Performing a T-Test in Excel.

1. On the Data tab, in the Analysis group, click Data Analysis.

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If this tab doesn't exist in your Excel, then you might have to just turn it on. To do so:

a. On the File tab, click Options.



b. Click "Go..."

c. Check Anlalysis ToolPak and



Commented [SS1]: On a Macc → This might be tools > Add-ons.

d. On the Data tab, in the Analysis group, you can now click on Data Analysis!

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2. Click on 't-Test: Two Sample Assuming Unequal Variances'

Data Analysis		?	×	
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Moving Average		Can	ncel	
Random Number Generation				
Rank and Percentile				
Regression		He	elp	
Sampling				
t-Test: Paired Two Sample for Means				
t-Test: Two-Sample Assuming Equal Variances				
t-Test: Two-Sample Assuming Unequal Variances				
z-Test: Two Sample for Means	¥			

- 3. Click in the Variable 1 Range box and select the range of data collected by the HOBO logger of your first PV site.
- 4. Click in the Variable 2 Range box and select the range of data collected by the HOBO logger for your second PV site.
- 5. Make sure the alpha is set to 0.05
- 6. You can keep the "New Worksheet Ply" selected in Output options, this will output the results in a new datasheet that you can rename.
- 7. Click OK
- 8. Your result will look something like:

	А	В	С
1	t-Test: Two-Sample Assuming Unequal Variances		
2			
3		Variable 1	Variable 2
4	Mean	87.88601	97.30627
5	Variance	107.1032	85.23838
6	Observations	186	186
7	Hypothesized Mean Difference	0	
8	df	365	
9	t Stat	-9.26367	
10	P(T<=t) one-tail	8.68E-19	
11	t Critical one-tail	1.649039	
12	P(T<=t) two-tail	1.74E-18	
13	t Critical two-tail	1.966485	

To reject the null hypothesis (that there is no difference between the temperature means at each site:

[t Stat] < [- t Critical one/two-tail] (depending on which you choose) OR

[t Stat] > [+ t Critical one/two- tail]

In this case, if I'm interested in the two-tailed result:

-9.263 < -1.966, so we can reject the null hypothesis, and conclude that means of these two datasets are significantly different.