

## Photosynthetically Active solar Radiation Methodology

(Last rev. 13/11/2024)

Incoming Photosynthetically Active solar Radiation (PAR) is measured electronically at 42m on the Celestino meteorological tower (see Figure 1 & 2) using two Kipp & Zonen PSQ1 Quantum Sensors (figure 3).

The sensors are located on each end of a long pole oriented in a North (n)/South (s) orientation. Solar radiation files have the format: "celestino\_tower\_par[n/s]\_elect".

Incoming solar radiation is sampled once every 10 seconds. Interval-average 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 Agua Salud research plots (red polygons) and the Celestino Meteorology Station

Figure 2



Celestino tower

Figure 3



Kipp & Zonen PSQ1 Quantum Sensor at the end of pole (left) and close-up view (right)