

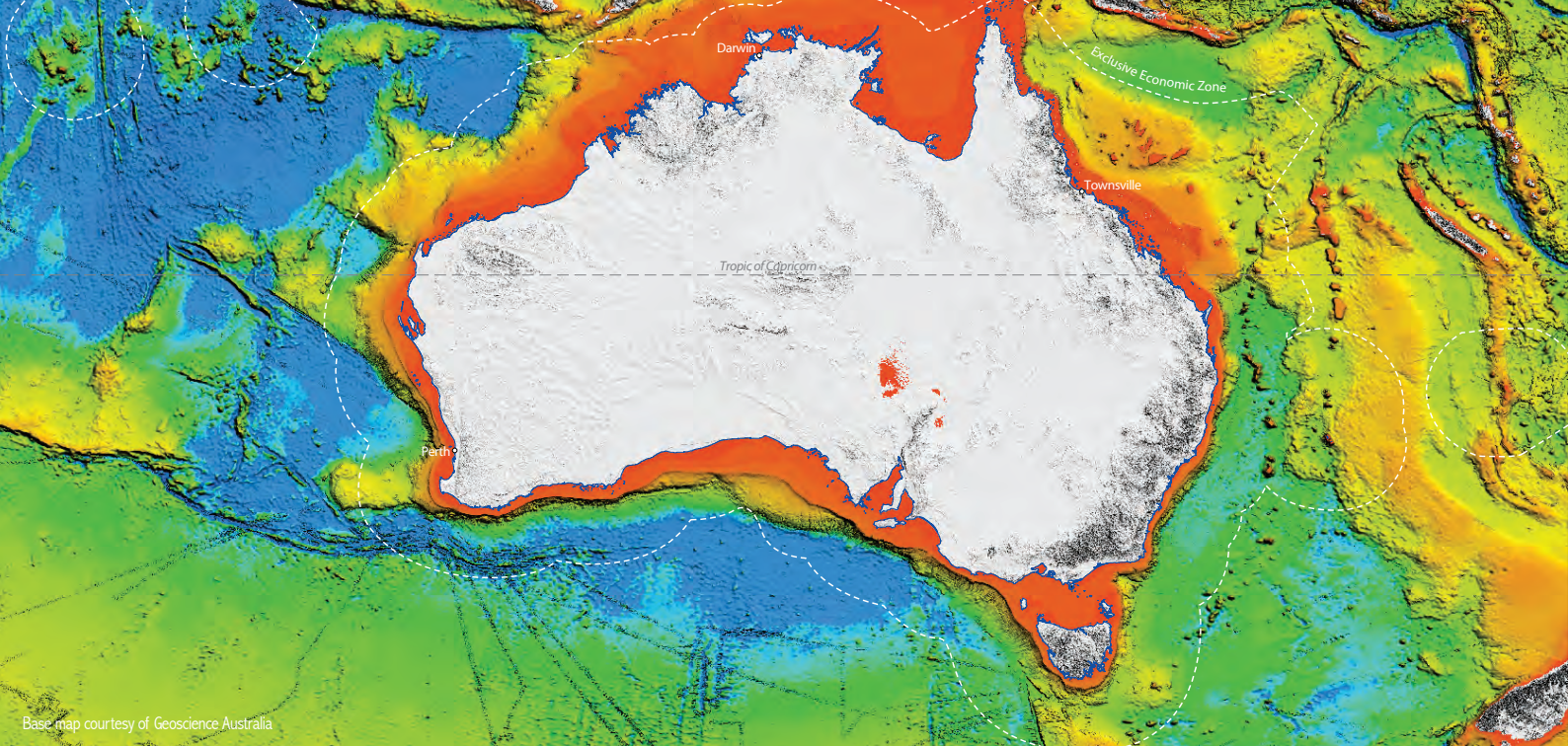


Australian Government



**AUSTRALIAN INSTITUTE
OF MARINE SCIENCE**

AIMS: Australia's tropical marine research agency.



What makes Australia a marine nation?

