



GOUGH BUNTING



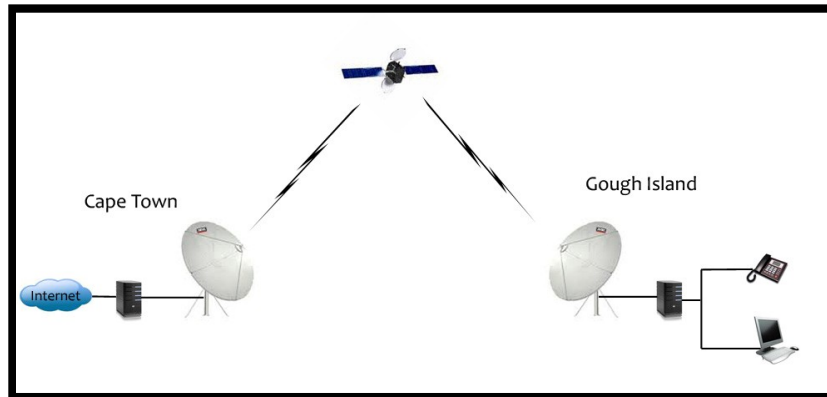
In this edition

Contacting the outside world - <i>Llewellyn Kriedemann</i>	3
Surface air temperature measurement - <i>Daphne Hollenbach</i>	4
Nature notes - <i>Graham Parker & Kalinka Rexer-Huber</i>	8
Photo synthesis - <i>Everyone</i>	10
Gough weather	13
Sponsors	14



Contacting the outside world

On Gough Island we are fortunate to have the means to phone home anytime we wish. Internet and telephone communication is possible 24 hours a day. Gough base has a dedicated data line and four telephone lines that are transmitted via our satellite dish, bounced of an Intelsat satellite and received in Cape Town, where we are connected to the rest of civilisation. The satellite system is very reliable, but the signal can be interrupted every now and then during very heavy rain on Gough.



Satellite uplink diagram

As a backup we have two HF radio sets that can be used to communicate with South Africa and Tristan da Cunha if satellite comms are interrupted and we really need to talk to someone.

VHF handheld radios are used for line of sight communication on the island and are used regularly by the biologists when they are out in the field. These are also used to communicate with ships and yachts that pass by the island from time to time.



There is also a satellite phone, owned by RSPB, on the island that can be used in an emergency, but making a call is very expensive.

As a last resort, if all else fails, there is an Aldis signal lamp that can be used to communicate with ships using Morse code. For that we however need a ship close to the island and someone on the ship that still knows Morse code.

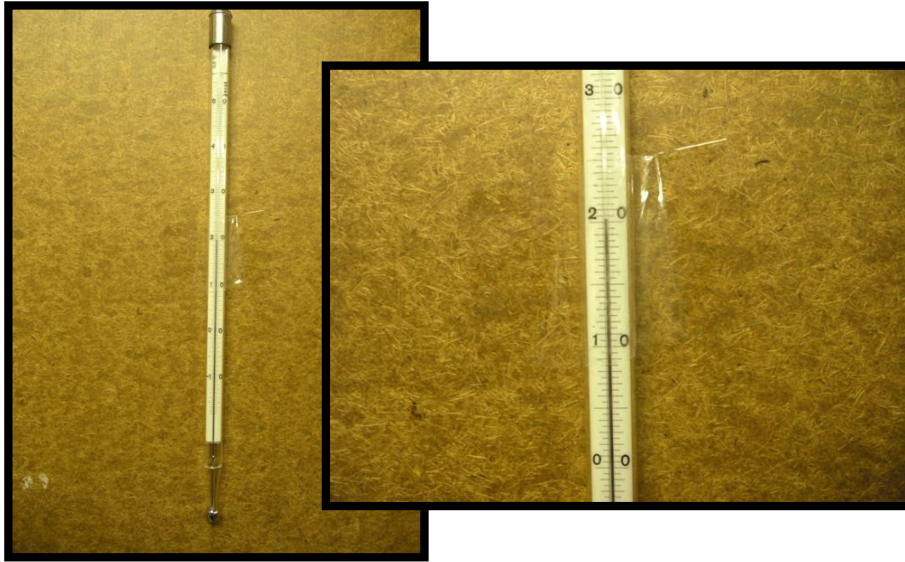
Llewellyn Kriedemann

GOUGH BUNTING



SURFACE AIR TEMPERATURE MEASUREMENT

When you step outdoors, the air temperature may be the first weather condition you notice. In fact, you are probably dressed a certain way to be comfortable at that temperature. If the air temperature is around 15°C, you might wear a long sleeve shirt or a light jersey.



