

REPORT TO THE INTERNATIONAL CARTOGRAPHIC ASSOCIATION GENERAL ASSEMBLY BRAZIL 2015

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Mapping Science Institute Australia

The Mapping Sciences Institute, Australia, is an incorporated company representing Australian cartographers and geographic information technologists. Its forerunner, the Australian Institute of Cartographers, was formed in 1952 and the name-change was registered in 1995. The purpose of the change of name was to recognize the emergence of the disparate disciplines involved in the management of geospatial information.

Mapping sciences are defined as those disciplines that deal with acquisition, management and communication of geospatial information and the MSIA promotes the theory, practice and understanding of all facets of these sciences through the collegiate expertise of its members. Membership is available to all persons engaged in the mapping sciences, admitted at grades commensurate with relevant academic qualifications and experience.

Management of the MSIA is effected at national level through the National Council which comprises a President, Secretary, Treasurer and Chairman of an Executive Committee, together with representatives from the States. MSIA is financially accountable to the Australian Securities and Investments Commission and in this regard, the Treasurer, Secretary and Chairman are the Company Directors. All office-bearers serve in an honorary capacity.

National Council

President: Don Pearce President 2013 Trisha Moriarty President 2014-15 Chair of Executive: Alan Armitage - to April 2015 William Cartwright – from April 2015 Secretary: Keith Smith Treasurer: John McCormack Promotion & Management: John McCormack Membership: Alan Unkles Heritage: Trevor McKenzie Research & Scholarship: David Fraser Journal of Spatial Science: Graeme Wright International: William Cartwright & Graeme Wright **MSI-Connected newsletter:** Shane Oates Webmaster: Shane Oates Barbara Petchenik Children's Map Competition: Doug Herrick CARTOGRAPHY periodical: David Fraser Bathurst Division representative: Doug Herrick NSW Division representative: Michael Turner NSW Division representative: Colin Mitford Queensland Division: Les Isdale Queensland Division: Alan Armitage Invited Councilor: Patrick Killoran

National Contact details: Mapping Sciences Institute, Australia GPO Box 1817

Brisbane QLD 4001 Email: national.secretary@mappingsciences.org.au

Australia's ICA Commitment

Professor William Cartwright

Past-President of the ICA Member of the Executive of the ICA Editor – International Journal of Cartography

Dr David Fraser

Member, Commission on Education and Training Editor, eCARTO online newsletter for the ICA

Trisha Moriarty

Member, Commission on Education and Training Coordinator for Australian activities, International Map Year

Australian Cartography

National Mapping

ANZLIC – the Spatial Information Council is the peak intergovernmental organisation providing leadership in the collection, management and use of spatial information in Australia and New Zealand. It comprises, as equal partners, senior officials from Australian, state and territory governments and the New Zealand Government.

'In April 2014, ANZLIC—The Spatial Information Council published the latest update to the Foundational Spatial Data Framework (FSDF) at

http://www.anzlic.gov.au/foundation_spatial_data_framework. The aim is to provide public access to datasets with 'a national coverage of the best available, most current, authoritative source of foundation spatial data which is standardised and quality controlled'. The Intergovernmental Committee on Surveying and Mapping (ICSM) is a standing committee of ANZLIC and performs a key role in implementing the national spatial policy through the delivery of the FSDF'. 1

Extract from

1. The Australian and New Zealand Foundation Spatial Data Framework: Making common foundation spatial data ubiquitous across Australia and New Zealand Edition 2 – April 2014 http://www.anzlic.gov.au/__data/assets/pdf_file/0017/47321/FSDF_Booklet_edition_2_web.pdf

Key agencies that act as data theme sponsors for the FSDF include the Bureau of Meteorology, Australian Bureau of Statistics, and the Department of Communications, assisted by Geoscience Australia.

Geoscience Australia is the Australian Government's national geoscience agency that acts as technical advisor on all aspects of geoscience as well as custodian of the geographical (and geological) data and knowledge of the nation.