- At 14 million km², Australia's marine jurisdiction is the third largest on Earth and nearly twice the surface area of the Australian land mass.
- Australia's coastline stretches almost 70,000km, nearly as long as the coastline of Europe.
- Marine industry contributes close to \$40 billion a year to the Australian economy and the sector is growing rapidly.
- The Australian marine environment contains all five of the world's ocean climate zones: equatorial, tropical, sub-tropical, temperate, sub-polar and polar.
- The Great Barrier Reef is the largest and best managed coral reef in the world, with about 3,000 individual reefs covering an area of 345,950 km².
- Australia shares ocean boundaries with three other nations: Papua New Guinea, East Timor and Indonesia.
- Eighty-five per cent of Australia's population lives within 50km of the coast and two-thirds reside in coastal towns and cities.
- Australia has 38 Marine Protected Areas (MPAs) designated under international law.
- Australian sea levels rose by about 10cm between 1920 and 2000 and are projected to rise even more steeply as the planet warms.
- Australia is a three-ocean country with a stake in the management and security of the Indian, Pacific and Southern Oceans, as well as the three seas to our North – the Timor, Arafura and Coral seas.



Research for a marine nation

The Australian Institute of Marine Science (AIMS) mission

“To generate and transfer the knowledge to support the sustainable use and protection of the marine environment through innovative world-class scientific and technological research.”

AIMS: Australia's tropical marine research agency

More than 70 per cent of Australia's territory is under water and much of this country's wealth and identity is bound up with its coastline and surrounding oceans. Australia has the potential to be an oceanic and environmental superpower, but its marine territory is yet to be fully explored and understood. There are many scientific challenges in its extensive waters and many rewards for pursuing them.



Image: Jergen Freund © FreundFactory



Right along the broad northern expanse of our island continent's waters, from the irreplaceable wonder of the Great Barrier Reef across the Top End and around to the burgeoning northwest coast, down to the pristine Ningaloo Reef, AIMS leads the field in researching this nation's tropical marine domain.

Each region contains unique assemblages of organisms and is influenced by widely different oceanographic and coastal conditions. At AIMS, we identify the key ecological drivers for these ecosystems and work towards understanding how they may be connected, to generate knowledge for national benefit.

This is a time of unprecedented focus on the marine estate for energy, tourism, food, security and climate forecasting, and on emerging challenges such as climate change and ocean acidification.

The Institute provides internationally recognised expertise in:

- Understanding tropical marine ecosystems and processes;
- Understanding the responses of tropical marine systems to global changes; and
- Supporting the sustainable development of tropical marine based industries.

About AIMS

AIMS is a Commonwealth statutory authority established by the Australian Institute of Marine Science Act 1972. The Institute has highly developed capabilities in marine biodiversity, impacts and adaptation to climate change, water quality and ecosystem health, and has established a new research effort in marine microbiology.

AIMS' research is designed to ensure that it is meeting the challenges facing our marine ecosystems and the requirements of our stakeholders. To do this, AIMS surveys and documents marine life from microbes to whole-of-ecosystems, and the processes that sustain them; monitors changes and identifies trends in the marine environment; and develops molecular tools and ocean technologies.

AIMS' research is geared towards the protection and sustainable development of marine resources. Industries such as fisheries, offshore oil and gas, mining, marine tourism, pharmaceuticals and aquaculture have all benefited from our research. These benefits will underwrite protection of Australia's marine biodiversity and development of new areas of the economy into the future.



Image: Eric Matson © AIMS



Image: Richard Brinkman © Woodside Energy Limited

Our people

AIMS employs around 200 science and support staff working across five research teams. Many of our scientists are world authorities in their field. Support staff provide specialised skills in data management, information technology, engineering, field operations, information services, science communication and corporate services. Around 30 contractors support the operations of our vessels and the maintenance of our facilities.

Our research

The Institute's expertise in tropical marine ecosystems, combined with a multidisciplinary capability, makes possible the full spectrum of scientific investigation from the seafloor to the lab bench. National and international research partnerships and collaborations maximise AIMS' capacity to improve understanding of complex marine ecosystems.

