

How to create wake loss estimates

Tutorial Summary:

Learn how to create wake loss model, generate wake loss estimates, and find net energy production estimates at turbine sites. Learn how to create maps of waked wind speed.

- 1) Generate gross estimates at turbine sites
 - See tutorial
- 2) Create wake loss model
 - Go to 'Net Turbine Ests'
 - Click 'Create Wake Model & Calculate Turbine Wake Losses'
 - Choose model type:
 - Eddy Viscosity
 - Eddy Viscosity with Deep Array correction (DAWM)
 - Jensen
 - Select power curve to use
 - Select wake combination method:
 - Linear (recommended)
 - Root-Sum-Square (RSS)
 - Average of Linear and RSS
 - Maximum
 - Geometric average
 - Average of Linear & Maximum
 - Average of Linear & Geometric
 - Average of RSS & Maximum
 - Average of RSS & Geometric
 - Average of Maximum & Geometric
 - Specify horizontal wake expansion angle (degrees)
 - Default is 5 degrees
 - Specify ambient turbulent intensity (%)
 - Default is 10%
 - If using DAWM, specify:
 - Downwind turbine spacing (in RDs)
 - Crosswind turbine spacing (in RDs)
 - Roughness length (m)
 - Click 'Generate Wake Model and Net Estimates'

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Wake Model Settings

Wake Loss Model: Eddy Viscosity Wake Model

Power Curve: Test_Turbine,,

Wake combo. method: Linear

Horizontal Wake Expansion Angle, degs: 5

Ambient TI (%): 10

Deep Array model settings:

Downwind Turbine Spacing (RDs):

Crosswind Turbine Spacing (RDs):

Roughness length (m):

Meas. Met data used

Roughness model used

Flow Sep. model NOT use

Cancel Generate Wake Model and Net Estimates

3) Create map of waked wind speed (optional)

- Click 'Create Wake Map'
 - Click 'Get Coords for Map that include all turbine sites' to automatically find Min/Max UTM X/Y
 - Click 'Generate Wake Map'

Select Wake Model to use:

Eddy Visc., Test_Turbi, Exp.: 5 degs, TI: 10 %, WRR: 0, L

Use Avg Dists. Use Avg Dists.

Roughness model used

Flow Sep. model NOT use

Meas. Met data used

Select Mets to use in Map:

