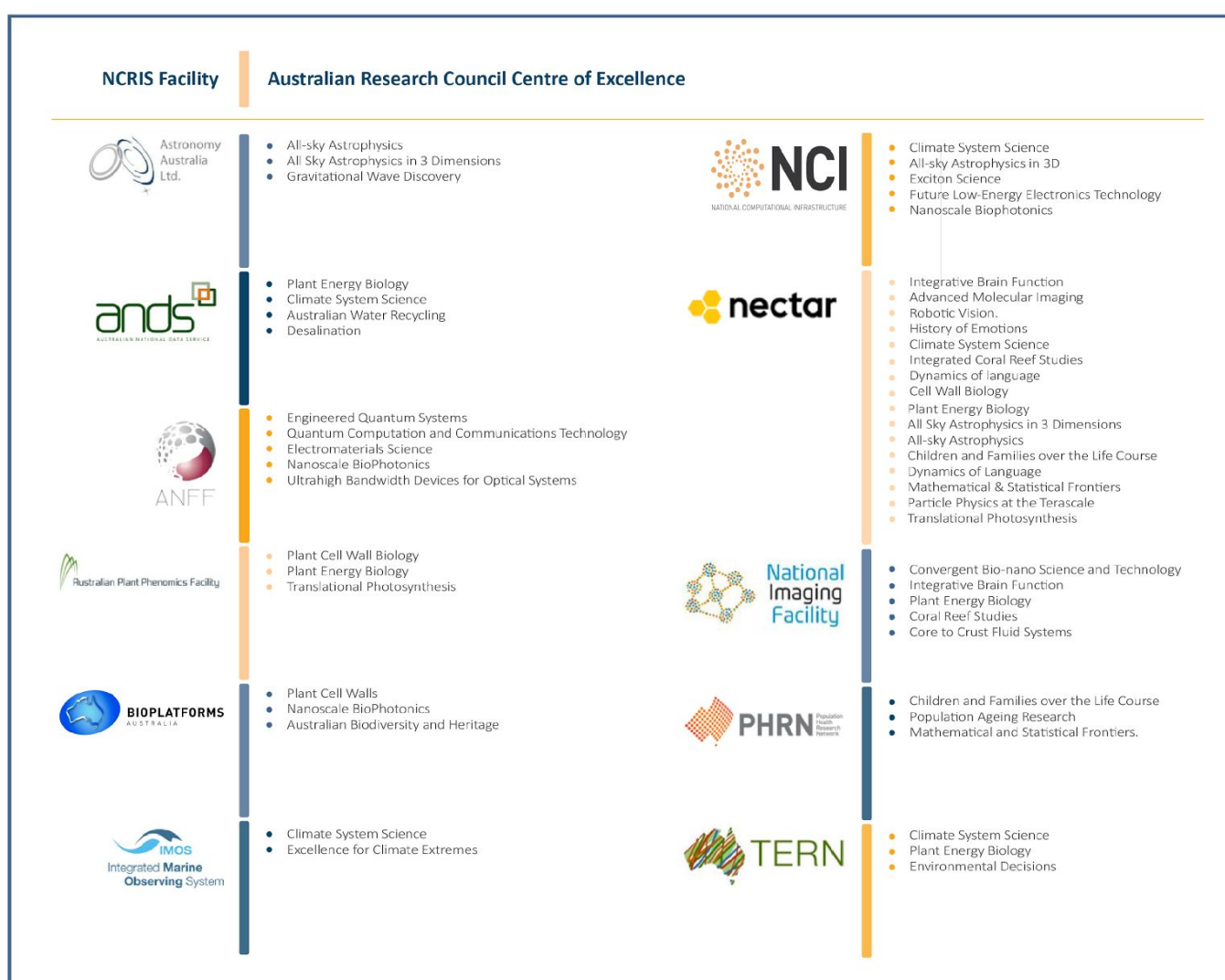


Facilitating real research impact: NCRIS supports prestigious ARC Centres of Excellence

NCRIS compounds the power of Australia's national science and research sector by providing access to high-quality, operational [research infrastructure facilities](#) that enable knowledge generation and the advancement of our economic, social and environmental objectives.