Our locations

AIMS' headquarters near Townsville is adjacent to the centre of the Great Barrier Reef and surrounded by a 207 hectare national park and marine reserve. It is free from development, biosecure and has access to clean seawater and a protected harbour. Using an injection of Australian Government infrastructure funding, the Institute is greatly expanding its seawater facilities at the Townsville site with the construction of the Australian Tropical Oceans Simulator. This new building will provide unprecedented ability to extend global understanding of the impacts of climate change and ocean acidification. New vessel berthing facilities will also be built in Townsville.

AIMS' research in Darwin is based at the Arafura Timor Research Facility (ATRF) adjacent to the campuses of Charles Darwin University and the Australian National University. Darwin was chosen as the site for this Major National Research Facility because of its national and international scientific and commercial advantages for marine and coastal research. AIMS' Northern Territory research facilities are being expanded to enable more joint research with its Darwin collaborators.

AIMS Perth is co-located with the University of Western Australia's new Ocean Institute at the University's Perth campus. AIMS has established research partnerships with a range of WA research institutions including the Western Australian Marine Science Institution (WAMSI).



Image: Steve Clarke © AIMS

Our facilities

- engineering workshops for the development of instrumentation required for research activities
- modern chemistry, biology, microbiology, oceanography and remote sensing laboratories
- a range of analytical facilities including a sophisticated biomolecular analysis facility
- the new high-tech Great Barrier Reef Ocean Observing System and other observing infrastructure at Scott Reef and Ningaloo Reef in Western Australia
- the AIMS Data Centre, providing online interactive visualisation and access to high value research data
- seawater aquaria and controlled environment rooms
- a microbiological and genetic research facility
- weather stations deployed at various marine locations
- a bioresource library
- an aquaculture centre
- an X-band satellite receiver
- the AIMS Coral Core Archive



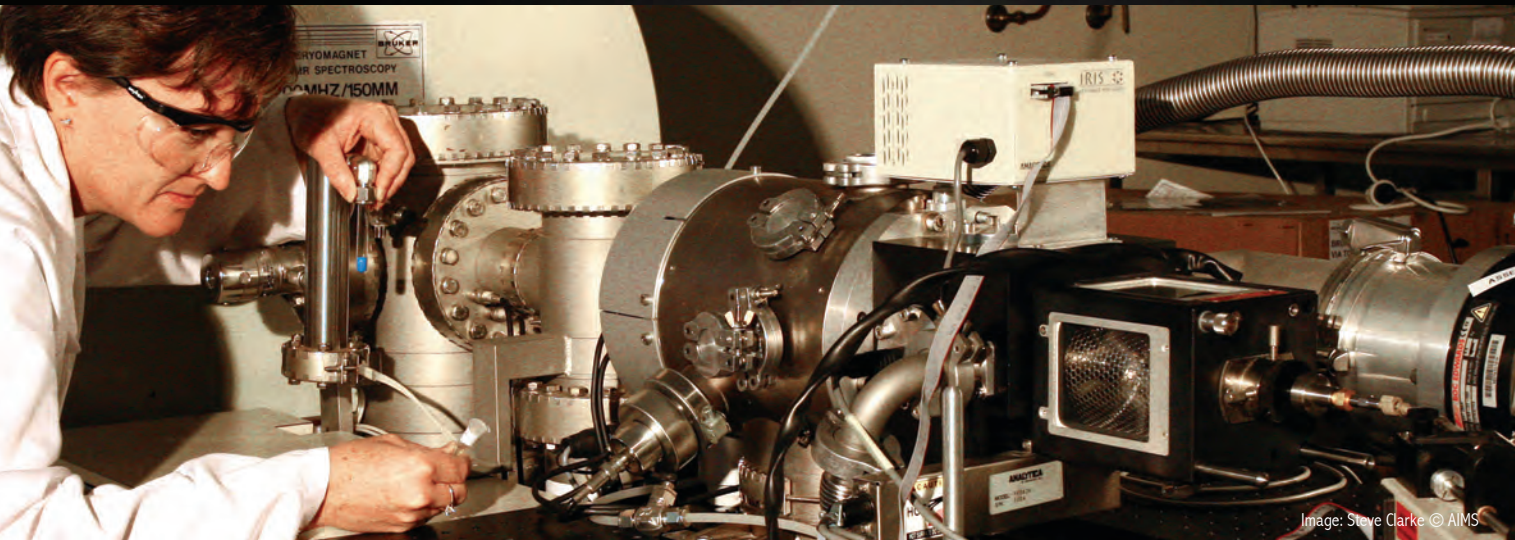


Image: Steve Clarke © AIMS



Our research fleet

The AIMS research fleet provides access to all of Australia's tropical marine environments. Two large purpose-built ships, the RV *Cape Ferguson* and the RV *Solander*, and a number of smaller vessels, take researchers to the diverse habitats that make up our tropical marine environment. AIMS' major vessels are equipped with a wide range of facilities for long research trips, such as:

