

Electronic Incoming Solar Radiation Methodology

(Last rev. 14/04/2017)

Incoming solar radiation was originally measured electronically using LiCor Model Li200x Pyranometers (see figure 1) at the 42m level. In Nov. 2001 two new sections were added to the tower bringing the height to 48m. This was necessary to accommodate the increased height of the surrounding canopy. The sensor was moved to 48m on Dec. 7, 2001.

Originally, one pyranometer was used, however in Nov. of 2010 a second pyranometer was installed (see Figure 2). The reported value is the larger of both sensors for any given reporting interval. The sensors are designated as East (e) and West (w). Solar radiation files have the format: "BCI_lutz48m_sr[e/w]".

On June 6, 2016 the East sensor was replaced with a Kipp&Zonen SPLite2 pyranometer (see Figure 3). A comparison of daily average solar radiation between the two sensors is shown in Figure 4

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 records. 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



Close-up of LiCor Li200x Pyranometer

Figure 2



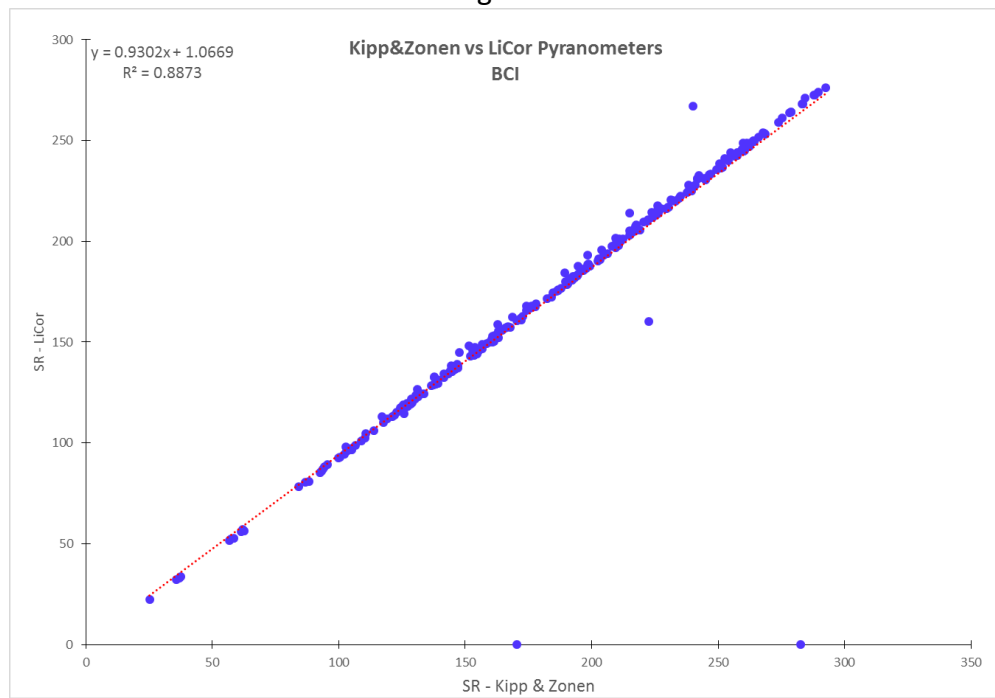
Paired Pyranometers (with protective caps used during installation)

Figure 3



Kipp & Zonen SPLite2

Figure 4



Comparison of Daily average solar radiation between LiCor Li200SB and Kipp&Zonen SPLite2 Pyranometers