

# Australia in Space: a decadal plan for Australian space science

EXECUTIVE SUMMARY JUNE 2021

*‘Human knowledge and human power meet in one.’* Francis Bacon

It is an exciting time to be involved with space. Increasingly diverse and open-market participation in space activities is catalysing transformative opportunities, but also amplifying risks. Space-derived activities and services are already integral to Australia’s economic, environmental and national security. Australia aims to exploit new opportunities by growing an internationally competitive space industry that will also build innovation capability and address strategic needs. Key to this is a sustainable space sector built on a foundation of excellence in science and technology.

Space science—the science of exploration and use of space to generate new knowledge, disruptive innovation and practical benefit—is a fundamental enabler for space industry and applications. It underpins the space programs of our global partners and our own space aspirations. Australian space science research has established a world-class reputation in many areas. It engages with international space programs and is critical for growing our space capability and mitigating risks. However, there is no coherent plan to develop and fund space science research across all sectors (government, universities, industry) and effectively transition it to support operational space capabilities and applications. This hinders the sustainable development and competitiveness of our space economy.

Australia in Space outlines strategies for Australian space science to advance national interests and priorities in space, enabling a vision that sees Australia participating in the global community of spacefaring nations while growing the innovation economy, developing sovereign capability and improving the lives of all Australians.

To achieve this vision, the plan presents the following headline priority recommendations:

1. A national research priority in space science to align with civil and defence sovereign industry capability requirements, to encourage discovery and innovation, and help build capacity for national benefit and international impact.
2. A respected voice to represent and support engagement of Australia’s space science expertise with the diverse elements of the space sector, and provide a point of contact for collaboration on science missions with other agencies. This should take place through a Chief Scientist within the Australian Space Agency with responsibility for space science policy settings.
3. Commitment to and investment in an ongoing national space program, enabled by space science missions that stimulate discovery and technical innovation, address national priorities, grow capability and inspire citizens.

These headline priorities underpin the plan and support the following recommendations.

4. An integrated national space innovation and education strategy, led by the Australian Space Agency, that spans the primary, secondary, tertiary, VET and industry sectors and aims to grow STEM participation, and improve career pathways and industry outcomes, cognisant of the values of diversity and gender equity.
5. An ongoing Earth observation satellite program to mitigate data supply risk, address grand national challenges, grow capacity and contribute to global programs. As part of this, Australia should lead international efforts on global instrument and data calibration and validation. This program should be led by the Australian Space Agency.
6. An integrated program to advance basic and applied research on transformative technologies in secure, high bandwidth radio frequency and optical communications technologies including across satellite networks, advanced on-board processing, and next generation secure position navigation and timing capabilities. This should include technology demonstrator satellite missions and associated ground infrastructure.
7. A national program focusing space weather research activities to help protect critical infrastructure and advance space weather forecasting and space situational awareness activities. This program should be supported by observations from a diverse and extensive suite of sovereign ground- and space-based sensors.
8. A commitment of support to a national program of space life science research, including space medicine and human factors, engaging with international programs and providing translation of research to improve everyday life.

The plan will position Australia to grow opportunity, productivity, skilled employment and sovereign capability and protect critical assets as the global space ecosystem evolves and transforms.

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## About the plan

This summary has been prepared by an executive working group convened by the National Committee for Space and Radio Science to prepare Australia in Space: a decadal plan for Australian space science. The plan has been informed by the activities of eleven expert working groups and extensive community consultation, including surveys and town-hall meetings. The views represented in this document do not necessarily reflect the views of, nor imply endorsement by, the working group members' affiliated organisations.

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