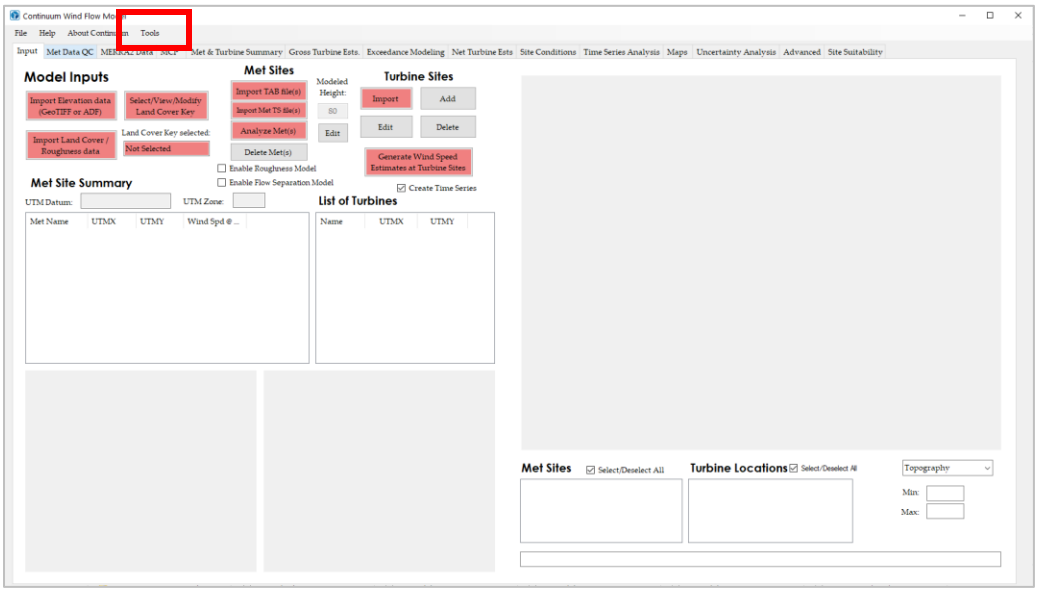
How to import and filter met data

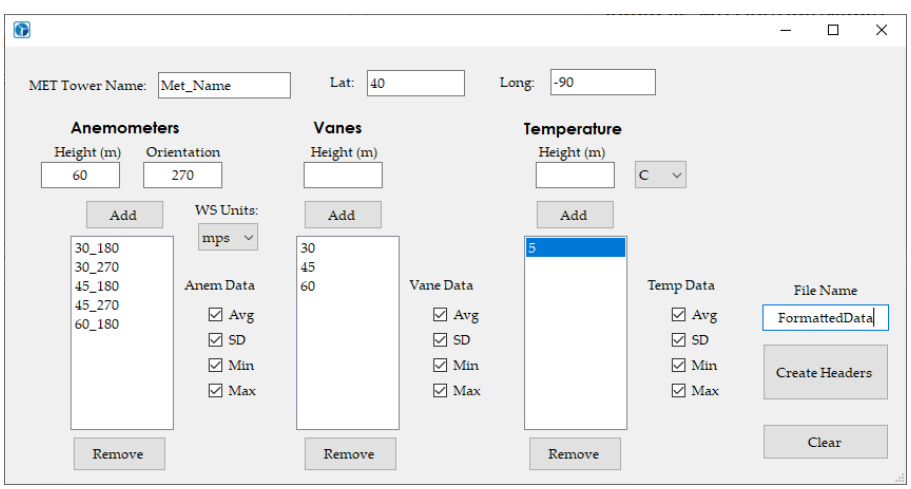
Tutorial Summary:

Learn how to format and import met time series data and apply met data QC filters.

1. Format data file
   - On top menustrip, click 'Tools' -> 'Generate Headers'



   - Enter:
     - Met site name
     - Met site latitude (decimal degrees)
     - Met site longitude (decimal degrees)
     - Each anemometer height (m) and orientation (Click Add for each sensor)
     - WS Units (m/s or mph)
     - Temperature sensor units (C or F)
     - Formatted data file name



