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

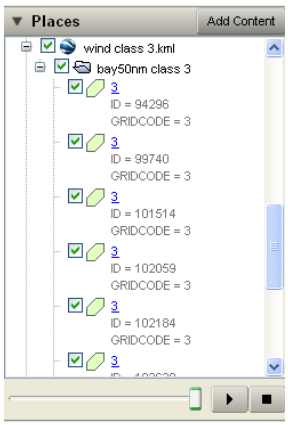
Objectives:

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

1) Open Google Earth

Adding Wind Class Data

2) From the Alternative Energy Educational Resources website (aeer.cisat.jmu.edu), go to the Mapping Data page and download the Wind Class Google Earth files (wind class 3.kml, wind class 4.kml, wind class 5.kml and wind class 6.kml).
3) Save these files to your computer.
4) Go to File/Open and select one (or all) of the wind class files that you saved. Google Earth will add the data and zoom to its location. The data layer name will appear on the list to the left, under Places/Temporary Places.
5) Note that this data is only for the waters off of Virginia.
6) Remember that you can un-click the box next to the data layer name on the menu to the left to turn off a layer.
7) You will want to turn off and on the wind class layers to understand which color/area corresponds to which wind class.
8) You can also expand all the files below each data layer name to see what color the area is being represented by



Interpreting the Wind Map

9) 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

10) Using the table above and the Wind Class data layer, answer the following questions:

1. Where is the wind class highest? Lowest? Why do you think that is?

2. Record the coordinates of a location where you would find winds speeds in the Chesapeake Bay between:

   7.5-8 m/s: _____

   15.7 and 16.8 mph: _____

   6.4-7 m/s: _____

3. Would you locate a wind turbine in the Chesapeake Bay? Why or Why not?

4. Where in Virginia, on land, do you think the best wind is located? Why?

5. Do you think on land Virginia has a lot of area with wind class >3? Why or Why not?