'It is a key player in the development and implementation of the FSDF, managing 16 of the 36 datasets, including datasets for positioning services, elevation and bathymetry, place names, earth observation, surface water, transport, maritime boundaries and land cover. This custodianship role aligns with Geoscience Australia's mandate for the provision of fundamental geographic information.'

'Geoscience Australia is responsible for Australia's contribution to the Global Geodetic Reference Frame (GGRF), upon which global positioning system (GPS) applications are based. The Global Geodetic Reference Frame is reliant on cooperation and contributions from many countries. Geoscience Australia is supporting a process initiated by the United Nations Committee of Experts on Global Geospatial Information Management to strengthen international cooperation, infrastructure investment and data sharing, with the aim of refining the GGRF. The use of positioning technologies yields efficiencies in many industries, including agriculture, mining, transport, engineering and land administration; it also underpins a number of global monitoring sciences, including the monitoring of sea level rise.'

'Geoscience Australia has implemented new capabilities in data stewardship to improve and encourage the discovery, access, interoperability and use of science data. Geoscience Australia has focused on improving data standards and governance; developing innovative data-sharing tools; and making data openly accessible via web services, to maximise the uptake and use of authoritative geoscience data by government, industry, research and the public. Geoscience Australia data can now be discovered and accessed online via a wide range of institutional and community portals, including data.gov. au and FIND (find.ga.gov.au), a search portal launched by Geoscience Australia in 2014 to improve discovery and access to Australian Government spatial data. Geoscience Australia has partnered with the Department of Communications and National ICT Australia to develop the National Map (<u>http://nationalmap.gov.au/</u>), which is an interactive online map designed to help members of the public to use data available from Geoscience Australia, the Bureau of Meteorology, other government agencies and science institutions, and state and territory government agencies.'

Extract from

Annual Report 2013-2014 Department of Industry: Part B Geoscience Australia, pages 268 – 271 <u>http://industry.gov.au/AboutUs/CorporatePublications/AnnualReports/Documents/13-14/Chapter-10-15.pdf</u>

The National Map has been submitted by the MSIA to the International Cartographic Exhibition under the Spatial Data Infrastructure category. <u>http://mappingsciences.org.au/international-map-competition-2015/</u>



Caption: National Map online portal

To demonstrate Australia's continuing commitment to a national framework Geoscience Australia's Key Strategies for providing Geographical Information over the next 4 years are listed below;

Strategic Direction 2014-17	Significant Work 2014-15
	Build and implement the Spatial Information Council's (ANZLIC) Foundation Spatial Data Framework in partnership with the states and territories.
5.1 Build and implement Foundation Spatial Data	Curation of national geographic datasets, including elevation, surface water, the built environment, Gazetteer of place names, maritime boundaries, imagery and land cover.
Framework to deliver reliable representations of the geography of Australia.	Provide advice and support on location information standards and data maintenance to the Intergovernmental Committee on Surveying & Mapping (ICSM), and Standards Australia.
	Develop new land cover products at 25 metre resolution.
	Develop national shallow water bathymetry from Earth observation platforms.
	Develop charts and vertical obstruction products in partnership with Airservices Australia to support safer aeronautical navigation.
5.2 Champion the use of location	Build capability of Australian Emergency Management to use location information for disaster events and situation awareness.
information for government and community decision making.	Provide maps to the Department of the Prime Minister and Cabinet to support indigenous affairs policies.
	Provide sea floor mapping, data and advice to the Australian Transport Safety Bureau to support the search for missing aeroplane MH370.
	Release the National Map platform for visualising location information available under open data policies.
	Deliver national geodetic coordinate datum services including legal traceability of position and the online Global Navigation Satellite System (GNSS) positioning service.
5.3 Deliver national geodetic capability.	Undertake ongoing refinement of the national geodetic coordinate datum that underpins all positioning and navigation activities in Australia.
	Commence the implementation of the National Positioning Infrastructure plan that will transform the application of GNSS data across Australia and its maritime zones.

Extracted from

Geoscience Australia website: <u>http://www.ga.gov.au/about/what-we-do/role/providing-fundamental-geographic-information</u>

State Mapping

In support of the FSDF and as a consequence of the rapid development and availability of new technologies for spatial data delivery, there has be a large focus on investment at the state and territory government levels at online spatial data delivery systems. This includes spatial data directories and web mapping applications. Below is a just a selected subset of state government systems that have been released recently.

