



Australian Government

Geoscience Australia

**GEOSCIENCE AUSTRALIA**

# **SCIENCE STRATEGY 2028**

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Earth sciences for  
Australia's future

## Department of Industry, Science, Energy and Resources

Minister for Resources and Water: The Hon Keith Pitt MP

Secretary: Mr David Fredericks PSM

### Geoscience Australia

Chief Executive Officer: Dr James Johnson

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### Images

Page 4, 10, 14: Jenny Wu

Page 12: Sarah Darbyshire

**The performance and delivery of Geoscience Australia's *Strategy 2028* is underpinned by our science and how we conduct it. Our value to the nation, support to the Australian Government, and the trust in our advice is centred on the quality, timeliness and relevance of the scientific knowledge and skills that we host and cultivate, as well as the culture and principles that guide our scientific endeavours. This cannot be taken for granted, so it is therefore appropriate that we have a science strategy to guide how we conduct and support our science.**

Part of our greater scientific mission is aligned and informed by national and global science priorities (for example, Australia's National Science Statement) as well as within our discipline of geoscience (such as the Academy of Science's decadal plans and the UNCOVER Initiative). To achieve this we work within the context of a broad

definition of geoscience to include the science of our Earth's systems traditionally included within disciplines such as geology and geography, but also a wider field of disciplines extending from the Earth's core and into the surrounding cosmos, to reflect an expanding and integrated portfolio of expertise in geoscience.

Our *Science Strategy 2028* represents a new approach to articulating the context and priorities for our science. Its main aim is to show the strategy and fundamental framework supporting the science that in turn supports Geoscience Australia's *Strategy 2028*. To do this it has brought together other key strategic strands such as our Core Commitments and Science Principles, and depends on our strategies in areas such as digital science, communication and engagement, health and well-being as well as diversity and inclusion. The way that our core commitment to science has brought these key strategic commitments together is perhaps one of

the most exciting strategic imperatives of this document.

The success of this science strategy will be largely measured by recommendations from our five-yearly schedule of science evaluations in 2021–22 and 2026–27. Also important will be how the nation values and engages with our science, as well as the well-being and achievement of our scientists and our community of staff working both internally and externally.

This science strategy was developed by our Office of the Chief Scientist in close collaboration and support from our senior executive (Divisional Chiefs and Branch Heads) and deep domain experts within Geoscience Australia.

This strategy sets out a vision with clear and measurable objectives and explains the roles and foundations of Geoscience Australia's Office of Chief Scientist. It provides the framework and direction to ensure our science aligns with our six Science Principles, and supports our Core Commitments set out in *Strategy 2028*.







The Science Strategy Implementation Plan is a companion document to the *Science Strategy 2028*. It sets out clear and measurable objectives to achieve our strategy commitments, and explains the roles and foundations of Geoscience Australia's Office of Chief Scientist.



# Who we are

## Our Purpose

Earth sciences for Australia's future.

## Our Mission

To be the trusted source of information on Australia's geology and geography for government, industry and community decision making.

## Our Office of the Chief Scientist

Ensures the quality, relevance and best conduct of Geoscience Australia's science in meeting its strategic purpose and mission.

## Strategy 2028

*Strategy 2028* outlines our strategic plan for impact by supporting evidence-based decisions through information, advice and services for a strong economy, resilient society and sustainable environment. It includes six key areas of impact, with underlying measurable objectives:

- building Australia's resources wealth
- supporting Australia's community safety
- securing Australia's water resources
- managing Australia's marine jurisdictions
- creating a location enabled Australia
- enabling an informed Australia.

The successful delivery of *Strategy 2028* is underpinned by the quality and relevance of our science and how we best conduct it.

## Our Core Commitments

In order to develop Geoscience Australia as the strongest, most resilient organisation it can be, we have identified four Core Commitments:

- pursuing science excellence
- making the most of our data
- ensuring supportive stakeholders
- enhancing positive organisational culture.

Each of our four Core Commitments influence the culture and success of how the people in Geoscience Australia are able to conduct science.









# Our science principles and strategic actions

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The Science Principles describe how we conduct our science in both long-term planning and day-to-day operations. The six Science Principles to which we commit, and the related strategic actions, are set out in the following pages.

