

## Electronic Incoming Solar Radiation Methodology

(Last rev. 15/03/2017)

From 1974 until 1981, Global solar radiation was measured on the roof of the laboratory building using a Moll-Gorczyński-type pyranometer. The sensor was destroyed by lightning in 1981 and in 1984 a Li-Cor LI200SZ pyranometer sensor was deployed at the reef flat DownStream location. Sensors were connected to dataloggers and the data were recorded hourly.

Since 2004, Global solar radiation has been measured on the Pier tower using Li-Cor LI200SB (see figure 1) pyranometers attached to a datalogger recording total ( $\text{MJm}^{-2}$ ), maximum and minimum ( $\text{J m}^{-2} \text{ s}^{-1}$ ) at 15-minute intervals. In Jan. 2011 a second Li-Cor LI200SB was added. The tower sensors are designated as North (n) and South (s). Solar radiation files have the format: "Galeta\_tower\_sr[n/s]". The Reef sensor files have the format "Galeta\_reef\_sr".

On Sept. 13, 2016 both of the tower sensors were replaced with a Kipp&Zonen SPLite2 pyranometers (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.

Figure 1



Close-up of LiCor Li200x Pyranometer

Figure 2



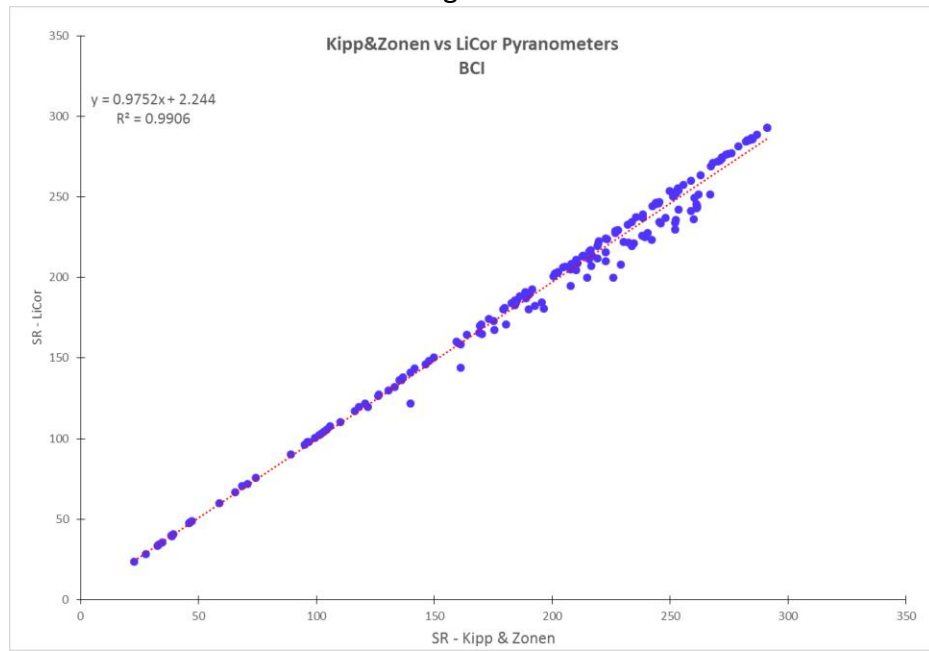
Paired Pyranometers (with protective caps used during installation)

Figure 3



Kipp & Zonen SPLite2

Figure 4



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