State Government	
system	Link
Western Australia- Share Location Information Platform (SLIP)	http://slip.landgate.wa.gov.au/Pages/AboutUs.aspx
New South Wales - Land & Property Information - NSW GLOBE	http://globe.six.nsw.gov.au/
Queensland - Business and industry portal – Queensland Globe	https://www.business.qld.gov.au/business/support-tools- grants/services/mapping-data-imagery/queensland-globe
Tasmania - Land Information System - the LIST	https://www.thelist.tas.gov.au/app/content/home
Victoria – Vicmap	https://services.land.vic.gov.au/landchannel/content/productcatalogue
South Australia - Location SA Viewer	http://www.location.sa.gov.au/

Spatial Data Catalogue Projects

Government system	Link
Geoscience Australia	find.ga.gov.au
New South Wales Spatial Data Catalogue	https://sdi.nsw.gov.au/
Queensland Spatial Catalogue - QSpatial	http://qldspatial.information.qld.gov.au
Western Australia – Interragator+	https://www2.landgate.wa.gov.au/interragatorplus/
Victoria – data.vic.gov.au portal	https://www.data.vic.gov.au/data/group/spatial-data
Northern Territory	http://www.lands.nt.gov.au/land-info/ntlis http://www.ntlis.nt.gov.au/imfPublic/imf.jsp?site=nt_atlas
Tasmania	https://data.thelist.tas.gov.au/datagn/srv/eng/main.home
South Australia – Data SA	https://data.sa.gov.au/

Australia Government Mapping Organisations

Commonwealth agencies

Geoscience Australia (GA) Australian Centre for Remote Sensing (ACRES) Australian Hydrographic Service Defence Imagery & Geospatial Organisation (DIGO) Australian Antarctic Division Intergovernmental Committee on Surveying and Mapping (ICSM)

State and Territory agencies

ACT - Planning & Land Authority <u>NSW – Land & Property Information</u> <u>NT - Dept. of Lands, Planning and the Environment</u> <u>Qld - Dept. of Natural Resources and Mines</u> <u>SA - Dept. for Environment, Water & Natural Resources</u> <u>SA - Primary Industries & Regions</u> <u>Tas - Dept. of Primary Industries, Parks, Water and Environment</u> <u>Tas - Land Information System</u> <u>Vic – Planning & Land Use</u> <u>Vic - Land Channel</u> <u>WA - Landgate</u>

Awards

Professor William Cartwright was made a member of the Order of Australia_for significant service to cartography and geospatial sciences as an academic, researcher and educator.

Australia - Events 2012-2015

An indicative selection:

- 1st DigitalGlobe Australia User Meet 2014
- Annual International Map Industry Association conference
- Annual Mapping Seminar, MSIA New South Wales Division
- Annual RMIT University Geospatial Students Association Dinner
- ANZMapS conference, Melbourne, 2013
- Brisbane's GIS Day 2014 at the Queensland University of technology (QUT)
- Curtin University celebrated 100 years of excellence in Spatial Sciences in 2013
- Directions 2013: ESRI Australia's Tour de Force
- EEE International Geoscience and Remote SensingSymposium 2013
- GeoCart'2014 jointly organized by the New Zealand Cartographic Society and the Australian and New Zealand Map Society
- GeoNext 2013: the State of Cartography map exhibition
- Geospatial Science Research 3 Symposium (GSR_3) 2014 RMIT University
- IEE International Geoscience and remote Sensing Symposium 2013
- MapHack Day Sunday 17 August 2014
- MSIA Brisbane International Geospatial Forum 2012

- MSIA Mapping Sciences professional development seminar, Ultimo, October 2013
- MSIA/ANZMapS Power of Maps conference, Canberra, 2015
- One-Day Intensive management Course at the LOCATE 15 Conference Building the Business Case for Investment in Spatial Information Projects
- SIBA National Breakfast Series
- Surveying and Spatial Sciences Conference
- The Australian and New Zealand Map Society (ANZMaps) annual conference
- The seventh National Cartographic Conference GeoCart'2014 / 42nd ANZMapS conference / 3rd ICA Regional Symposium on Cartography for Australasia and Oceania, September, 2014