Ordinary thermometer. (Used for the dry and wet bulb) Close-up view of the numeric scale on the thermometer.

Meteorological observatories measure the temperature and humidity of the air near the surface of the earth, using thermometers. A standardized, well-ventilated, white-painted instrument shelter, called the Stevenson Screen, are used to house the thermometers in.

This Stevenson Screen enclosure is necessary to shield the meteorological instruments against precipitation and direct heat radiation from outside sources, while still allowing air to circulate freely around them. This is to ensure that the temperature of the air is been measured as accurately as possible.



Stevenson Screen: Dry and Wet bulb thermometers at the back and the Maximum and Minimum Thermometers in front.

GOUGH BUNTING



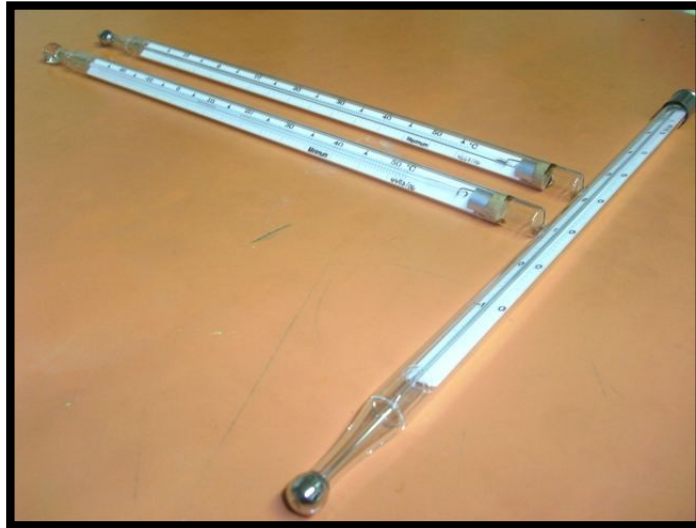
The whole screen is painted white to reflect sunlight radiation. The standard screen used internationally to shelter instruments, is a double louvered wooden box, with the instruments 1.2 to 2.0 meters above ground level.

Thermometers work because matter expands when heated. Most thermometers are closed glass tubes containing liquid such as alcohol or mercury. When air around the tube heats the liquid, the liquid expands and moves up the tube. A numeric scale that shows the temperature is marked on the tube.

There are different types of thermometers to determine the state of how humid air is.

- Dry bulb thermometer;
- Wet bulb thermometer;
- Minimum thermometer;
- Maximum thermometer

All of them are placed in a specified way inside the Stevenson Screen.



Maximum, Minimum and Ordinary Thermometers

When people refer to the temperature of the air, they are normally referring to the dry bulb temperature. It is called a dry bulb because the air temperature is indicated by a thermometer not affected by the moisture of the air.

The wet bulb temperature is indicated by a moistened thermometer bulb exposed to the air flow. The bulb of the thermometer is wrapped in a wet wick that is kept wet because the wick's other end is constantly hanging in water.

The rate of evaporation from the wet bandage on the bulb, and the temperature difference between the dry bulb and wet bulb, depends on the humidity of the air. The evaporation is reduced when air contains more water vapor. The wet bulb temperature is always lower than the dry bulb temperature, but will be identical with 100% relative humidity.

GOUGH BUNTING



Observer resetting maximum and minimum thermometers

By subtracting the wet and dry bulb temperatures, the difference is used to further calculate by using a Hygrometric table, what the dew point temperature and relative humidity of the air is.

The dew point is the temperature at which water vapor starts to condense out of the air. The temperature at which air becomes saturated. Meaning, the temperature at which cloud bases are formed. If the dew point temperature is close to the dry bulb temperature, the relative humidity is high, and if the dew point is well below the dry bulb temperature, the relative humidity is low.

Electronic temperature/humidity sensor probes, which are connected to an Automatic weather station, are also used in conjunction with the traditional thermometers.

This sensor was designed for measurement of relative humidity and temperature simultaneously. Both the humidity and the temperature sensors are located at the tip of the probe and protected by a membrane filter.



