Let’s say we have 4 air temperature sensors mounted in a cluster, exposed to the same wind, radiation, air, etc. All four should read nearly the same value.

1. **Check the StDev of the sensors, if it’s greater than some value, flag all values**

For this we could copy this rule to all columns:

*std([col\_Cotton\_Avg,col\_Gill\_AF\_Avg,col\_Gill\_Lg\_Avg,col\_Gill\_Sh\_Avg,col\_HJA\_Lg\_Avg,col\_HJA\_Sh\_Avg,col\_RMY\_ASP\_Avg],0,2)>0.2='Q';*

where:

[col\_Temp1,col\_Temp2,col\_Temp3,col\_Temp4] = matrix of temps

0 = normalize flag (we do not normalize)

2 = dimension flag for calculating std across rows instead of per column

so:

*std([col\_Temp1,col\_Temp2,col\_Temp3,col\_Temp4],0,2)*

gives us a column of StdDev across all sensors per time point for comparison against your critical value (e.g. 0.2)

1. **If the Stdev is within the acceptable range, but col\_x is some value greater or less than the mean of the other 3, flag col\_x**

in addition to the rule above, add to each column:

*abs(x-mean([col\_Temp1,col\_Temp2,col\_Temp3,col\_Temp4],2)) > 0.5='Q'*

where:

*mean([col\_Temp1,col\_Temp2,col\_Temp3,col\_Temp4],2)*

gives us a column of means across the 4 temps (again, using dim = 2 to calculate means across rows instead of columns)

abs(x-mean...) gives you the absolute difference between each data value and the group mean

1. **Define the “gold standard” sensor and check col\_x to see if it’s some value more or less than the value of the standard**

for this scenario, we just put this rule in each column \*except\* the "gold standard" column (assuming it's Temp1 here): *abs(x-col\_Temp1)>0.1='Q'*