Some specifics:

Conferences

Locate conference

The annual **Locate Conference** is Australia & New Zealand's leading Spatial event consolidating the top Australian spatial industry events. It provides a central meeting point for industry, government and academia in one of the fastest growing industries. Locate Conference Series is designed to energise the location industry, inspire both producers and consumers of location information, and drive greater awareness, adoption and innovation. An integral part of this conference is the **Research@Locate**, which brings-together Australian researchers working in the geospatial sciences.

International Map Industry Associations Asia-Pacific Conference

The annual **IMIA** conference is Asia- Pacific's leading mapping and cartographic event in one of the fastest growing industries in Australia.

Power of Maps conference

For a number of years the Australian and New Zealand Map Society (ANZMapS) and MSIA have cooperated in the organisation of a bi-annual conference event. The most recent was the Power of Maps Conference was held at the National Gallery of Australia (NLA), Canberra from Wednesday 29th April to 1st May, 2015. Twenty six papers were present on topics ranging from military mapping, map curatorship and mapping technologies. In acknowledgment of the 100 year anniversary of the ANZAC Corps and the 100 year anniversary of the formation of the Royal Australian Survey Corps, two sessions were dedicated to military mapping. There was also a display geological maps of parts of France produce by eminent Australian geologist Edgeworth David during WW1.

Delegates who stayed on for the excursion were informed by presentations at Geoscience Australia; the Australian National University; the National Arboretum, the Australian War Memorial, Red Hill Lookout and the Surveyor's Hut. It was a very successful conference which brought together cartography lovers from all sectors of the industry.

Exhibitions

Mapping Our World: Terra Incognita to Australia Exhibition, National Library Australia



The once-in-a-lifetime exhibition *Mapping Our World: Terra Incognita to Australia* was the National Library of Australia's most successful exhibition with near full-house attendance at all timed sessions and events. Mapping Our World attracted 118,264 visitors over 17 weeks, from 7 November 2013 to 10 March 2014.

Curated by national Library Curator of Maps Dr Martin Woods, Treasures Curator Mr Nat Williams and Dr Susannah Helman, many of the unique and rare maps in the exhibition had never been seen in the Southern Hemisphere and some had never left the libraries that

hold them. Major loans were negotiated with international lenders including the *Biblioteca Nazionale Marciana* in Venice, the British Library, the National Archives in the United Kingdom, the *Bibliothèque nationale de France* in Paris, and the *Biblioteca Apostolica Vaticana*.

The exhibition formed the centrepiece of a rich program of cultural activities including lectures, seminars, a film series, musical performances, an education program for visiting schools, workshops for children and adults and late night viewings for the whole family. Attendance at related events was also very strong. An additional 6,660 people attended exhibition related events and just over 4,000 school children participated in education programs.

A major catalogue was published featuring essays on all 110 exhibition items, with over 9,000 catalogues sold. Interactive and real-time geospatial applications were developed and supplied by ESRI Australia.

Benefits to the Australian public and international visitors included:

- a once-in-a-lifetime opportunity to see, firsthand, historically significant maps that ultimately led to the discovery and mapping of Australia;
- an opportunity to experience rarely displayed and memorable manuscript maps from remarkable international and private collections, as well as from the Library's own rich collections;
- an opportunity for a greater understanding of the significant events, voyages and cartographic documents that shaped the history and discovery of Australia;
- enhanced awareness of the continuing role of libraries in collecting and documenting cartography and great voyages of discovery; and,
- support of education and life-long learning in the areas of Australian history and culture.

Report supplied by Dr Martin Woods, Curator of Maps, National Library Australia





Mapping Our World exhibition interior, with Fra Mauro Map of the World at left.

