

Electronic Solar Radiation Methodology

(Last rev. 07/10/2024)

The San Lorenzo Park (formerly known as Fort Sherman) station (Figure 1) is located approximately 10km southwest of the city of Colon in forest that has only been lightly altered by human activities. It is attached to a large construction crane (Figure 2).

Two pyranometers was used, designated as Back (b) and Front (f). The reported values in summary statistics are based on the larger values of both sensors for any given reporting interval.

Incoming solar radiation was originally measured electronically using LiCor Model Li200s Pyranometers. Currently, Kipp&Zonen sensors are in use (Figure 3). The Front sensor is a Kipp&Zonen CMP11 pyranometer and the Back Sensor is a Kipp&Zonen CMP3 pyranometer (see Figure 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 San Lorenzo Crane

Figure 2



San Lorenzo Crane

Figure 3



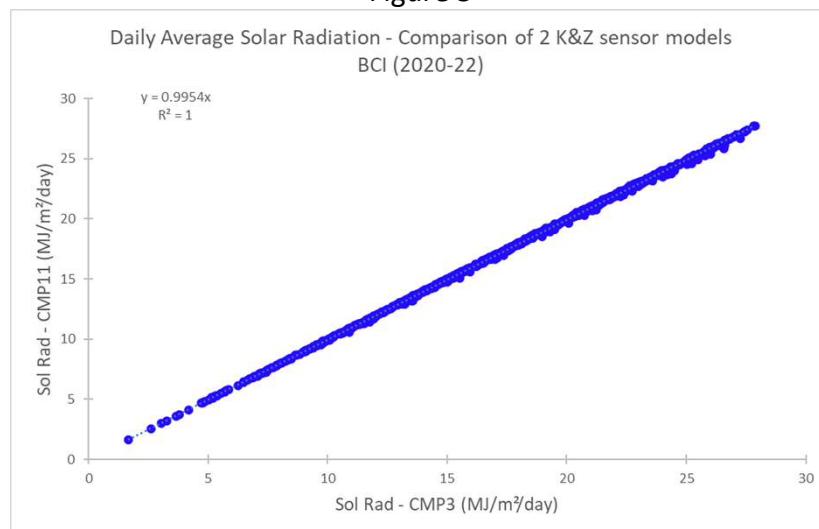
Kipp & Zonen CMP11 (left) and CMP3 (right)

Figure 4



San Lorenzo Crane solar radiation sensors

Figure 5



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