# posts in a cold place

## Scientists have much to learn at Australia's Antarctic stations

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AFP

**Antarctic research goes well beyond studying penguins and weather patterns**

A CENTURY after the first Australian-led expedition to Antarctica, scientists and researchers remain eager to follow in the footsteps of the famous explorer Douglas Mawson. Fortunately for the modern adventurers, the prospects of finishing the journey alive and not getting frostbite are much better these days.

In 1911, Mawson led a crew to map and explore Antarctica after having earlier visited the cold continent on an expedition with British explorer Ernest Shackleton. His party travelled more than 1000km, mapping the coastline and collecting geological samples, but the trip proved tragic when appalling weather conditions contributed to the loss of two of his fellow polar explorers.

Today, the frontier environment continues to woo scientists keen to answer questions about climate change, ecosystems and even medical dilemmas. The Australian Antarctic Science Program, the scientific arm of the federal government's Australian Antarctic Division, has been supporting scientists working around the South Pole since the 1950s.

Gwen Fenton, manager of science, planning and coordination for the program, says the unusual environment offers rare insights for scientists.

"It really is about the change that you experience at the poles," she says. "They are quite central to the way that climate processes run in the world, so things that happen there impact everywhere."

The program is calling for grant applications for research projects and co-funded postdoctoral fellowships for the 2012-13 research season. A new strategic direction includes a strong focus on climate and the Southern Ocean.

"It's really about answering key questions around climate and the ecosystems, the change that we're experiencing, or the future change and what it might mean," Fenton explains. There are four themes researchers need to address to be eligible for grants: climate processes and change; terrestrial and near-shore ecosystems (environmental change and conservation); Southern Ocean ecosystems (environmental change and conservation); and frontier science. The areas address government policy and national research priorities.

The program typically supports about 100 research projects a year. Fenton says the scientists study a lot more than penguins and weather patterns.

For example, medical research has included an analysis of isolated communities and vitamin D studies examining the consequences of prolonged periods of darkness. NASA has also conducted research as part of the program because the environment is an analogue for space station communities.

**RESEARCH GRANTS**

**Where:** Australian Antarctic Science Program
**Salary:** Up to $150,000 over five years
**Closing:** Expressions of interest by August 31
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Getting to Antarctica is one of the biggest hurdles for would-be researchers. The program grants, which are open only to Australian citizens, help in this regard with logistical support that includes travelling to Antarctica by ship or plane, training before the expedition, and food and shelter.

"The part people really want is the access," Fenton says. "You're fed, you're clothed, there's medical support and all that sort of thing, so the moment you step on a ship or plane with us, we support you."

Support includes training in Tasmania before the expedition and field training when researchers arrive in Antarctica.

"Researchers shouldn't be concerned that it'll be a cold and difficult place to work, because they will be helped and everything will be done safely," Fenton says.

In return, the researchers are expected to provide the scientific know-how. "It's their scientific expertise we want and we will help them make that possible."

Fenton says Antarctic exploration has come a long way in the 100 years since Mawson's expedition. "We have much better gear, there are satellite phones, they have communication all the time and very experienced field people are always part of those teams."

Sophisticated equipment has made some research easier.

For example, some aspects of meteorology are automated so that data is beamed back to the headquarters of the Australian Antarctic Division.

Most researchers are based at either the Casey or Davis stations, but there is also access to Mawson Station and Macquarie Island. During summer there are often about 100 people living at each of the stations.

While the research teams get access to equipment and technology that ensure they are as comfortable and safe as possible, the weather is still unpredictable and extreme. Research expeditions include deep-field trips far from the stations, where they may camp in tents for a few weeks.

Despite the harsh climate, Fenton admits living in the Antarctic is not such an intrepid adventure these days. Temperatures at the stations vary from about zero to minus 20C in summer, but on sunny days it can even get warm enough to shed a few layers of clothing.

"It's kind of odd because the clothing is all designed for dealing with the cold and you start seeing people in T-shirts and shorts."

Fenton says living and working in Antarctica is a fantastic opportunity. Researchers need to overcome the isolation and there are no shops to pick up forgotten provisions, but the rewards make it worthwhile.

"Just about everybody comes back having had an incredible experience — and also getting their projects done, hopefully."