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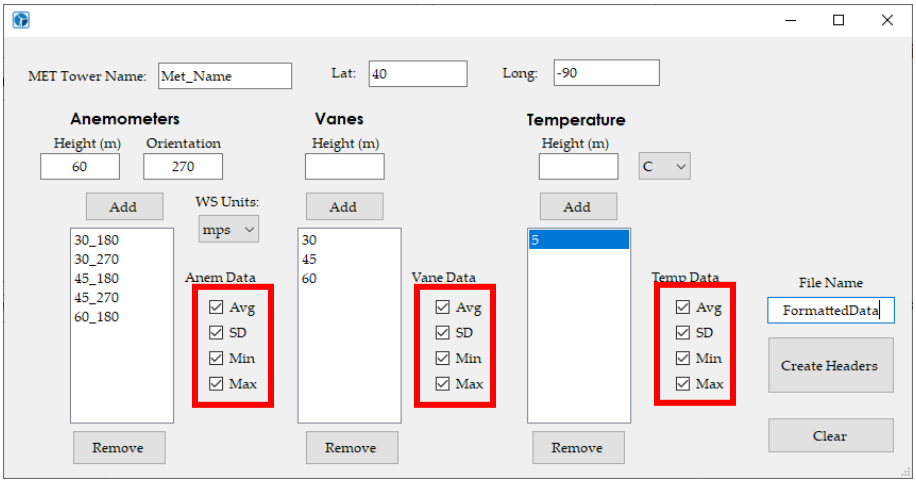
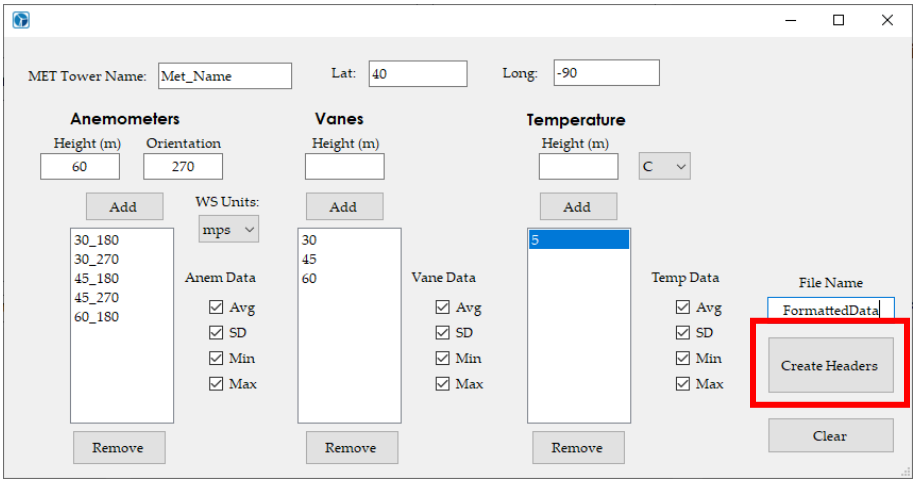
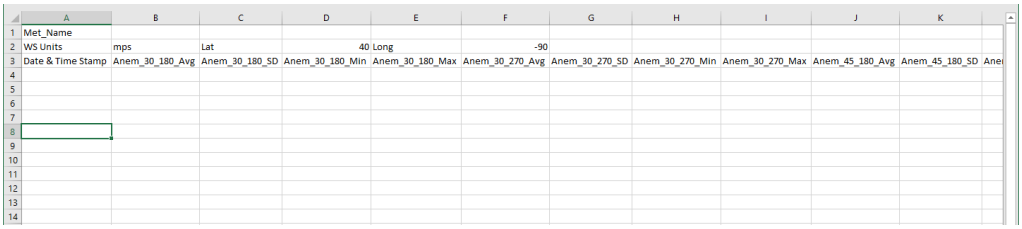
- Specify data types contained in met data file: Avg, SD, Min, Max



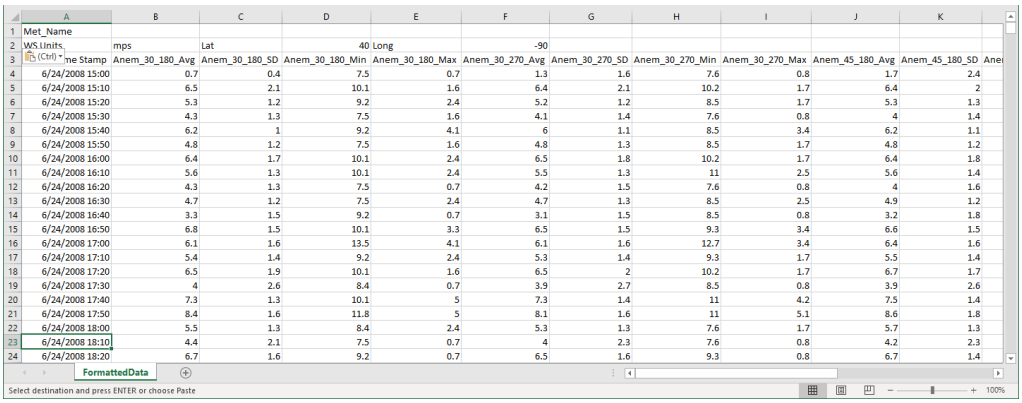
- Click 'Create Headers'



- Copy data into formatted data file and save as .csv



	A	B	C	D	E	F	G	H	I	J	K
1	Met_Name										
2	WS Units	mps	Lat	40	Long	-90					
3	Date & Time Stamp	Anem_30_180_Avg	Anem_30_180_SD	Anem_30_180_Min	Anem_30_180_Max	Anem_30_270_Avg	Anem_30_270_SD	Anem_30_270_Min	Anem_30_270_Max	Anem_45_180_Avg	Anem_45_180_SD

