

# Antarctic Peninsula Automatic Weather Station Network

## 2022-23 Field Season Review

### Overview

The British Antarctic Survey (BAS) is responsible for a network of automatic weather stations (AWS) located on the Antarctic Peninsula and in the Halley region. BAS also service two further AWS on the Larsen C ice shelf in collaboration with the University of Utrecht.

All BAS AWS sites measure wind speed, wind direction, temperature, pressure and relative humidity. Data are logged to a Campbell CR1000 data logger and ten-minute averaged data are saved to a data card. Ten-minute averaged data are transmitted via SBD Iridium every three hours and relayed as SYNOPS on the GTS. Once a week the complete data set is sent via Iridium. The AWS are powered by two 100Ah 12V lead acid batteries, charged by a solar panel. Assuming normal service, these stations need only be visited to raise the instruments, logger box and batteries above snow accumulation and to retrieve and replace data cards. Visits usually take place every one or two years depending on weather conditions and aircraft operational commitments.

### 2022-23 season

This season most sites were visited for data retrieval and instrument raising. The exceptions being Dismal Island (University of Wisconsin) and Baldrick.

### BAS sites

Services were undertaken at Fossil Bluff, Sky Blu, and Butler Island and over at Halley the CASLab, Met Caboose and TT03 were also serviced. A mast extension and raise was undertaken at Limbert AWS.

### University of Utrecht

There were two Intelligent Weather Stations (iWS) located on the Larsen C ice shelf, however one site, iWS18 was removed this season and a new HiRise site installed nearby. These iWS were developed by the University of Utrecht. The iWS is a small unit (18x22x12cm) which comprises a power system (solar panels and lithium batteries), logger and all sensors, except a propvane and radiation sensor which are plugged into the unit and are mounted on the same rig. Data are transmitted via ARGOS. The units, propvane and radiation sensor are replaced annually, when operational commitments allow, with a normal service time of less than an hour.

This season two new sites were input by the IMAU team as part of the HiRise project. At the iWS14 site a snowfox sensor and GNSS unit with a power mast was installed. The second site was a new site near Cabinet Inlet where a turbulence mast, snowfox sensor and GNSS were installed.

### Issues

This season the Limbert AWS had a power issue due to a snapped handle on a battery box putting stress on the power cable. This was replaced and power was restored. The propvane at Limbert had also broken over winter and was replaced.

At Fossil Bluff there was rubbing damage around a cable tie on the propvane cable. This was replaced and the propvane re-aligned.

The radiation shields at SkyBlu had rotated off horizontal and were straightened when visited. The new mast style here worked well

however the guy lines needed tightening as they were very loose.

Over at Halley, the Met Caboose AWS had a power problem because of a broke wire in the dump box to battery box cable due to snow/ice weight on the cable. It was replaced and resolved.

Flags marking the masts are regularly buried or lost during the winter. This makes it extremely difficult to spot smaller/thinner masts from the air when visiting a site, which is a possible flight safety issue.

The single masts make servicing easier, without the need for mast climbing kit and heavy mast sections. However, they may have

a tendency to become wobbly or off-centre due to snow melt if they are not guyed correctly.

### Intentions for 2022-23 season

This coming field season, operations will be carried out from both Rothera and Halley as usual to enable the best possible chance to visit and service all of the AWS. This work is undertaken opportunistically throughout the season so the teams must be ready to service any site at a moment's notice.