

Astronomy Australia Ltd

Astronomy Australia Ltd (AAL) supports a range of projects to ensure that Australian astronomers stay internationally competitive and have access to the best astronomical research infrastructure.

Overview

AAL is a not-for-profit company limited by guarantee. AAL supports Australian astronomers by:

- providing Australia's astronomers with access to major international optical/infrared observatories to remain at the forefront of the discipline;
- supporting the development and operations of new advanced instruments for current and next-generation optical and infrared telescopes, and powerful new radio survey telescopes that will facilitate Australia's key role in the international Square Kilometre Array (SKA) project;
- developing new High Performance Computing facilities and managing the allocation of time on national supercomputing resources for theoretical astrophysics applications and large-volume data processing; and
- advancing a long term vision to create a Federation of National Astronomy Datasets that will give astronomers widespread access to radio, optical and theoretical data, to facilitate data-intensive research in astronomy and astrophysics.

AAL also engages with the Australian astronomy community to advance the national research infrastructure priorities of the Australian Astronomy Decadal Plan and advises the Government on future investments in national astronomical research infrastructure.

Key facts

- State: National
- Lead institute: Astronomy Australia Ltd
- Project status: In progress
- Australian Government contribution for provision of new national astronomy infrastructure and facilities:
 - \$45.531 million from the National Collaborative Research Infrastructure Strategy
 - \$10.0 million under the Super Science Initiative
 - \$3.474 million under the Collaborative Research Infrastructure Scheme
 - \$12.185 million from the National Collaborative Research Infrastructure Strategy 2013

Project deliverables

AAL is providing key elements of national radio and optical astronomy infrastructure and developing eResearch infrastructure to manage astronomical and astrophysical data.

Optical/infrared astronomy

In the field of optical/infrared astronomy, AAL is:

- managing and supporting access by Australian astronomers to international 8-metre class optical / infrared telescopes at the [Gemini](#) and [Magellan](#) Observatories;

- supporting the development of '[HERMES](#)', a new high-resolution spectrograph, and upgrading the existing [AAOmega spectrograph](#) for the 4-metre [Anglo-Australian Telescope](#) operated by the [Australian-Astronomical Observatory](#).

Along with the Australian National University, AAL is also a founding partner in the international [Giant Magellan Telescope](#) (GMT) project, in collaboration with institutions in the United States and Korea, to design, build and operate a next-generation optical/infrared telescope at high altitude in Chile.

Antarctic astronomy

In Antarctic astronomy, AAL supports Australian scientific collaborations and design studies with China, the United States, Japan and Europe. Australian-designed and manufactured robotic observatories known as [PLATO](#) (PLATeau Observatory), pioneered by the University of New South Wales, operate autonomously to support scientific instruments for astronomy and atmospheric site testing on the high Antarctic plateau, potentially the world's most pristine location for ground-based optical and infrared observations.

In August 2012, AAL signed a Memorandum of Understanding with the Division for Basic Research of the Chinese Academy of Sciences to advance bilateral scientific collaboration with China in several priority areas of Antarctic astronomy using Chinese telescopes in Antarctica and complementary observations using Australian telescopes.

Radio astronomy

In radio astronomy, AAL is supporting the construction and operations of two survey telescopes that are precursor facilities for the international [Square Kilometre Array \(SKA\) project](#) - the [Australian SKA Pathfinder \(ASKAP\)](#) and the [Murchison Widefield Array \(MWA\)](#), both located at the [Murchison Radio-astronomy Observatory \(MRO\)](#) in Western Australia.

eResearch

AAL is working closely with the eResearch community to develop state-of-the-art high performance computing systems and a federation of astronomy data sets to allow astronomers to process, combine and analyse the deluge of astronomy data from multiple facilities.

The first step towards this vision is the [All-Sky Virtual Observatory \(ASVO\)](#), sponsored under the [National eResearch Collaboration Tools and Resources \(NeCTAR\) project](#). ASVO will link large scale observational and theoretical datasets within a single Virtual Observatory. The initial observational data sets will be obtained from the Australian National University SkyMapper Telescope, while the initial theoretical data sets, models and telescope simulations will be provided by the Theoretical Astrophysical Observatory at Swinburne University of Technology. ASVO will be expandable to include future datasets such as MWA, ASKAP and the SKA.

Access

AAL operates on the principle that access to major national astronomical research infrastructure and time assignment for these facilities should be available to any Australian-

based astronomer purely on scientific merit, in accordance with established application and peer-review procedures.

This concept of national astronomical research infrastructure extends to Australian participation in international facilities, including Australian access to the Gemini and Magellan telescopes. Access to the astronomy facilities supported through Australian Government contributions to the international facilities is provided free of charge to users (although the users may bear some of the costs entailed, such as travel-related costs). Data archive and management costs are typically borne by the respective observatories, with observation data freely available to the international science community via web-based archives following a proprietary period (usually 18 months).

Participating organisations

AAL's members include all Australian universities and research organisations with a significant astronomical research capability:

- Australian Astronomical Observatory (AAO)
- Australian National University (ANU)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- Curtin University
- Macquarie University
- Monash University
- Swinburne University of Technology
- University of Adelaide
- University of Melbourne
- University of New South Wales (UNSW)
- University of Queensland
- University of Sydney
- University of Tasmania
- University of Western Australia

More information

The [Astronomy Australia Ltd website](#) describes the organisation, its mission and professional activities, the national astronomy infrastructure projects it is managing, its publications, and the people and committees that provide it with expert advice.