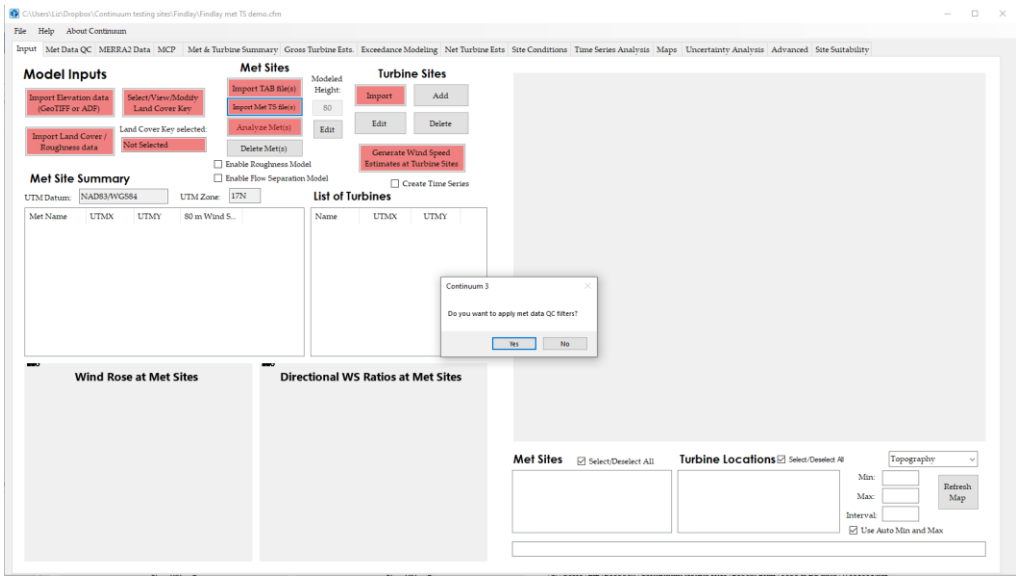


	A	B	C	D	E	F	G	H	I	J	K
1	Met_Name										
2	WS Units,	mps		Lat	40	Long	-90				
3	(Ctrl) ' me Stamp	Anem_30_180_Avg	Anem_30_180_SD	Anem_30_180_Min	Anem_30_180_Max	Anem_30_270_Avg	Anem_30_270_SD	Anem_30_270_Min	Anem_30_270_Max	Anem_45_180_Avg	Anem_45_180_SD
4	6/24/2008 15:00	0.7	0.4	7.5	0.7	1.3	1.6	7.6	0.8	1.7	2.4
5	6/24/2008 15:10	6.5	2.1	10.1	1.6	6.4	2.1	10.2	1.7	6.4	2
6	6/24/2008 15:20	5.3	1.2	9.2	2.4	5.2	1.2	8.5	1.7	5.3	1.3
7	6/24/2008 15:30	4.3	1.3	7.5	1.6	4.1	1.4	7.6	0.8	4	1.4
8	6/24/2008 15:40	6.2	1	9.2	4.1	6	1.1	8.5	3.4	6.2	1.1
9	6/24/2008 15:50	4.8	1.2	7.5	1.6	4.8	1.3	8.5	1.7	4.8	1.2
10	6/24/2008 16:00	6.4	1.7	10.1	2.4	6.5	1.8	10.2	1.7	6.4	1.8
11	6/24/2008 16:10	5.6	1.3	10.1	2.4	5.5	1.3	11	2.5	5.6	1.4
12	6/24/2008 16:20	4.3	1.3	7.5	0.7	4.2	1.5	7.6	0.8	4	1.6
13	6/24/2008 16:30	4.7	1.2	7.5	2.4	4.7	1.3	8.5	2.5	4.9	1.2
14	6/24/2008 16:40	3.3	1.5	9.2	0.7	3.1	1.5	8.5	0.8	3.2	1.8
15	6/24/2008 16:50	6.8	1.5	10.1	3.3	6.5	1.5	9.3	3.4	6.6	1.5
16	6/24/2008 17:00	6.1	1.6	13.5	4.1	6.1	1.6	12.7	3.4	6.4	1.6
17	6/24/2008 17:10	5.4	1.4	9.2	2.4	5.3	1.4	9.3	1.7	5.5	1.4
18	6/24/2008 17:20	6.5	1.9	10.1	1.6	6.5	2	10.2	1.7	6.7	1.7
19	6/24/2008 17:30	4	2.6	8.4	0.7	3.9	2.7	8.5	0.8	3.9	2.6
20	6/24/2008 17:40	7.3	1.3	10.1	5	7.3	1.4	11	4.2	7.5	1.4
21	6/24/2008 17:50	8.4	1.6	11.8	5	8.1	1.6	11	5.1	8.6	1.8
22	6/24/2008 18:00	5.5	1.3	8.4	2.4	5.3	1.3	7.6	1.7	5.7	1.3
23	6/24/2008 18:10	4.4	2.1	7.5	0.7	4	2.3	7.6	0.8	4.2	2.3
24	6/24/2008 18:20	6.7	1.6	9.2	0.7	6.5	1.6	9.3	0.8	6.7	1.4

FormattedData

Select destination and press ENTER or choose Paste

2. Import formatted met data file
    - Go to 'Input' tab
    - Click 'Import Met TS file'
    - Click 'Yes' to apply met data QC filters