Viasala Intercap temperature /humidity Probe HMP 50 YA and the Viasala HMP 45 D temperature/humidity transmitter

GOUGH BUNTING



The South African Weather Service makes use of the Vaisala HMP 45 D temperature/humidity transmitter as well as the Vaisala Intercap humidity and Temperature Probe HMP 50 YA. On Gough island we make use of the latter which is also housed in the Stevenson Screen, together with the other thermometers.

An ordinary thermometer, housed in a Crawford Bucket, is also used to measure the sea temperature. Usually the sea temperature is measured early mornings, but here on Gough island it is measured at 1200z (14h00 SAST). The thermometer is lowered into the ocean for at least a period of 30 minutes, after which the temperature is then read.



Getting ready to lower the Crawford Bucket into the ocean.

Daphne Hollenbach



Nature notes

As the bracken browns and the storms become more frequent, these signs of changing seasons also mean that life on Gough slows down for most of the animals here.

Penguins, now free of their large demanding chicks, are mainly at sea and the seal pups are growing up to be fat and independent. The skuas are much less purposeful now that their chicks are safely gone; most of the skuas we see now hang out in bunches, curious and energetic and particularly interested in anything new or different. At a campsite the top zip of my backpack got wiggled open by a determined skua and a glove removed, an errant sponge got completely decimated and any mice we catch eagerly swallowed.

Most of the seabird species are done breeding and have headed off to sea for the winter. The exceptions of course are the Tristan albatrosses, whose chicks are turning into well-fed, soccer-ball sized down balls and the winter-breeding petrels: Atlantics, Greys and Great-winged petrels. Things are just starting to get rolling for the Atlantics and Great-winged, while some of the Grey petrels already have chicks.

Grey petrels, like other burrowing birds, tunnel into the soft peat soil and nest underground. To find out how mice affect their breeding success, we need to check what's going on in the nesting chamber – often at the end of a 3 meter tunnel with cold water and mud making a 'moat' for the first half meter. Fortunately, we have a burrowscope to take our eyeballs underground into the burrows. A small infra-red camera mounted to a 2.5m long cable, the burrowscope transmits an image to a screen in the operator's hand. But as with most cutting-edge technology, the burrowscope still has its problems. Mud is the biggest one, going around tight corners is another.



Figure 1. Burrowscoping Grey petrel burrows. Infrared camera with vision-impairing mud and without.

So the process looks like this: we lie in a puddle of cold mud at the burrow entrance and try to get the scope into the burrow without covering the business end of the camera in mud. Easier said than done. The reward is seeing a very cozy but surprised-looking bird sitting on an egg three meters underground.

GOUGH BUNTING

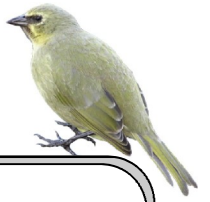


Figure 2. Adult Grey petrel incubating an egg

When a big storm like yesterday's rolls over the island, bringing thunder, lightening, heavy rain down-pours and the odd hailstorm, we can't help but ponder how Gough's winter chicks are doing. I'd rather be a Grey petrel chick 3 m deep in my burrow than a Tristan albatross chick, huddling into my high nest mound with the wind whipping long white down everywhere.

Graham Parker & Kalinka Rexer-Huber

GOUGH BUNTING



Photo Synthesis



Presented here is a selection of photos taken by the team during their time here on Gough island.

Please vote for your favourite photo.

Email: gough@sanap.ac.za

Telephone: 021 405 9470

Facebook group **Gough 55**

Winning photo for last month

Waterdrops on grass by Kalinka Rexer-Huber



GOUGH BUNTING



GOUGH BUNTING



GOUGH BUNTING



GOUGH BUNTING



Pressure

Ave Max Pressure	1010.3 hPa
Ave Min Pressure	1001.6 hPa
Ave Pressure	1006.2 hPa
Max Pressure	1021.1 hPa
Min Pressure	990.1 hPa

Temperature

Ave Max Temp	12.3 °C
Ave Min Temp	8.5 °C
Ave Temp	10.4 °C
Max Temp	16.3 °C
Min Temp	4.5 °C