- on-board compressors to provide, for example, NITROX capability
- A-frame, hydrographic and CTD winches
- on-board wet and dry laboratories
- large deck spaces
- inflatable tenders
- high tech navigation and satellite communications
- flow-through aquaria and computing facilities

World-class science through collaboration

While AIMS research is conducted throughout Australia's ocean territory, with concentrated effort in northern waters between the Great Barrier Reef and Ningaloo Reef, the Institute's expertise is enlisted throughout the world. The Institute has working relationships with more than 90 organisations across all Australian states and territories, and in 20 countries around the globe.

A joint venture with James Cook University, AIMS@JCU, has consolidated Townsville as a centre for world-class research and teaching in tropical marine science. In another joint venture with the Australian National University to establish the ATRF, the partners and Charles Darwin University have increased the marine research capability of northern Australia, helping to bridge the gap between the social and biological sciences. With the establishment of the University of Western Australia (UWA) Oceans Institute, AIMS and the UWA have entered into a joint venture to develop new marine science capability in WA.





Image: Scott Bainbridge © AIMS

The Institute also engages in major collaborative initiatives such as the Marine and Tropical Sciences Research Facility (MTSRF) and the Western Australian Marine Science Institution (WAMSI). These multi-agency programs combine the research strengths of universities, research organisations and industry partners.

AIMS maintains a leading role in many international research initiatives, including CReefs, a field program within the global Census of Marine Life (CoML). Through partnerships with international marine science organisations such as the US National Oceanic and Atmospheric Administration (NOAA), the United Nations Environment Program (UNEP) and the Global Coral Reef Monitoring Network (GCRMN), AIMS is addressing issues of national and international importance.

Research capabilities

- Assessing and mapping biodiversity of shallow and deeper water communities.
- Fish biodiversity surveys and demographic studies for assessing fisheries impacts, management strategies and effects of climate change.
- Monitoring responses and resilience of coral reefs, mangroves and estuarine systems to climate change and other pressures. This effort includes identifying signals of stress using molecular tools.
- Monitoring changes and investigating processes influencing marine ecosystem health and productivity. This enables scientists to gauge and develop ways to reduce human impacts such as sediments, pollutants and excess nutrients on coastal ecosystems.
- Microbial community analysis to determine the effects and responses of wild and cultured marine organisms to pathogenic attack.

Ecophysiology • Climatology and Coral Records • Organic Chemistry • Biogeochemistry • Biological Oceanography • Ecology and Microscopy
Environmental Chemistry • Ecotoxicology • Analytical Technology • Gamma Radio Chemistry • Physical Oceanography • Long-term Monitoring