- Click 'Yes' if modeled height (i.e. hub height) is correct

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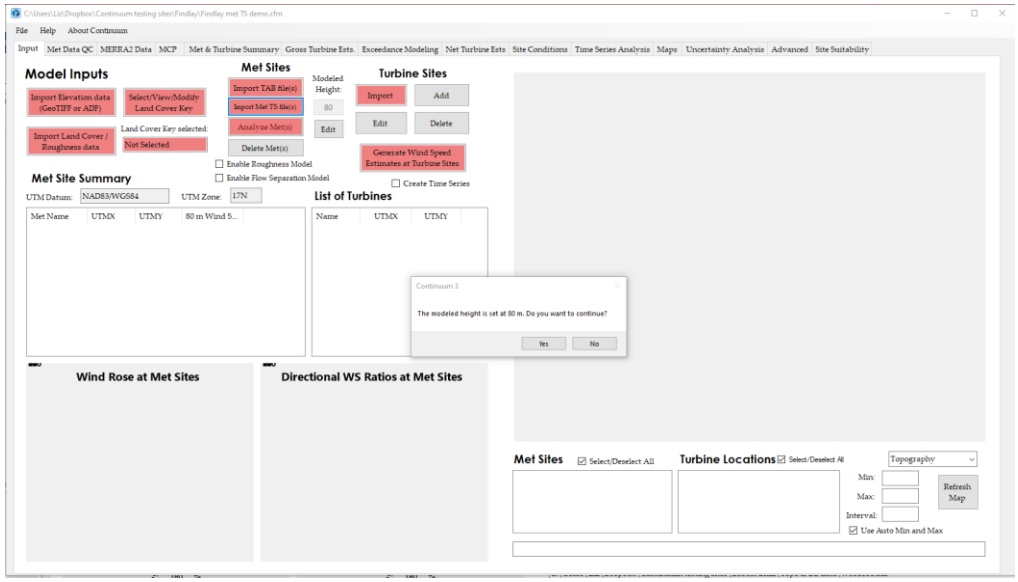
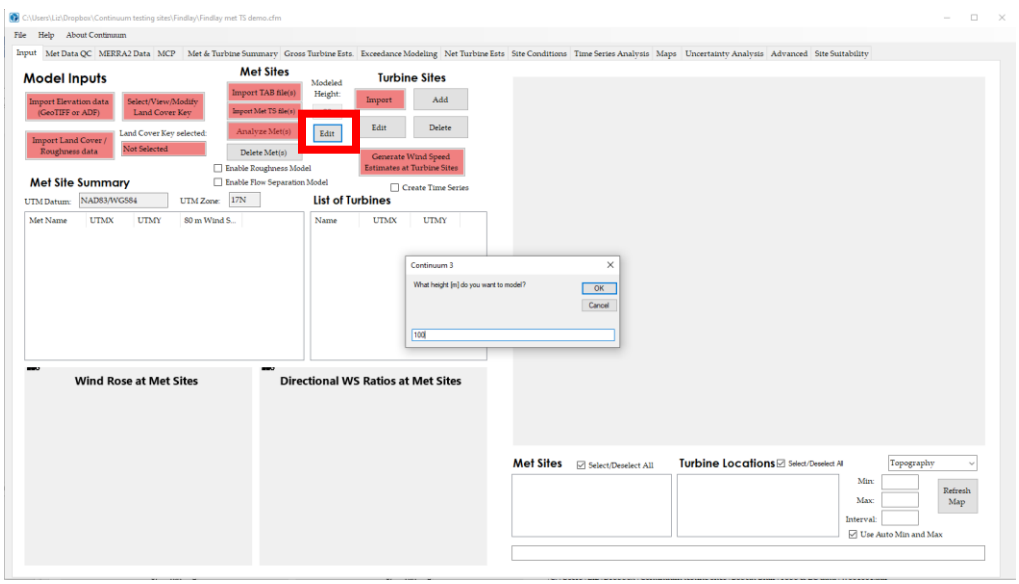


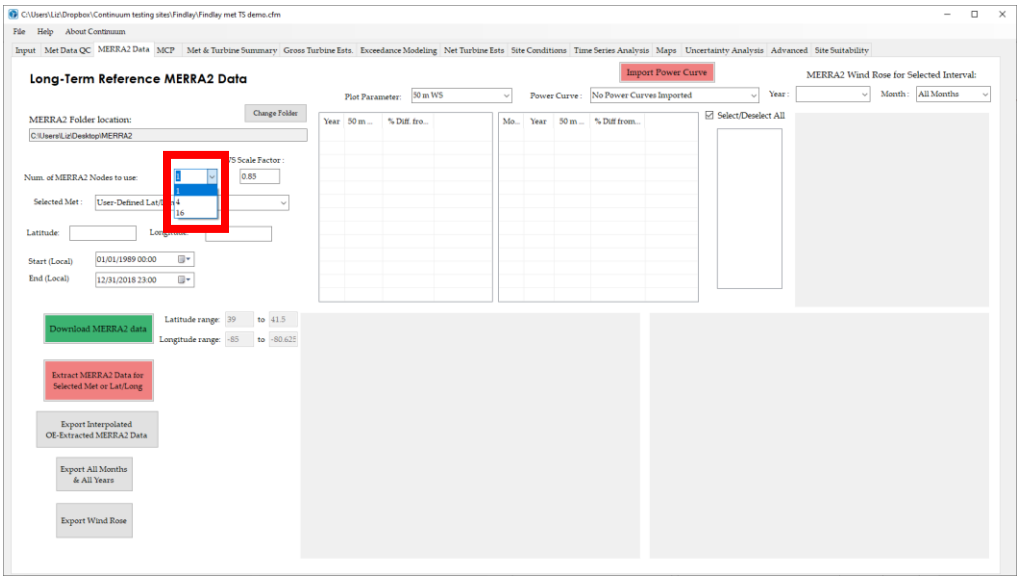
- If a different modeled height is desired, click 'No'
  - Click 'Edit' and enter height to model as shown below.