Humidity

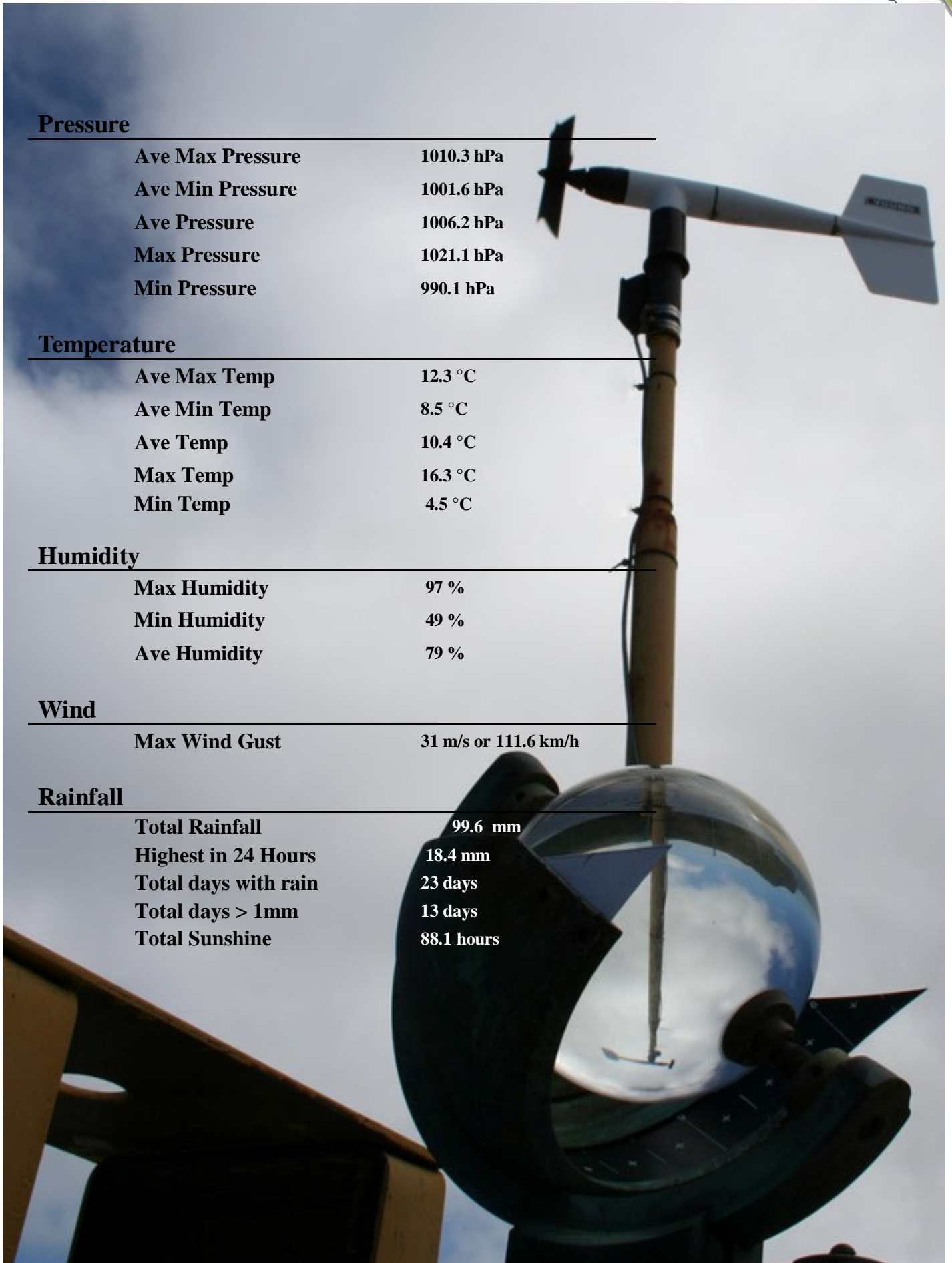
Max Humidity	97 %
Min Humidity	49 %
Ave Humidity	79 %

Wind

Max Wind Gust	31 m/s or 111.6 km/h
---------------	----------------------

Rainfall

Total Rainfall	99.6 mm
Highest in 24 Hours	18.4 mm
Total days with rain	23 days
Total days > 1mm	13 days
Total Sunshine	88.1 hours



GOUGH BUNTING



Sponsors

We would like to thank the following sponsors for making life on Gough island even more exciting.

