

Name: _____



Will Hudson River wetlands change?

Go to: <https://wri.cals.cornell.edu/hudson-river-estuary/climate-change-hudson-river-estuary/resources-resilience/flooding-and-sea-level-rise-mappers/>

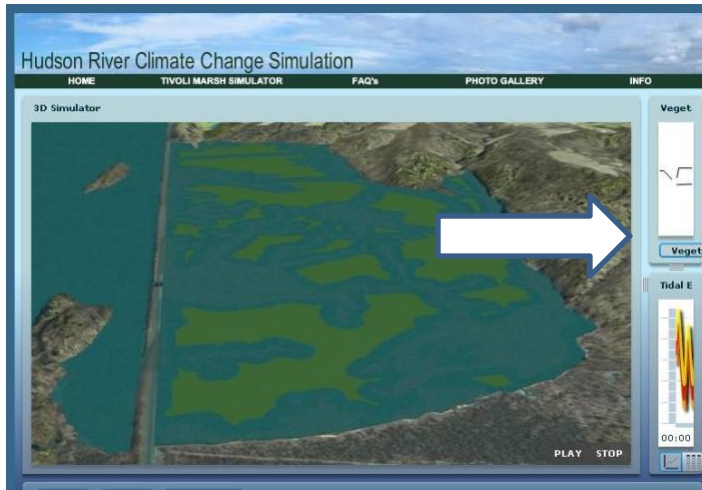
1. Click on "Tivoli Marsh Simulator. To what date in the future can this model show (look at the years on the bottom right hand corner)? _____
2. Click on the Temperature tab in the upper right. Compare the temperature for different years. How many degrees (F) change will there be in:
2020? _____
2050? _____
2080? _____
3. Click on the CO₂ Emissions tab. Then answer the questions.
 - a. What will be the total amount of CO₂ released in 2020? _____
 - b. In which year is there a decrease from the previous year's emissions?

 - c. Why do you think there might be a decrease in emissions?

4. Click on the Vegetation Tab. On the pie chart, you can roll over each of the three types of vegetation for a description of each. In the section for Vegetation, turn all the years off. Then:
 - a. Click on the 2009 tab (blue). Which of these three vegetation classes is the most common? _____ BV _____ SV _____ GV
 - b. Click on the 2020 tab (orange). Which of these three vegetation classes is the most common? _____ BV _____ SV _____ GV
 - c. Click on the 2050 tab (red). Which of these three vegetation classes is the most common? _____ BV _____ SV _____ GV
 - d. Click on the 2080 tab (yellow). Which of these vegetation classes is the

most common? _____ BV _____ SV _____ GV

Now, return to the main screen where you can see all three pieces of the simulation: the Tidal Elevation, the graphs of CO₂/Temperature, and the 3D Simulator. You can make the different parts of the page larger and smaller by clicking and dragging on the small bars between the sections (look next to the arrows in the picture below).



5. Turn off all the years except for 2009 (under the Tidal Elevations Graph). Press “Play” on the 3D simulator. Using the visual and the graph, answer the following:
 - a. When does the lowest tide occur? _____
 - b. The highest tide? _____

6. Click on “2080”. How are the tides in 2080 different than those in 2009?

7. How much higher is the high tide in 2080 than in 2009? You can get these data by clicking on the table icon at the bottom left hand side of the graph area.

8. Turn all the years on. Underneath the pie chart, you can click on buttons for CO₂ emissions and temperature.
 - a) In what year are CO₂ emissions the highest? _____
 - b) In what year is the temperature the highest? _____

11. According to this model, what is the reason for the change in the tides between 2009 and 2080?

12. How does the vegetation in the marsh change between 2009 and 2080?

13. The Hudson River accumulates sediment at a rate of 0.05-0.29 cm/year. Is this sediment accumulation enough to keep the marsh from flooding at high tide in 2080? Why or why not?

14. What type of vegetation will almost disappear by 2080? Based on what you've learned, what impact do you think this will have on the ecosystem?
