

Air Temperature and Relative Humidity Methodology

(Last rev. 07/11/2024)

The Parque Natural Metropolitano (PNM) station (Figure 1) is located on the north edge of Panama City. It is attached to a large construction crane.

The original crane, erected in 1995, was dismantled in 2021. A new 70m crane, located approximately 10m away, was put into operation in January of 2022 (Figure 2).

The original Temperature and Relative Humidity sensor was installed approximately 25m above the ground. When the original crane was replaced, the temperature and humidity sensor was installed at the top of the crane (Figure 3). The data from the old and new locations are treated as separate data series tower. Unfortunately, there are no overlapping data between the old and new locations that could be used to derive a correlation between them.

Air temperature and relative humidity are measured electronically using combination sensors housed in naturally aspirated radiation shields*

*(From the manufacturer: the naturally aspirated 6 and 10-plate radiation shields' louvered construction allows air to pass freely through the shield, keeping the probe at or near ambient temperature. The shields' white color reflects solar radiation.)

Since 1995, several types of sensors have been used. From 1995 to 2001 the Viasala HMP35C was used. From 2001 to 2010 the Viasala HMP45C was used. From 2010 to xxxx the CS215 sensor was used. Since then, the Campbell Sci. HygroVue10 Temperature & Humidity sensor has been used (Figure 4).

Air temperature and relative humidity are sampled every 10 seconds. The average, minimum and maximum values are recorded at the end of every 15-minute interval.

Sensor elements are replaced every year according to the manufacture's recommendations.

Figure 1



Location of the Parque Metropolitano Crane stations.

Figure 2



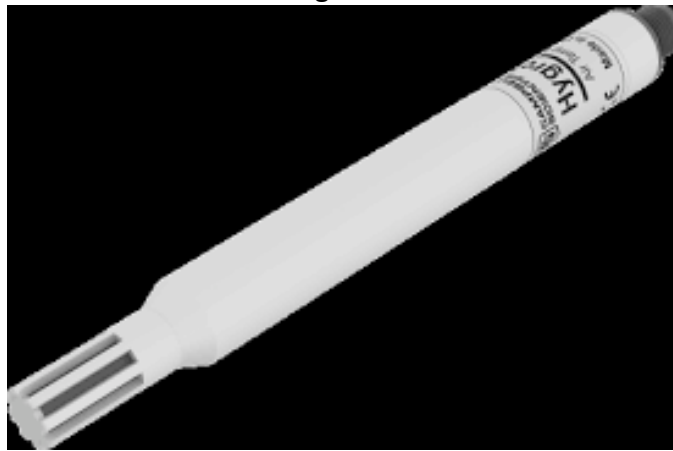
Original PNM crane (left column) and new crane (right)

Figure 3



Original PNM tower showing original, 25m station (left) and new crane-top 10-gill radiation screen with sensor inserted from below (right)

Figure 4



Campbell Sci. HygroVue10 Temperature & Humidity sensor