Met_1_LT

Met_2_LT

Met_3_LT

Grid Resolution: 50

Min UTMX: 539959

Max UTMX: 543887

Min UTM Y: 3709543

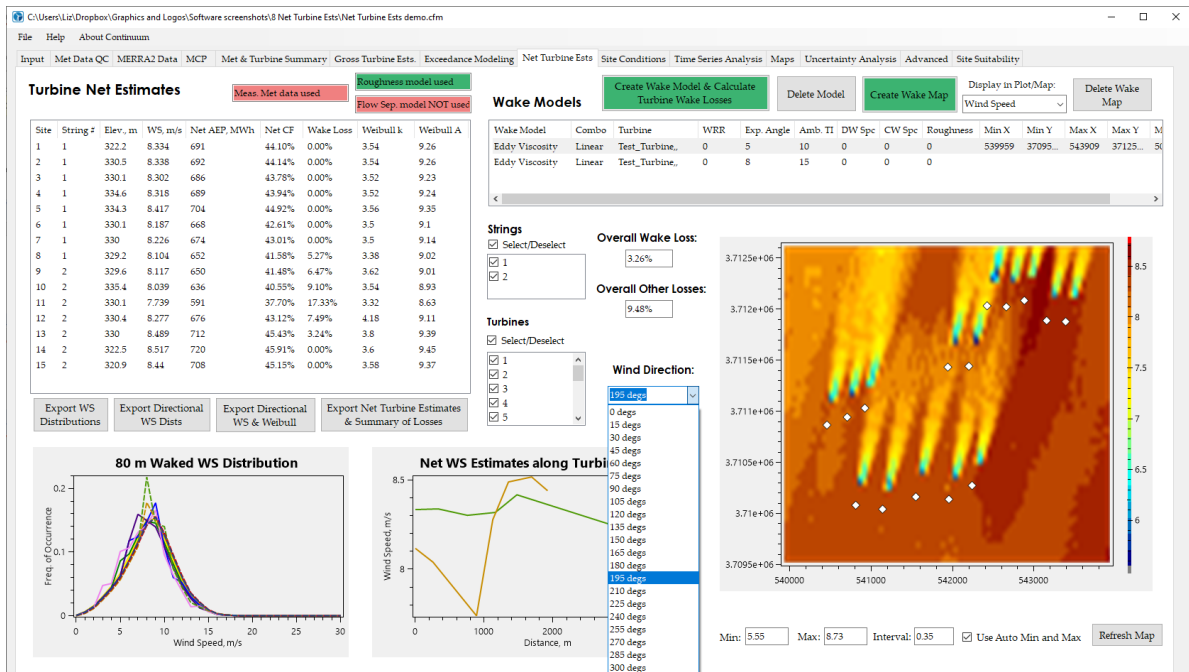
Max UTM Y: 3712586

of Grid Points: 4819

Get Coords for Map that include all turbine sites

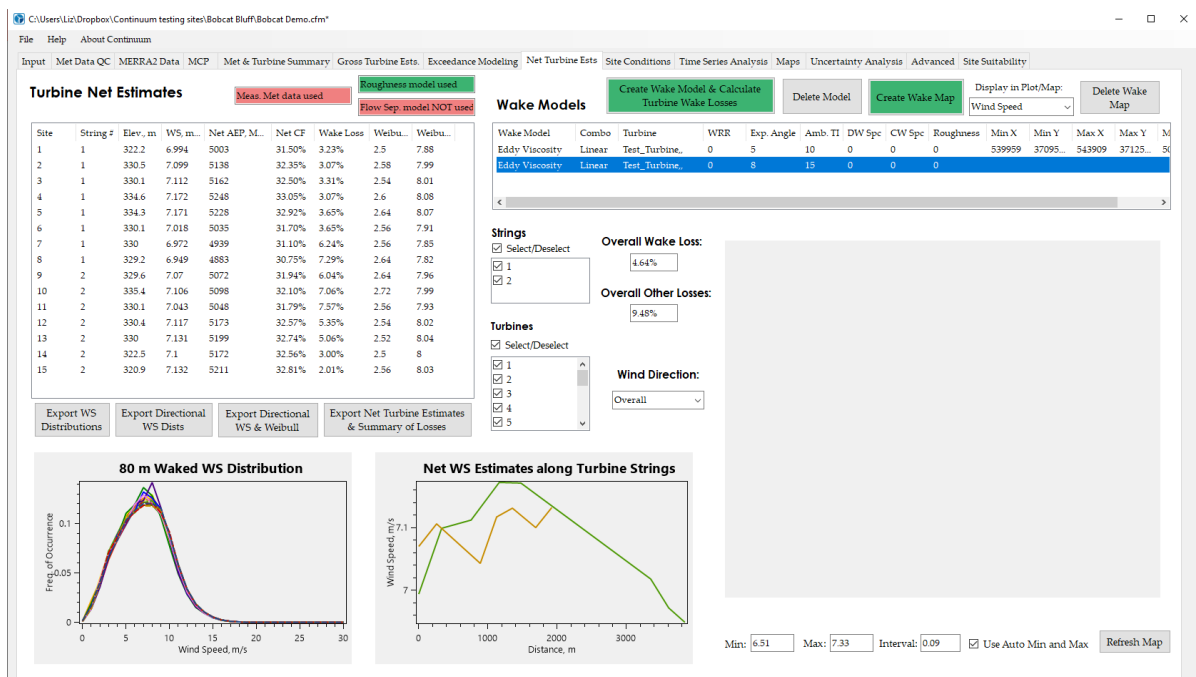
Cancel Generate Wake Map

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4) Create additional wake loss models (optional)

- Create multiple wake loss models and toggle between selected model to view/export net energy estimates and wake losses.



- Export the net turbine estimates and a summary of loss factors.