**Bouldin Corn: 4-way radiometer (NR01) PRT correction – June 2017**
**8 August 2017**
Daphne Szutu

Summary

NR01 PRT data at Bouldin Corn dropped precipitously in 2017-06 (Fig 1) and became NAN. The issue was fixed on 2017-06-23 11:30 by tightening the PRT wires at the datalogger. I used a linear regression between NR01 PRT data at Bouldin Alfalfa and Bouldin Corn to correct the Bouldin Corn data.
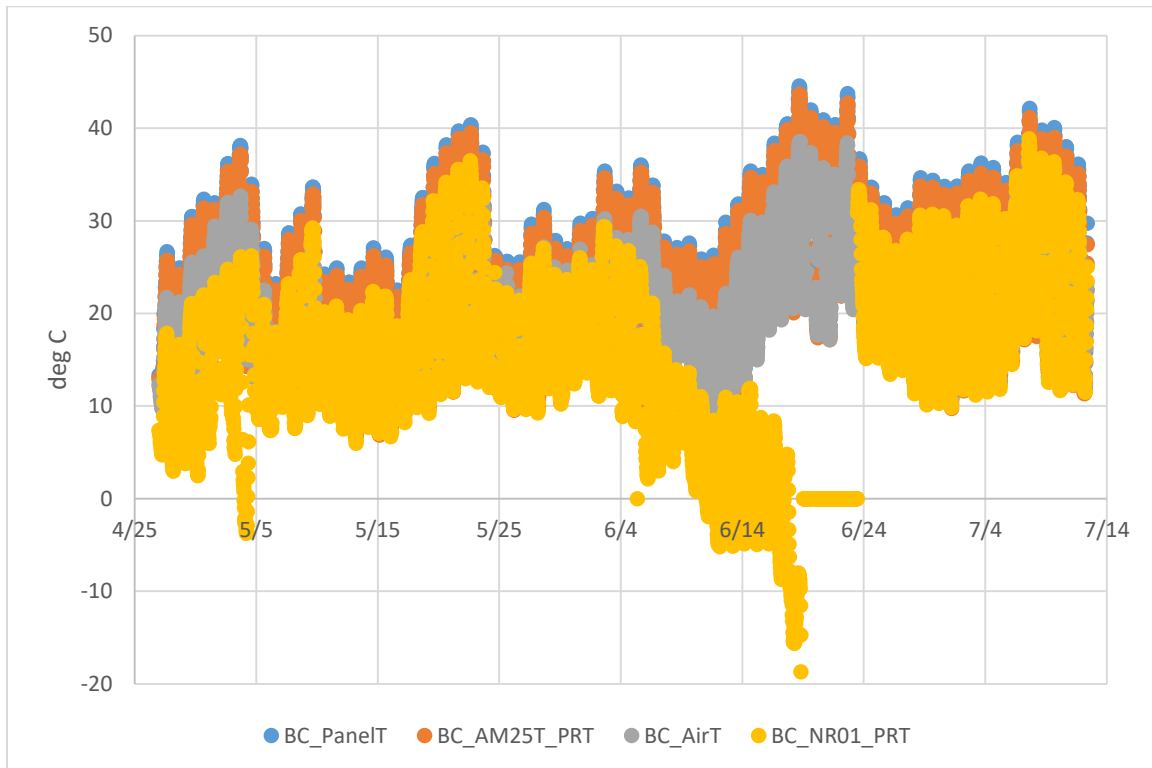
Fig 1. Time series of temperature data at Bouldin Corn (BC) showing the drop in NR01 PRT data.

Methods and Results

I determined the incorrect data started on Jun 1 through visual inspection of when the field data (NR01_PRT) and the corrected data (NR01_PRT_corr) diverged (Fig 2). Based on this, I corrected the Bouldin Corn NR01 PRT data from 2017-06-01 00:00 to 2017-06-23 11:00 I used a linear regression between PRT data at Bouldin Alfalfa and Bouldin Corn to correct the Bouldin Corn data (Fig 3). The two data sets matched well with a high R^2 value, a slope close to 1, and an intercept close to 0 (R^2 = 0.98, m = 0.95, b = 1.24). After the correction, the Bouldin Corn NR01 PRT data matched well with air temperature data at Bouldin Corn (Fig 4).
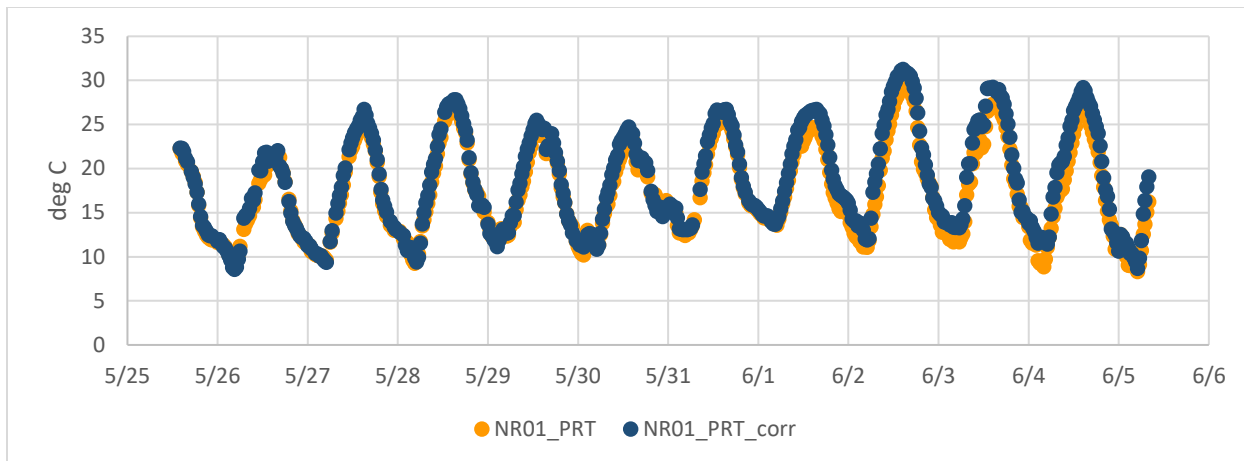
Fig 2. Time series of field (NR01_PRT) and corrected data (NR01_PRT_corr). The correction period was visually determined as the date when the two series began diverging, 2017-06-01.

