

Antarctic Telescope High On Australian New Wishlist

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Astronomers hope to kick-start their long-running push to build a telescope in Antarctica in the latest 10-year plan for Australian astronomy.

A draft version of the so-called decadal plan will be discussed at the annual scientific meeting of the Astronomical Society of Australia in Sydney next month.

One of the key recommendations is to go forward with what's now being called the PILOT project in Antarctica.

The proposed 2 metre infra-red telescope was originally scheduled to be completed at Antarctica's Dome C this year. But lack of funds have stalled the project and frustrated astronomers.

Astronomer Dr Michael Burton of the University of New South Wales, a member of a working group for the decadal plan, says Australia risks being left behind by the international astronomy community.

What's happened to infra-red astronomy?

He says Australia's strength in astronomy has traditionally been founded on its radio and infra-red capabilities.

But there are concerns it has fallen behind in infra-red astronomy, which studies infra-red radiation emitted by objects in space.

Infra-red is superior to traditional optical or radio astronomy in detecting the most distant objects in the universe, which have a high 'redshift', a change in the wavelength of light where the wavelength is longer than it was at the source.

"Clearly we have fallen behind in the last decade or so from being one of the major players in that field to just another group with a small facility," Burton says.

"We haven't become a major part of any of the big projects which have developed over the last decade and that's definitely a worry."

Burton says Australia is currently a 5% member of the international Gemini Observatory consortium, which gives it access to two of the world's biggest telescopes in Hawaii and Chile.

This compares to a decade ago when it was a 50% member of the Anglo-Australian Observatory, which at the time hosted what was then one of the world's eight biggest telescopes.

"The problem is that we don't have the really good sites for doing [infra-red] in mainland Australia," he says.

Why Antarctica?

Burton says it's hoped that PILOT, which will cost about A\$10 million (US\$7.7 million), will put Australia in the position where it can eventually build an extra large telescope in Antarctica.

"What we're trying to do in Antarctica at the moment is build the telescopes there that can put us in a position where we can build the big ones," he says.

"[PILOT] really is a pathfinder for what could be the ultimate ground-based telescope."

Antarctica is the driest continent on Earth and its elevated inland plateau, along with its stable clear weather and absence of daylight in winter, make it ideal for watching the stars.

Is Australia really falling behind?

Professor Warrick Couch, head of physics at the University of New South Wales and another decadal plan working group member, disagrees that Australia is falling behind in infra-red astronomy.

He says Australia is capable of doing "very useful", albeit limited, infra-red astronomy from facilities at the Anglo-Australian Observatory at Siding Spring and the Australian National University.

"The argument for a thing like PILOT ... is that we would [have] something that's pretty much solely Australian owned," he says.

"It's not that we don't have an infra-red astronomy going on because we certainly do. It's really another opportunity to build on what we're doing at the moment."

Going ahead with PILOT will increase Australia's ability to study how stars and galaxies form and find previously undetected planets, Couch says.

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