An aerial photograph showing a river with a distinct greenish-blue hue winding through a dry, brown, and textured landscape. The river has several meanders and loops. The surrounding terrain appears rugged and possibly volcanic or mineral-rich.

# 01 Relevant science

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We commit to relevant science in order to ensure that Geoscience Australia provides quality-assured information to the right people in the right timeframe so they can make evidence-based decisions, particularly related to the Australian Government. This includes the provision of scientific advice to meet national and international obligations.

We will achieve this by:

- understanding the current and emerging national priorities and undertaking the science required to respond to them.
- influencing national and international research agendas to promote the development of science that will support current government priorities and position Australia to respond to long term challenges.
- ensuring that our investments in science are targeted both towards current stakeholder priorities and building capability to address long term challenges.

## 02 Collaborative science

We commit to collaborative science to allow Geoscience Australia to meet current and emerging challenges that are more complex than any single individual, team or organisation can achieve. This requires us to engage with the broad research and data community, and with non-scientific stakeholders who are more likely to use and value our information if they are involved in our work.

We will achieve this by:

- proactively engaging with the science community to leverage their capabilities and develop our own.
- engaging our stakeholders in designing scientific activity to ensure they receive and use the information and products they require.
- acknowledging our collaborators to promote an inclusive working environment that will foster future opportunities.
- recognise and actively listen to the different roles, capacity and priorities of the diversity of stakeholder types and ensure that our science engagement is appropriate for the situation.







### 3 Quality science

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We commit to quality science to maximise stakeholder confidence that the data and information we provide is accurate, that results are repeatable, and that any uncertainties are explained and accounted for. This will ensure that our science reflects not just quality, but integrity. Data and information can then be used to inform current national debate and decisions, and be re-used and re-purposed long after it is created.

We will achieve this by:

- complying with the *Australian Code for the Responsible Conduct of Research*.
- attracting, retaining and developing staff with the right skills and attributes to meet our future science objectives.
- providing fit-for-purpose information with conclusions consistent with the data inputs, appropriate caveats on limitations, and quantification of uncertainties.
- appropriately participating in regular evaluation of the quality of our science.

## 4 Transparent science

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We commit to transparent science to demonstrate that our scientific activities are unbiased and support the trust and authority of advice to government and subsequent decisions. By openly sharing our work and abiding by the FAIR data principles (findable, accessible, interoperable, reusable) we create a platform that supports further innovation in the tradition of scientific discovery.

We will achieve this by:

- ensuring that we aim to make our data and associated information (metadata, methods, results, and products) are findable, accessible, interoperable, and reusable (FAIR).
- tailoring communication styles in scientific presentations and publications to the audience so that they understand the science.
- ensuring that our science products are delivered in the most appropriate way (e.g. digital) that is user-friendly, robust and responsive.





## 05 Communicated science

We commit to communicated science to ensure that Geoscience Australia's outputs are accessible and useful for a wide variety of stakeholders. By tailoring the communication of scientific information to the particular audience and purpose, our science will reach more stakeholders and have greater impact. Effective communication includes appropriate background for stakeholders and the public to enhance their understanding of the science.

We will achieve this by:

- seeking to communicate our science broadly to maximise its impact.
- using plain language to communicate our ideas without losing scientific integrity.
- listening to the concerns of stakeholders and communicating in ways that address those.
- promoting understanding and application of scientific evidence for decision making by policy developers, industry and the broader community.
- inspiring the broader community in geoscientific knowledge to foster a scientifically literate public and the next generation of geoscientists.



## 06 Sustained science capability

We commit to a sustained science capability that positions us to undertake scientific activities that meet current and future priorities. The type and level of science capability we retain will be determined by horizon-scanning and strategic requirements.

We will achieve this by:

- retaining core scientific capability in-house, and develop an adaptable workforce with abilities in technical science, digital technologies, and data management.
- engaging with the broader science community to promote development and maintenance of the external capabilities we are likely to require.
- identifying future data requirements and promote the acquisition, curation, analysis, and interpretation of that data by ourselves and others.
- valuing and committing to inclusive and diverse scientists that bring their authentic and best person to their science.