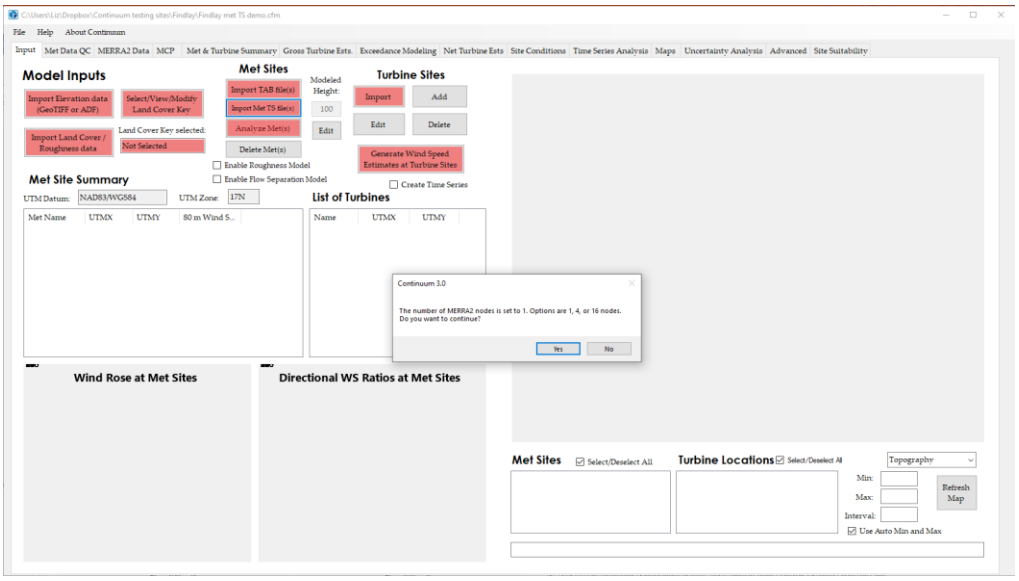


- Click 'Yes' if number of MERRA2 nodes is set to desired value.
  - If MERRA2 data is not used (i.e. MCP not conducted) then this setting has no effect.
  - If MERRA2 data is used then data will be extracted for the met site location.
    - If 1 node is used, the MERRA2 node closest to the met site location will be extracted and the 50 m MERRA2 data is used in MCP.

- If 4 or 16 nodes are used, the 4 or 16 closest MERRA2 nodes will be extracted and inverse-distance weighted average is calculated and used in MCP.

  - If a different number of MERRA2 nodes is desired, click 'No' and change the dropdown on the MERRA2 tab as shown below.

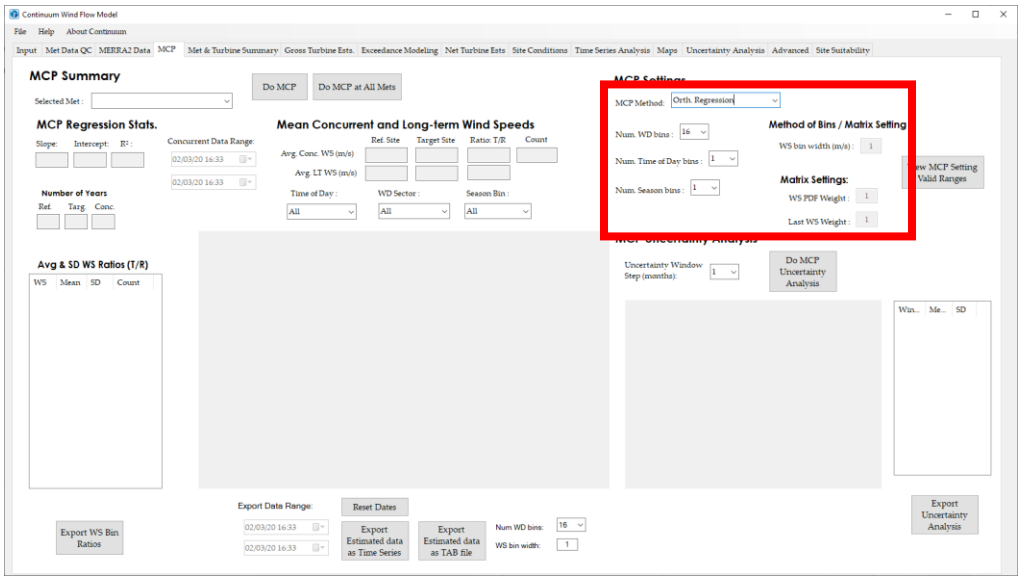




- Click 'Yes' if the MCP settings are set to desired values.
  - If MCP is not conducted (i.e. MERRA2 data is not used) then this setting has no effect.
  - If a different MCP setting is desired, click 'No' and change settings on the MCP tab