$$y = 0.9542x + 1.2382$$
$$R^2 = 0.98$$
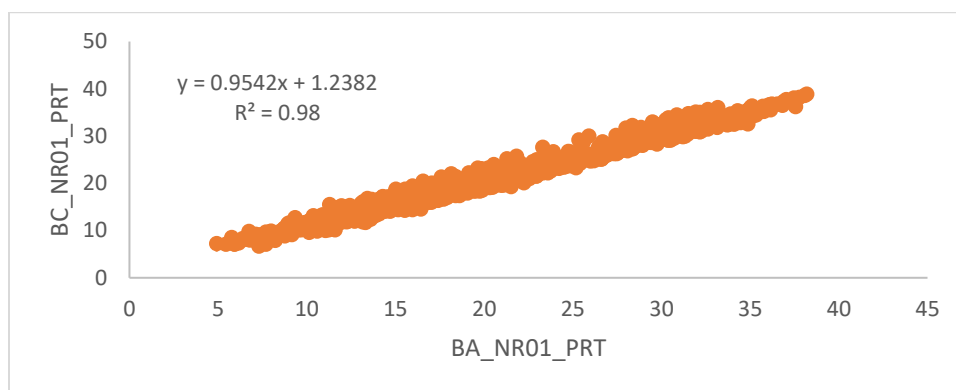
Fig 3. Linear regression between NR01 PRT at Bouldin Corn (BC) and Bouldin Alfalfa (BA). The dates used for the linear regression were about two week before and after the correction period (2017-05-15 00:00 to 2017-05-31 23:30 and 2017-06-25 00:00 to 207-07-10 9:30).
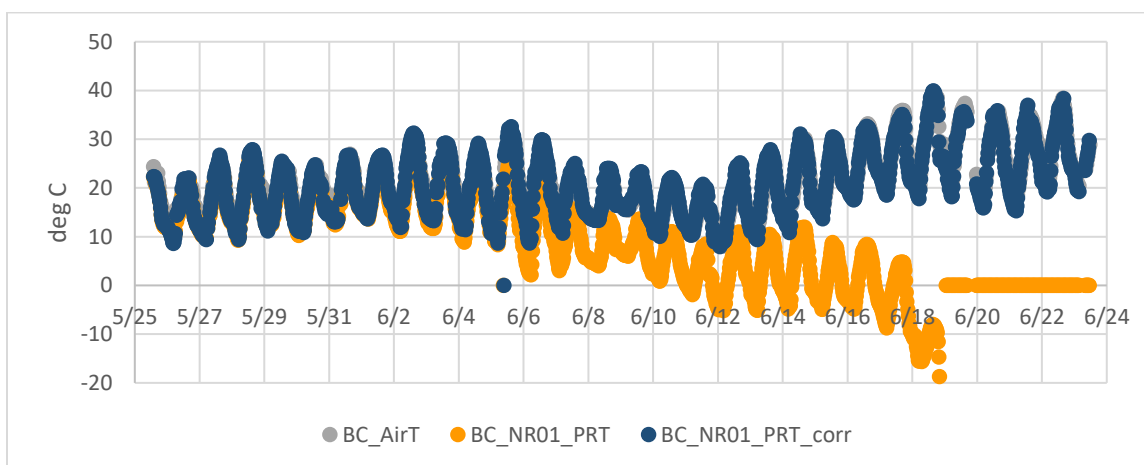
Fig 4. Time series of air temperature, uncorrected NR01 PRT data, and corrected PRT data at Bouldin Corn. Corrected PRT data follows the trends of air temperature data much better than uncorrected PRT data. Corrected PRT data from 2017-06-01 00:00 to 2017-06-23 11:00 was uploaded to the database.