100,000th visitors to *Mapping Our World*, with exhibition curators Dr Susannah Helman, Nat Williams and Dr Martin Woods, 26 February 2014



Peter Barber, Head of Maps at the British Library speaks at the *Mapping Our World* Discovery Day, 10 November 2013



Mapping Our World Family Day, 15 February 2014



Actor Russell Crowe at the *Mapping Our World* media preview, 6 November 2013.

Barbara Petchenik Children's World Map Competition Australian Exhibition 2015

The MSIA is once again participating in the Barbara Petchenik Children Map Drawing competition. There were 69 entries in the three age groups from 11 schools.

- 32 entries in the 6 to 8 age group
- 34 entries in the 9 to 12 age group and
- 3 entries in the 13 to 15 age group.

MSIA was pleased to be able to display the Australian entries here at the Power of Maps conference held in Canberra in April for all to enjoy. The maps judged as the national winners for the age categories will then go on to represent Australia at the International exhibition at the ICC2015 in Brazil. A people choice award was also offered with the conference delegates voting on their favourites.

Results published at

http://mappingsciences.org.au/barbara-petchenik-childrens-map-competition-2015/

Local prizes for the Australian competition were kindly donated by the NSW Land and Property Information agency.



Caption: Delegates at the Power of Maps enjoying the children's maps

International Cartographic Exhibition

MSIA has also coordinated the Australian entries for the International Cartographic exhibition being held in conjunction with the ICC2015. A wide variety of submissions were received and Australia will have entries in 5 of the 6 categories. Twelve organisations made submissions, many with multiple entries across the 6 categories. 16 in total have been entered.

Category: Digital Products

	Organisation	Title	Туре
1	Geoscience Australia	Australian National Base Map	Map cache service
2	Spatial Data & Mapping, Department of Natural Resources and Mines, State of Queensland, Australia	QTopo	Web Site
3	Geoscience Australia	Australian Topography Map	Map cache service

4	Geological Survey of New South Wales, Australia	Interactive NSW Geology Phone Map	Tiled-images map with UTFGrid storage of informational text
5	Royal Melbourne Institute of Technology	For King and Country	Online web map
6	Geological Survey of Western Australia	WA Geology	WA Geology application is a free, device independent Geographical Information Systems (GIS) viewer to view, query and integrate geology and resource information.

Category: Paper Maps

	Organisation	Title	Material type	scale
1	Geological Survey New South Wales	Bathurst 1:250 000 Metallogenic Map (Second Edition)	Paper	1:250 000
2	Airservices Australia	International Airroutes	Paper	1:15 MILLION
3	Airservices Australia	Visual Navigation Chart - Townsville	Paper	1:500 000
4	Geological Survey of South Australia, Department of State Development, Government of South Australia	WINTINNA 1:250,000 Geological Map	paper	1:250,000
5	Geological Survey of Western Australia, Department of Mines and Petroleum	Basic Raw Material Resources: KARRATHA	paper	1:200 000

Category: Education

	Туре	Authors	Published by	Date published
1	website	Dorothy Prescott , Ailie Smith	eScholarship Research Centre, University of Melbourne	2013-2015
2	Map and Interactive map	Lauren Carter	National Centre of Biography, Australian National University, Canberra	1/06/2014

Category: Spatial Data Infrastructure

	Organisation	Title	Portal Address
1	NICTA (Australia's Information and Communications Technology Research Centre of Excellence) and Australian Commonwealth Government's Department of Communications collaboration.	National Map	<u>http://nationalmap.gov.au</u>

Category: Atlases

	Organisation	Title
1	Department of Environment, Water and Natural Resources	Mount Lofty Ranges, South Australia, Emergency Services Map Book
2	Geological Survey of South Australia	The South Australian Atlas of Geoscience and Mineral Exploration Data – Woomera Prohibited Area within the Gawler Craton
3	Melway Publishing Pty Ltd	Melway Street Directory Of Greater Melbourne Edition 42, 2015

Competitions

Indicative selection:

