

How low can you go? New records for Antarctic weather

A new automatic weather station has been installed on the highest and possibly coldest point in Antarctica – Dome A – raising the chance of a new record low surface temperature being recorded.

According to glaciologist Dr Ian Allison, of the Australian Antarctic Division (AAD) and the Antarctic Climate and Ecosystems Cooperative Research Centre, the lowest temperature ever recorded was -89.2°C in July 1983, at the Russian station Vostok, inland of Australia's Casey station. As Dome A is nearly 600 m higher in elevation than Vostok, Dr Allison says there's a good chance an even lower temperature will be recorded.

The new weather station, which was designed by AAD scientists and installed by glaciologists from the Chinese Antarctic Research Expedition (CHINARE), will allow scientists to view the weather records immediately.

'Over the past 25 years we've installed automatic weather stations at more than 20 sites within the Australian Antarctic Territory,' Dr Allison says.

'These earlier stations provide information as a series of numbers which need to be decoded. But the weather station at Dome A contains new technology that enables it to do the

decoding itself. So when we get the data back from satellites, we can see the temperature in degrees, pressure in hectapascals and wind speed in metres per second.'

The information from the weather stations is used for routine weather forecasting and in support of Antarctic shipping and air operations. The new weather station and some of the older ones also have additional sensors measuring snow temperature at different depths, atmospheric humidity, solar radiation and the height of the sensors above the snow surface. These data are used for climate research.

'We use information from the weather stations to study katabatic wind processes, surface energy exchange (the transfer of heat between the surface of the ice sheet and the atmosphere), how the rate of snowfall varies seasonally and from year to year, and to calibrate ice core records,' Dr Allison says.

Calibration involves comparing the air temperature measured by the weather stations, with the physical properties of recent snowfall – which occur as a result of climate conditions such as air temperature. This comparison provides a scale that can be used to deduce past climates and climate change from the snow that fell thousands of years ago and that is recovered in ice cores.

The new weather station installed at Dome A contains the latest technology for decoding temperature, pressure and wind speed.



CHINARE