

Electronic Incoming Solar Radiation Methodology

(Last rev. 13/11/2024)

Incoming solar radiation is measured at the top of AVA tower which is located to the north of the 50ha plot on Barro Colorado Island (BCI) (see Figure 1 and 2).

Two pyranometers was used, designated as North (n) and South (s). The reported values in summary statistics based on the larger values of both sensors for any given reporting interval.

The South sensor is a Kipp&Zonen CMP11 pyranometer and the South Sensor is a Kipp&Zonen CMP3 pyranometer (see Figure 3 and 4). A comparison of daily average solar radiation between the two models is shown in Figure 5

Incoming solar radiation is sampled once every 10 seconds. The average, minimum and maximum values are recorded every 15 minutes.

Sensor elements are replaced with newly recalibrated sensors every year according to the manufacture's recommendations.

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 AVA Tower. Red lines are trails. White rectangle is the 50ha plot.

Figure 2



AVA Tower

Figure 3



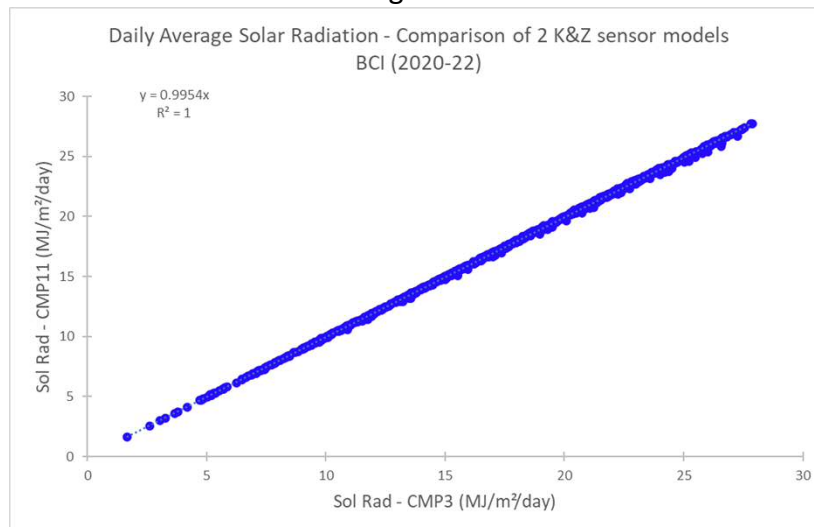
Kipp & Zonen CMP 3 pyranometer (end of pole) and PQS 1 PAR sensor

Figure 4



Kipp & Zonen CMP3 (left) and CMP11 (right)

Figure 5



Comparison of Daily average solar radiation between Kipp&Zonen CMP3 vs CMP11 Pyranometers