- Annual SSSI Prize to Geospatial Sciences student at RMIT
- Australian entries in the 2015 International Cartographic Map Exhibition
- Australian entries in the Barbara Petchenik Childrens' Map Competition
- GIS People, a Brisbane-based high-tech start-up company, won the title of Information Technology Champion at the Australian Small Business Champion Awards 2014.
- Mapping Sciences Institute, Australia, student prize at QUT
- National map competition
- Student awards to RMIT Geospatial Science students
- Surveying and Spatial Sciences Institute Prize
- David McInnes Memorial Prize
- The Patricia Alonzo Memorial Prize, jointly awarded by MSIA and ANZMaps
- ESRI Prize for Spatial Information Systems
- The IMTA (Asia Pacific) 2012 Map Awards attract the best of Australian and international contemporary cartographers, to win distinction for their products.
- Australian Map Competition 2015

Publications

The Journal of Spatial Science is a joint publication for members of the MSIA as well as the SSSI. Members of the SSSI receive the Journal only in online format via the Taylor & Francis website which also provides access to a substantial catalogue of back issues for CARTOGRAPHY to 1957.

The Journal of Spatial Science (TJSS) is a peer-reviewed journal in the Mapping Sciences that is published twice yearly in March and September by Taylor & Francis (T&F). TJSS is a publication of The Mapping Sciences Institute, Australia (MSIA) and Surveying & Spatial Sciences Institute (SSSI) which publishes papers contributed by members of both MSIA and SSSI, and also contributors from across the world. These are original peer review Research and Review Papers contributing to the theory and practice of the mapping sciences representing new ideas and improvements on existing approaches to old problems. The Journal also publishes Professional Papers that describe aspects of professional practise and implementation of techniques related to cartography, geodesy, geographic information science, hydrography, photogrammetry, remote sensing or surveying. This provides an opportunity for professionals and practitioners to inform the world of their business and industry innovations.

Contents of Volume 60, Issue 1, 2015

Special feature – managing the dynamics of the New Zealand spatial cadastre Donald Bruce Grant, Nic Donnelly, Chris Crook, Matt Amos, John Ritchie & Craig Roberts Special feature: extracting geography from cartoons in a war context Antoni Moore & William Cartwright Seasonal differences assist in mapping granite outcrops using Landsat TM imagery across the Southwest Australian Floristic Region G. Alibegovic, A.G.T. Schut, G.W. Wardell-Johnson & T.P. Robinson Modelling the hypsometric seasonal snow cover using meteorological parameters Snehmani, Anshuman Bhardwaj, Mritunjay Kumar Singh, R.D. Gupta, Pawan Kumar Joshi & Ashwagosha Ganju Seaport resilience to climate change: mapping vulnerability to sea-level rise Prem Chhetri, Jonathan Corcoran, Victor Gekara, Chris Maddox & Darryn McEvoy Analysing user contribution patterns of drone pictures to the dronestagram photo sharing portal Hartwig H. Hochmair & Dennis Zielstra Classification of different urban categories corresponding to the strategic spatial level of urban planning and management using a SPOT4 scene Michael Meinild Nielsen & Ola Ahlqvist Artificial intelligence-based solution to estimate the spatial accuracy of volunteered geographic data Nazila Mohammadi & Mohammadreza Malek Modelling cost estimation for accessing spatial data using fuzzy logic and time-driven activity based costing in the context of an NSDI Eric Mwaikambo, Abbas Rajabifard & Martin Hagai Space-borne pseudo-range reconstruction and its performance analysis in dynamic orbit determination Dongju Peng, Kefei Zhang, Jizhang Sang, Suqin Wu & Bin Wu Estimation of optimal quantitative parameters of selected input data used in local quasigeoid modelling by the GGI method Marek Trojanowicz Planning and visualising 3D routes for indoor and outdoor spaces using CityEngine

KyoHyouk Kim & John P. Wilson

Selection: Cartography – Australian edition of ECarto online newsletter MSI-Connect: Newsletter of the Mapping Sciences Institute, Australia Map Matters: the newsletter of the Australia on the Map Division of the Australasian Hydrographic Society. Position magazine – Australian magazine of surveying, mapping and geoinformation

Online Resources Spatial Source <u>http://www.spatialsource.com.au/</u>

Map Library Collections Online

National Library of Australia Map Collection

Online Map Collections: State Library of New South Wales State Library of Victoria State Library of Queensland State Library of Western Australia State Library of South Australia State Library of Tasmania