NCRIS infrastructure and data products are being used by some of Australia's most successful scientists, spread across many universities and institutions. 30 out of the 34 Australian Research Council (ARC) Centres of Excellence (CoE) funded between 2011 and 2017 rely on components of the collaborative research infrastructure delivered through NCRIS.

ARC CoE rely on NCRIS infrastructure, such as telescopes, synchrotrons, land and ocean observatories, and data to undertake innovative and transformational research that advances Australia's capabilities and knowledge.



Support of almost 90% of these prestigious foci of expertise is evidence that NCRIS infrastructure is critical for delivering outstanding research and maintaining and developing Australia's international standing in research areas of national priority.

To help illustrate and quantify the support NCRIS provides ARC CoE, detailed case studies from two CoE-supporting NCRIS capabilities are provided.

World-class astronomy infrastructure for advanced astrophysics

Astronomy Australia Limited (AAL) aims to ensure Australian-based astronomers have access to the best astronomical research infrastructure and proudly supports three ARC CoE: the CoE for All-sky Astrophysics (CAASTRO); the CoE for Gravitational Wave Discovery (OzGrav); and the CoE for All Sky Astrophysics in 3 Dimensions (ASTRO-3D).

CAASTRO researchers rely on AAL funded research infrastructure to access national and international optical and radio telescopes—including Subaru, Keck, Gemini, the Australian SKA Pathfinder, and the Murchison Widefield Array—and further their research that's answering fundamental questions about the nature of the Universe.

AAL's support and investment in astronomy e-research, data and modelling infrastructure also provides vital services and data to CAASTRO researchers. This includes theoretical and observational datasets delivered by the [All-Sky Virtual Observatory](#) (ASVO); computational modelling from the [GPU Supercomputer for Theoretical Astrophysics Research](#); and astronomy-specific training, data and helpdesk services provided by [Astronomy Data and Computing Services](#) (ADACS).

NCRIS impact statistics at a glance: AAL supports CoE for All-sky Astrophysics

- Scientifically productive: more than 100 peer-reviewed publications directly using AAL supported research infrastructures have been published by CAASTRO researchers.
- Inspiring collaborations: 80% CAASTRO publications involved Australian-international collaborations, driving Australia's high level of research impact and productivity in astronomy.



National ecosystem data for advanced climate science

The Terrestrial Ecosystem Research Network (TERN) is the national observatory for Australian ecosystems, delivering data streams that enable environmental research and management. TERN's research infrastructure and open data supports three ARC CoE: the CoE for Climate System Science; the CoE for Plant Energy Biology; and the CoE for Environmental Decisions.

The ARC CoE for Climate System Science uses TERN's data on the exchanges of gas and water between the atmosphere and ecosystems collected by our [national network of flux monitoring towers](#). TERN's flux data, together with modelled climate data from TERN's [ecosystem modelling infrastructure](#), is used by the CoE in the development and applications of land-surface climate models and in research that is improving our understanding of ecosystem function and biogeochemical cycles.

Thanks to the incorporation of real measurements of ecosystem processes, which have been made available through TERN, CoE for Climate System Science researchers have improved Australia's Community Atmosphere-Biosphere-Land Exchange model (CABLE), and Australian Community Climate Earth Systems Simulator (ACCESS) used in climate prediction. In one such CoE for Climate System Science project, TERN data was vital in the testing of a new component of CABLE, which was subsequently successfully incorporated into ACCESS and used to estimate the intensity of future heat waves and demonstrate their potential impacts.

NCRIS impact statistics at a glance: TERN supports CoE for Climate System Science

- Scientifically productive: 15 peer-reviewed journal articles directly using TERN data have been published by the CoE for Climate System Science and a large volume of additional journal papers have been published using models improved via TERN data.
- Indispensable infrastructure: 10 CoE for Climate System Science researchers currently use or have used TERN data.