Image: Mike Hall © AIMS

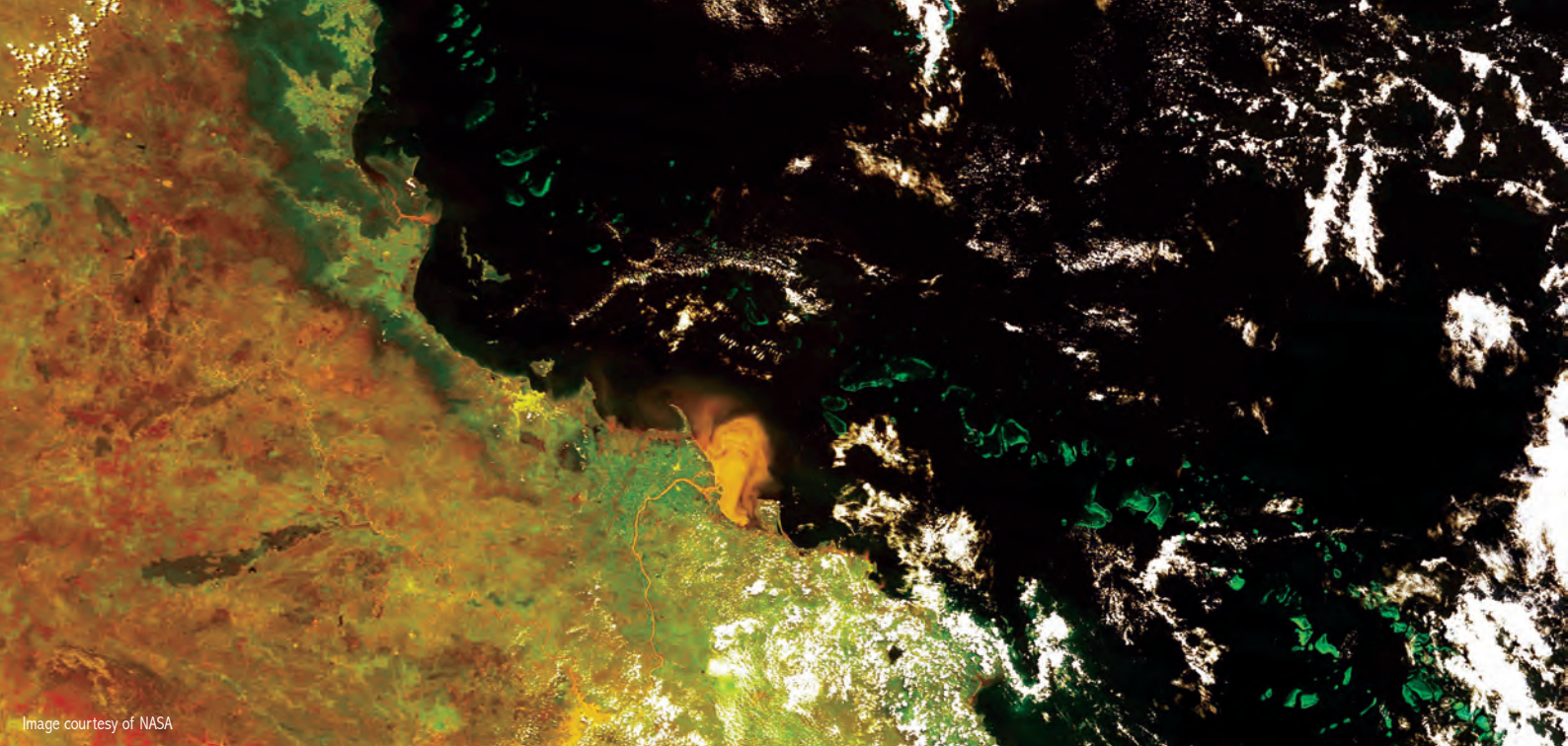


Image courtesy of NASA

- Processing and analysing satellite data to provide information about shelf oceanography, current regimes, flood plumes and ecosystem productivity.
- Reconstructing climate histories from coral cores to track climate change and improve climate prediction.
- Assessing water quality and issues related to runoff from the land.
- Measuring, analysing and modelling oceanographic processes, including water circulation, wave mechanics and sediment dynamics in estuarine, coastal and continental shelf waters.
- Investigating biogeochemical processes and analysing marine sediments in intertidal, sub-tidal and offshore systems.
- Screening and analysing compounds from marine samples with potential for use in human health care as well as industrial and environmental applications.
- Developing aquaculture techniques for the production of food and commodities (e.g. bath sponges).
- Developing environmentally sustainable aquaculture production.
- Domesticating prawns and rock lobsters. This includes hatchery management and looking for answers to animal health in microbial communities.

Remote Sensing • Molecular Biology • NMR Mass Spectrometry • PC2 Laboratory • Microbiology and Biochemistry • Data Centre
Engineering Workshop • Controlled Environment Aquaria • Tropical Aquaculture Hatchery & Controlled Maturation Facility

Points of contact: AIMS is committed to collaborating and co-investing with partners to advance knowledge of tropical marine ecosystems. To discuss a research partnership with AIMS, contact:

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