How to import and filter met data

- MCP Methods:
  - Orthogonal Regression
  - Variance Ratio
  - Method of Bins
  - Matrix
- Number of WD (Wind Direction) bins: 4, 8, 12, 16, or 24
- Number of Time of Day bins: 1 or 2
  - If 2 bins selected,
    - Day: 7am to 6pm
    - Night: 7pm to 6am
- Number of Season bins: 1 or 4
  - If 4 bins selected,
    - Winter: Dec. – Feb.
    - Spring: Mar. – May
    - Summer: Jun. – Aug.
    - Fall: Sep. – Nov.
- Wind Speed (WS) bin width: 0.1 to 2 m/s
  - Used only in Method of Bins and Matrix methods
- WS Probability Density Function (PDF) Weight: 0 to 10
  - Used only in Matrix MCP method
- Last WS Weight: 0 to 10
  - Used only in Matrix MCP method



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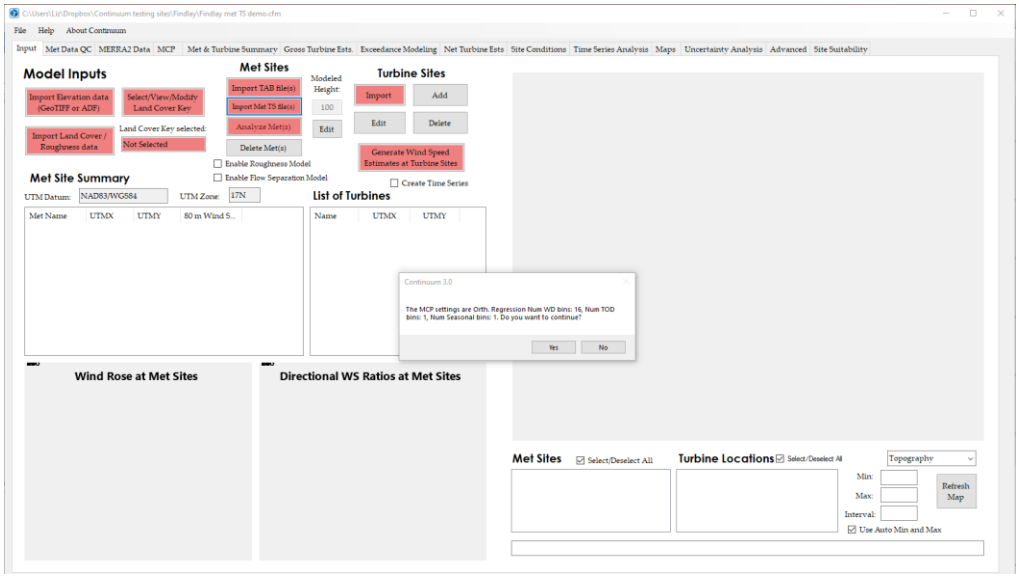
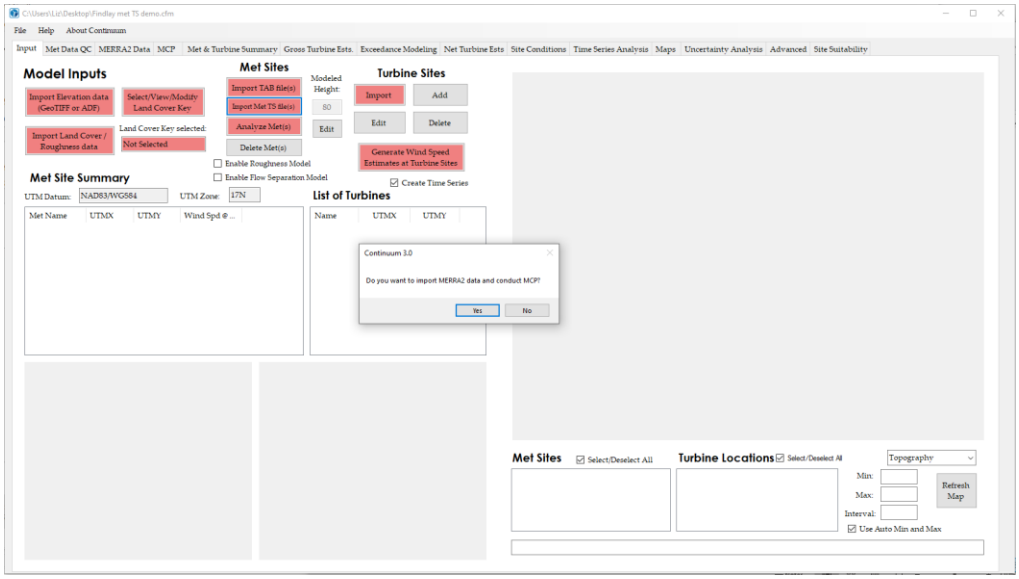
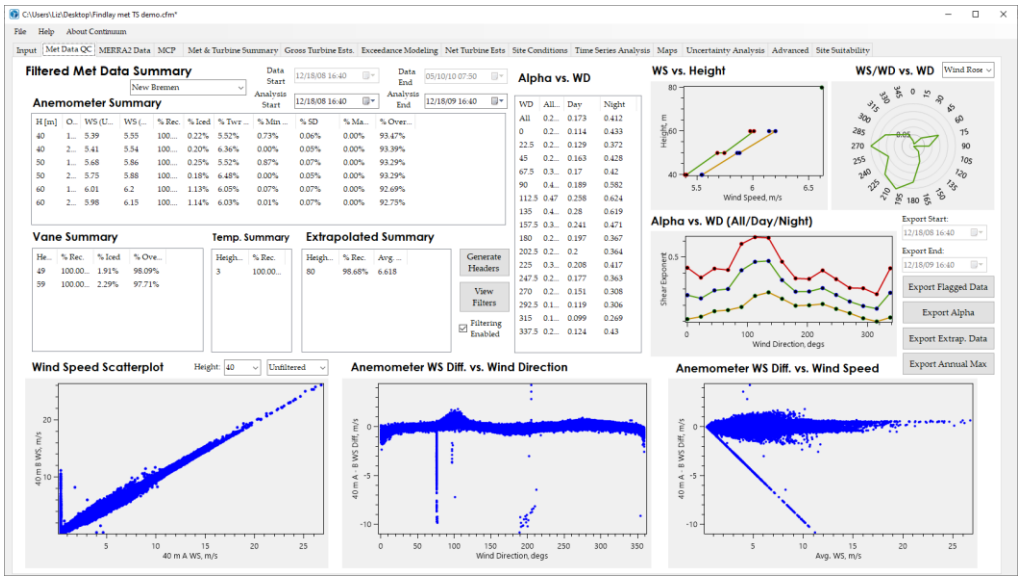


