapping. Topography, vegetation, terrain, surface geology and hydrogeology, soils and climate data are available in a 1:1000 000 resolution GIS; regional data at 1:250 000 scale are also being captured. A 1:25 000 scale digital orthophotomap database of the whole of the Murray floodplain has been completed and referenced to the Australian Map Grid. This is available in several hard copy forms and as geocoded raster data on three CD-ROMs. The CD product issued in 1995 and derived from 1991 aerial coverage also includes a DEM of the basin on a 100 m grid and 250 digital orthophotos covering 10 km x 11 km blocks. Mapping of the basin continues with digital ortho-photo coverage being extended to the lower Darling.

The **Bureau of Meteorology** (**BOM**) compiles climatic and meteorological mapping of the continent and region. Daily and monthly rainfall drought and temperature maps compiled from data collected in a network of 2 500 climatic stations are available in hard copy, by fax and from the BOM Web site. Digital versions of these data are packaged with interrogation software in an electronic climatic atlas. Regular synoptic forecast charting is also prepared. BOM published an atlas in the 1980s bringing together many Australian climatic data, with 1:12 500 000 scale thematic coverage, which may still be acquired from map dealers.

Divisions of the Commonwealth Scientific Industrial Research Organization (**CSIRO**) were very active in the 1960s and 1970s in the field of resources mapping of Australia and neighbouring states. The CSIRO Division of Land Research published a very wide variety of land system surveys, issued until 1977 in the *hand research series*, with mapping published at scales between 1:250 000 and 1:1000 000, and interpretations derived from aerial photographic coverage. From the mid -1980s systematic hard copy publication programmes were abandoned by the different divisions of CSIRO, and environmental GIS solutions came to be adopted for the increasingly research driven business units within CSIRO. Hard copies of many of the maps may still be available from map dealers, for example the 1:2 000 000 scale soils mapping of Australia in 10 sheets, compiled by CSIRO and published as the *Atlas of Australian soils* with the University of Melbourne Press in the 1960s.

New South Wales

Amongst the other mapping agencies in the state are the **Department of Water Resources**, the **Environment Protection Authority** and **NSW Agriculture**.

Northern Territory

We have listed all standard series topographic and geological series mapping covering Northern Territory under the Australia section of the catalogue.

Queensland

Since 1983 an increasing priority has been given to the *Sunmap* range of maps. Twenty-five tourist and recreation maps cover the whole state, as well as providing larger scale coverage of popular destinations. A range of fishing maps and boating safety charts is published, and street and road guides are issued. Other popular QDNR products include satellite image maps, as well as smaller scale general mapping of the state.

The Resource Sciences Centre of QDNR supports sustainable natural resource management and assessment of land resources in Queensland. In the past this included active publication programmes mapping the state and native forests and plantations, the compilation of soils mapping and the 1:1 000 000 scale vegetation survey of Queensland compiled in the Botany Branch of the QDPI. Some of these hard copy maps are still available. Recent projects have all involved digital mapping and output from GIS and include forest cover mapping of the Murray-Darling basin, and the publication of a water quality atlas of the state. QDNR maintains a thematic database which will allow it to generate customer-defined thematic mapping of Queensland.

Back to top

Atlas

Several important regional language atlases have been co-ordinated from the Australian National University Department of Linguistics in Canberra.

The market leader in the provision of electronic atlases, and software for the manipulation of census data on CD-ROM is **Space-Time Research**. Their Supermap software is used in a number of products offering the capability to retrieve tabulated data and generate customized colour or monochrome mapping. Amongst these are electronic census atlases, available for several countries and a number of different dates, an agricultural atlas of Australia on CD-ROM and the CDCD: *climate data compact disc*, with Australian climatic data from 1991. **ERSIS** Australia is the leading Australian commercial vendor of digital map data, with particular expertise in digital road data and the procurement of spatial data sets for the wider Asia-Pacific region. It provides access to these data from an on line 'data mall' at URL http://www.datamall.com.au.

Western Australia

DOLA collaborates with other state agencies in the production of a coastal resource atlas and in improving access to land information sources in the state. The *Western Australian land information system* (*WALIS)* is operated from DOLA headquarters. WALIS is a consortium of more than 20 state agencies with an interest in managing land or geographic information in Western Australia. Its aim is to facilitate integration of many different data sets by sharing information, developing standards, and encouraging inter-agency cooperation. Examples of GIS output by the WALIS community in Western Australia are available on the WALIS homepage at URL http://walis.wa.gov.au.

Back to top

Cadaster

Queensland

Cadastral maps of Queensland are held in QDNRs Digital Cadastral Database, and digital images of all freehold, mining and crown plans have been captured. The *Basic land information network* has been implemented from 1996 to allow public access to these data, customized hard copy property maps may be output, and from 1998 customers have been able to download digital files across networks from remote locations. Administrative mapping of other boundaries in Queensland is still available in hard copy, for example, electoral local authority and emergency planning maps. QDNR also distributes a PC-based digital land information directory and maintains a Web-based information service at URL http://www/qsiis.qld.gov.au/spat_info_directory/qsid.html. It is also responsible for the authoritative place name database for the state.