Academic Institutions teaching Cartography related courses

Australian Defence Force Academy Canberra Institute of Technology Charles Sturt University Faculty of Science <u>Curtin University</u> <u>Queensland University of Technology</u> University of Adelaide University of New South Wales University of Newcastle University of Queensland - Brisbane University of Southern Queensland - Toowoomba University of Tasmania University of Western Australia - Perth TAFE NSW TAFE Tasmania

Educatedu List of Geography and Cartography programs in Australia - <u>http://www.educaedu.com.au/geography-and-cartography</u>

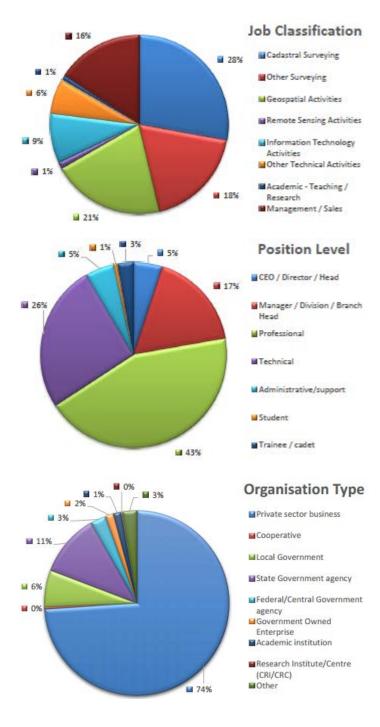
Cartographers and Surveyors in Australia

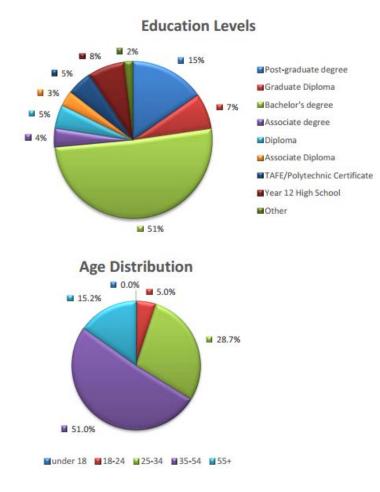
Spatial Industry Business Association (SIBA) Survey

The 2014 Spatial Salary Survey was conducted online during May to August 2014 by Spatial Industries Business Association on behalf of the Spatial Industry Statistics Program participants.

The full report can be found at : <u>Spatial Industries Business Association (SIBA) analysis of the 2014</u> salary survey.

To provide a brief overview the state of the spatial industry in Australia, the following statistics have been copied below.





Further information regarding career trends for Cartographers and Surveyors is also available from the Open Universities Australia <u>https://www.open.edu.au/careers/agriculture-forestry-fishing/cartographers-surveyors</u>

Employment trends - Employment for Cartographers and Surveyors has risen by a rate of 11.6% over the past 5 years and is expected to grow moderately through 2017.

Employment growth - Total employment growth over the past 5 years for male and female, employed part-time and full-time is 2,100

Cartography related professional institutes

Mapping Sciences Institute, Australia Surveying and Spatial Sciences Institute Australian and New Zealand Map Society SIBA International Map Industry Association Australasian Hydrographic Society

Other <u>XNATMAP</u> <u>Australian Geography Teachers Association</u> <u>Cooperative Research Centre for Spatial Information</u> Destination Spatial Intergovernmental Committee on Surveying and Mapping ANZLIC – the Spatial Information Council Australian Spatial Information Education and Research Association Map History Map-Librarians Australia on the Map

Australia Private Mapping Organisations

Representative selection only: **1Spatial Australia** AAM Carto Graphics Chart and Map Shop GIS People Pty Ltd. Hema Maps Map Centre Parramatta Melbourne Map Centre Melway NextByte Technologies Pvt Ltd Spatial Vision The Map Shop The Perth Map Centre UBD / Gregorys / Explore Australia Westprint Heritage Maps World Wide Maps

Further information can be found at the Spatial Source Online Industry Directory http://www.spatialsource.com.au/directory