

Make a Wind Sock/Build an Anemometer – Map Extension Activity

Objectives:

- Investigate the US wind resource map
- Use wind data to identify good locations for wind farms

1) Open ArcMap

Adding Wind Class Data

- 2) From the Alternative Energy Educational Resources website (aer.cisat.jmu.edu), go to the Mapping Data page and download the Wind Class shapefile (wind class.zip).
- 3) Unzip and extract the files to your computer.
- 4) Use the Add Data tool in the upper right of the screen to add in the wind class data layer. You should see the data layer on the screen and the data layer name on the list to the left.
- 5) Note that this data is only for the waters off of Virginia so you will also need to download and add the Mid Atlantic states data from the Alternative Energy Educational Resources website. Repeat steps 2-4 for the Mid Atlantic States (land) shapefile (mid atlantic states.zip).

Symbolizing Wind Classes

- 6) Double click on the data layer name in the layer list to the left. This will bring up the Properties box.
- 7) Select the Symbology tab
- 8) Select Symbolize by Category/unique values from the menu on the left side of the window
- 9) Select the value field to be your GRIDCODE column
- 10) press Add All Values at the bottom of the window
- 11) Be sure the All Other Values box is NOT checked
- 12) Choose a Color Ramp to be applied to your categories
- 13) Press OK

Interpreting the Wind Map

- 14) Right click on the Wind Class data layer name in the layer list to the left
- 15) Select Zoom To Layer. Now you have the entire Wind Class data layer centered and zoomed into your window.
- 16) See the table below to understand better what each Wind Class means in terms of sustained wind speeds:

Wind Power Classification				
Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m ²	Wind Speed ^a at 50 m m/s	Wind Speed ^a at 50 m mph
1	Poor	0 - 200	0.0 - 5.6	0.0 - 12.5
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	> 800	> 8.8	> 19.7

^a Wind speeds are based on a Weibull k value of 2.0