Western Australia

The **Land Information Branch Ministry of Planning** maintains land use mapping and geographic data for local authority town planning systems and for the Perth Metropolitan Region Scheme. All maps are now held in ARC/INFO or Microstation mapping systems.

The Department of Resources Development (**WADRD**) maintains site and regional maps of strategic industrial areas and a regularly updated small scale map of major development areas in the state.

Back to top

Tourist/Reference

A wide variety of commercial map producers are active in Australia. **Hema Maps** specialises in the international tourist market for mapping of Australia and the Pacific. First established as a map distributor in 1984 its mapping of Australia now concentrates upon the publication of regional and state road maps and atlases for the motorists, but Hema also publishes a range of city maps and has entered into a co-publication deal with Ordnance Survey Great Britain. In 1999 Hema released a CD-ROM Atlas of Australia and other recent

work has concentrated upon mapping of the more remote parts of the continent.

By far the largest commercial mapping combine in Australia is **Universal Press** (**UBD**), which publishes a range of road, tourist and town maps, directories and guide maps under the brand names Gregory's, Travelog, Robinson's, UBD and Broadbent. Production flowlines are increasingly digital and based around the use of AUTOCAD, with digital urban data available for most cities. UBD mapping is used in the electronic mapping available with the Telstra *White pages* business directory Web site. Universal headquarters are in Sydney, but the company also maintains offices in Melbourne, Adelaide, Brisbane and Perth. **Fullers Maps**, Adelaide, produces the market leading State Directory of South Australian urban areas, also available on CD-ROM as raster or vector data. **Ausway** produces street mapping of Melbourne and more recently Sydney, published in directories and as wall maps, and more recently available on CD-ROM. The Ausway Web site includes a street search facility with inquiry-centred interactive street mapping of the two cities. **Lonely Planet Publications** has headquarters in Hawthorn, Vic. and recently began to release tourist atlases of long haul destinations to complement its extensive range of guide books.

Other commercial publishers include Adelaide-based **Carto Graphics**, which initially focused upon the earth science contract market, but which increasingly concentrates upon the publication of tourist mapping of the interior of the continent and of tourist sites in South Australia. The motoring market is served by different state automobile associations, such as Royal Automobile Association of South Australia or the New South Wales based **NRMA**, which produces city maps, route maps, holiday maps and district mapping. Raised plastic relief mapping is issued by **Geo Maps**, including maps of areas around major cities, state maps and continental coverage.

Back to top

Census/Demography/Statistics

The **Australian Bureau of Statistics** (**ABS**) is the official statistical agency, responsible amongst other activities for the collection and dissemination of results from the Australian five-yearly censuses of population. **ABS** has been involved for many years in the publication of pre-census boundary mapping of enumeration units, and the post-census mapping of data collected in the censuses. These two strands of mapping activity are reflected in products available for the 1986 and 1991 censuses, which have become increasingly sophisticated in their use of digital mapping technologies. For the 1991 census maps AUSLIG maps were used as sources for the pre-census planning of data collection, and results were made available in the CDDATA91 product, from Space-Time Research, which built upon an earlier CD-ROM for the 1986 census by providing digital census geographies, many attribute census data relating to these areas, and Supermap or MapInfo-based mapping capability with desktop analysis of census results.

For the 1996 census a collaborative project was established to build a consistent national digital mapping infrastructure. This has involved an agreement between ABS and state and federal mapping agencies, who combined to form the Public Sector Mapping Agencies (PSMA), led by the Land Information Centre of New South Wales. A mapping data set is being created, matching census units to nationally standardized PSMA base map data, which has been used for census data collection. A thinned digital backdrop has been created from these data to serve as a base for the CDATA96, disseminating the results of the 1996 census. It is intended to use these products to support output from future censuses, but also to develop other applications, possibly with the addition of geocoded census geographies. This initiative represents the first pass at a standardized national spatial data infrastructure.

A wider range of data are available in the Integrated regional database, providing a detailed, customizable and updated socio-economic electronic atlas and database of Australia. Data comprise agriculture, building construction, population census and tourist information from ABS, as well as many data from other Commonwealth organizations. These have been chosen to allow time series analysis, by map, table or chart. Available on CD-ROM the IRDB is based on a Paradox system, with a mapping module using ArcView and mapping data derived from the Digital chart of the world.

The **Australian Electoral Commission** (**AEC**) publishes maps of electoral districts, and of electoral results. These maps are compiled by AUSLIG, hard copy results and boundary maps are available from AEC, and digital boundary data sets from **AUSLIG**. Consolidated maps of federal electoral boundaries are available in 14 sheets for the whole of Australia, or as state-wide sets. More detailed individual maps of the 148 federal electoral divisions are available as a regularly revised atlas.

Queensland

Statistical mapping of Queensland is compiled by the Office of the Government Statistician, including administrative mapping available on

the organization’s home page.

Back to top