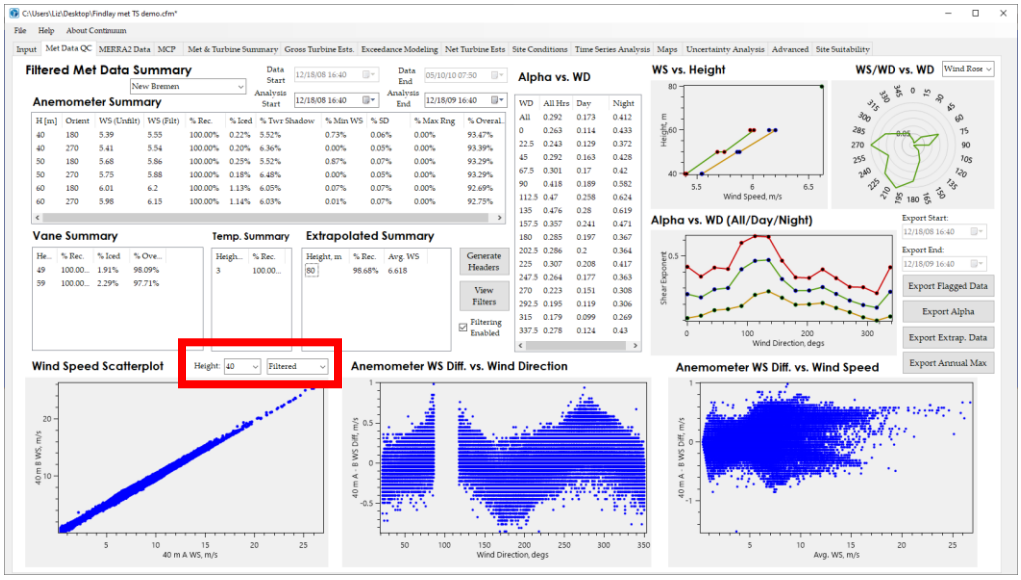
- Specify met data file to import.
- Click 'Yes' if MERRA2 data has already been downloaded and it is desired to conduct MCP.