# Strategic science priorities

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**Geoscience Australia's strategic science priorities are derived from mapping our four Core Commitments to the six Science Principles.**

Table 1 shows an overview of these and is followed by a brief outline according to each of our four Core Commitments, and examples of three key implementations.



**Table 1.** Our strategic science priorities (bold text and parenthesis reflect “key implementations” further described in the Implementation Plan)

		Our Core Commitments			
		Pursuing Science Excellence	Making the Most of Our Data	Ensuring Supportive Stakeholders	Enhancing Positive Organisational Culture
Science Principles	Relevant Science	<ul style="list-style-type: none"> <li>Science Evaluations (1.1)</li> </ul>	<ul style="list-style-type: none"> <li>Accelerate engagement with digital and computational science, such as HPC, ML and AI (2.1)</li> </ul>	<ul style="list-style-type: none"> <li>Science Stakeholder Framework (3.1)</li> <li>Science for national benefit</li> </ul>	<ul style="list-style-type: none"> <li>Valued science and scientists</li> </ul>
	Collaborative Science	<ul style="list-style-type: none"> <li>Identify capability and capacity gaps for targeted collaboration (1.2)</li> </ul>	<ul style="list-style-type: none"> <li>Build community consensus on standards for datasets to improve interoperability to enhance data sharing and facilitate collaboration</li> </ul>	<ul style="list-style-type: none"> <li>Stakeholder Framework (3.1)</li> </ul>	<ul style="list-style-type: none"> <li>Inclusive science and scientists (4.1)</li> <li>Highlight and celebrate collaboration</li> </ul>
	Quality Science	<ul style="list-style-type: none"> <li>Science Evaluations (1.1)</li> <li>Maintain and grow:                             <ul style="list-style-type: none"> <li>» deep domain knowledge</li> <li>» authoritative advice</li> <li>» national science leadership</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Quantify ‘uncertainty’ of our data (2.2)</li> <li>Peer review our science data through Science Evaluations (1.1)</li> <li>Participate in major conferences</li> <li>Lead national and international communities of practice/standards groups</li> </ul>	<ul style="list-style-type: none"> <li>Indigenous geoscience (4.2)</li> <li>Science Evaluations (1.1)</li> </ul>	<ul style="list-style-type: none"> <li>Indigenous geoscience (4.2)</li> <li>Scientific integrity</li> <li>Foster creativity, innovation and measured risk</li> </ul>
	Transparent Science	<ul style="list-style-type: none"> <li>Build science fraud &amp; ethics awareness</li> </ul>	<ul style="list-style-type: none"> <li>Accelerate adoption of ‘FAIR’ data principles (2.2)</li> <li>Core Trust Seal Certification</li> <li>Improve internal data lifecycle management</li> </ul>	<ul style="list-style-type: none"> <li>Major conference attendance, workshops and key note presentations</li> </ul>	<ul style="list-style-type: none"> <li>Maintain and grow scientific integrity and trust</li> </ul>
	Communicated Science	<ul style="list-style-type: none"> <li>Science Masterclasses</li> <li>Publication clearance and peer review</li> </ul>	<ul style="list-style-type: none"> <li>Innovative Geoscience information and data delivery (2.3)</li> <li>Citizen science</li> </ul>	<ul style="list-style-type: none"> <li>Client &amp; Visitor Services</li> <li>Videos of science highlights</li> <li>Stakeholder networking</li> </ul>	<ul style="list-style-type: none"> <li>Science outreach to address national challenges (3.3)</li> </ul>
	Sustained Science Capability	<ul style="list-style-type: none"> <li>Capability—Capacity Mapping (1.2)</li> <li>Graduate Program and growing staff capability (1.3)</li> <li>Study scholarships</li> <li>Scientist Legacy Program</li> </ul>	<ul style="list-style-type: none"> <li>Digital science capability mapping and workforce planning (1.2)</li> <li>Volunteer program</li> <li>Invest in staff data skills and capability (1.2)</li> </ul>	<ul style="list-style-type: none"> <li>Best practice land, air and marine access (3.2)</li> <li>Education Centre/Science outreach (3.3)</li> </ul>	<ul style="list-style-type: none"> <li>Social licence for science and from science</li> <li>Engage breadth and diversity of science talent, especially across generations (4.3)</li> </ul>



