

Electronic Air Temperature Methodology

(Last rev. 30/10/2024)

Air temperature is electronically measured at two different locations at the Fortuna Station

1. Inside a Stevenson screen located in a small clearing ~10m north of the main building.
2. Near the top (~10m) of the radio tower that is located on the east side of the main building. The sensor is located inside of a standard 10-gill solar radiation shield.

See Figures 1, 2 and 3 for the location of the station and the sensors.

The electronic measurement of air temperature began in August of 2017 using Onset Hobo U22-001 Pro V2 Underwater data loggers (see Fig. 4). In December of 2023, a Campbell Sci. HygroVue10 Temperature & Humidity sensor (Figure 5) replaced the Hobo sensor on the tower.

Hobo sensors record temperature once every 15 minutes. Data represent the temperature at the moment of the time stamp. HygroVue10 sensors sample every 10 seconds. The average, minimum and maximum values are recorded at the end of every 15 minute interval. HygroVue10 data are downloaded on the same schedule.

Hobo sensors are replaced every 5-7 months. The sensors are calibrated before they are deployed and when they are returned. The data are adjusted according to the results of the calibrations.

Records are provided with two Quality Control flags. Flag one indicates the fitness for use of each record. Possible values are: good, bad, doubtful, missing. Records are marked as bad if they fail one or more QC tests. Likewise, records are marked as doubtful if they are potentially bad, but without sufficiently strong evidence to be marked as bad. The second QC variable provides that reason for marking a variable as bad or doubtful. Potential values are: range, step, persistence, drift. At this time only range tests have been applied.

Figure 1



Location of the Fortuna Station

Figure 2



Radio Tower (left), north-side clearing

Figure 3



Location of tower 10-gill Radiation sensor with Hobo inserted (left) and Clearing Instrument shelter (right)

Figure 4



Onset Hobo U22-001 Pro V2 Underwater data logger

Figure 5



Campbell Sci. HygroVue10 Temperature & Humidity sensor