3. Analyze filtered met data
    - Go to 'Met Data QC' tab

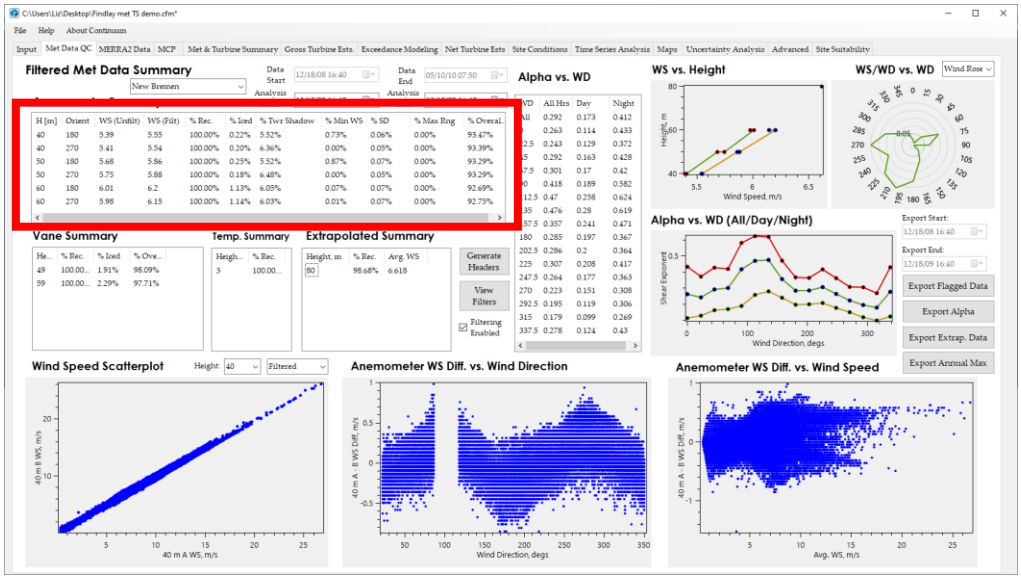


- Toggle between heights and between filtered and unfiltered to view effect of QC filters



How to import and filter met data

- View data recovery and break-down of QC filters



- View shear exponent (alpha) each wind direction and day/night

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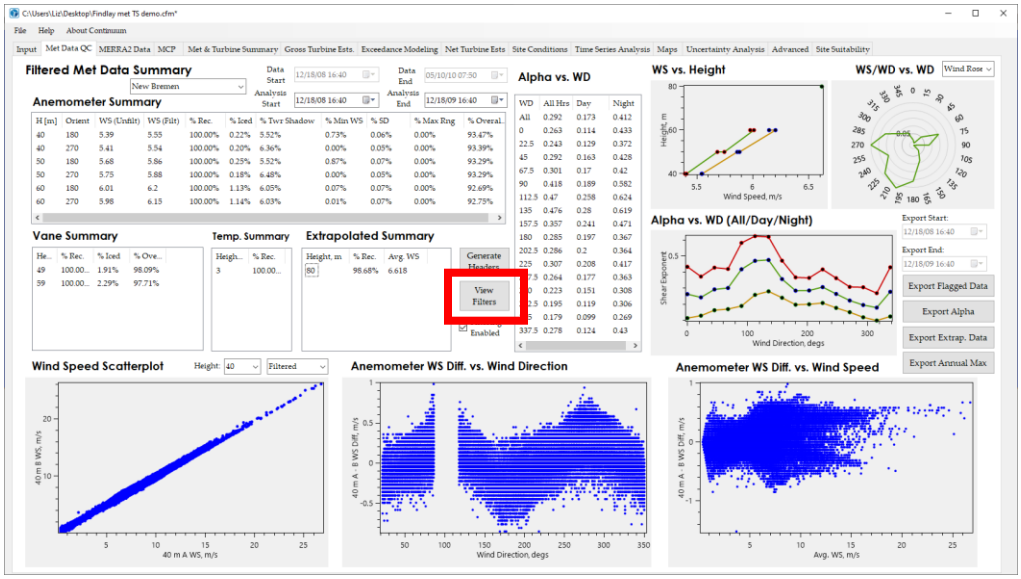
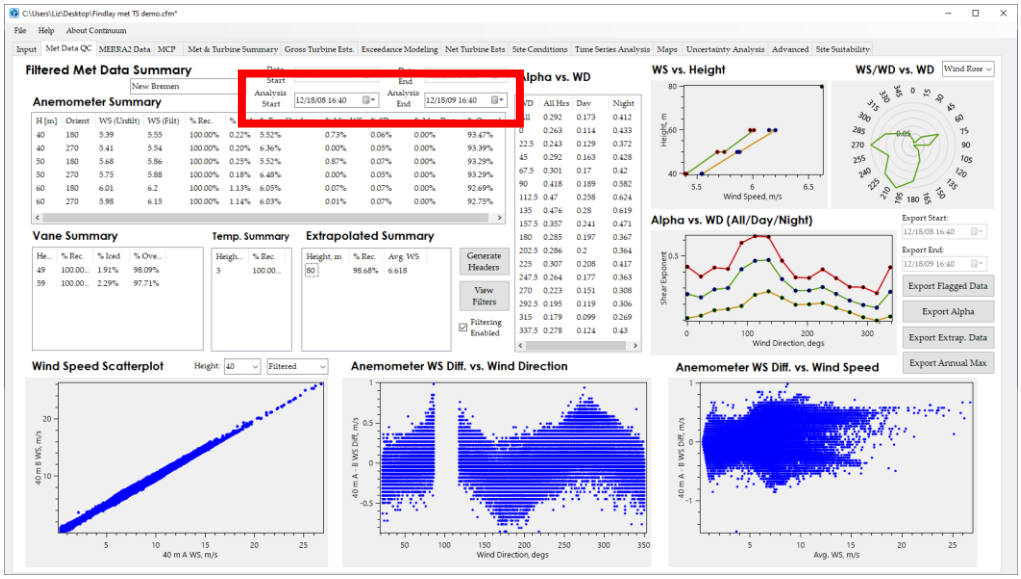
- Click 'View Filters' to see settings of each met data QC filter



Additional Notes: When importing and filtering data, Continuum will find the yearly period with the highest data recovery and assign this date range to 'Analysis Start' and 'Analysis End'. This time period is used in the MCP analysis. The user can modify this range, if desired.