

**Motion of the Ocean**  
**Monitor National Marine Sanctuary & The Mariners' Museum**

1. On the map of North Carolina label the following data buoy locations with a STAR and Buoy #:
  - Buoy # 41025/*Monitor* National Marine Sanctuary (16 miles S-SE of Cape Hatteras, NC)
  - Buoy # DUCN7/Duck Pier, NC (Outer Banks of North Carolina approx. 15 miles North of Nags Head)
  - Buoy #CLKN7/Cape Lookout, NC (Outer Banks of North Carolina south of Oregon Inlet)
  
2. Complete the following chart based on the data provided. Compare the observed wind speed to the Beaufort Wind Force Scale and record the Beaufort Force and expected sea conditions.

Buoy #	Site Name	Date of Observation	Nearshore or Offshore Buoy?	Wind Speed (knots)	Wave Height (ft)	Air Temperature (Fahrenheit)	Water Temperature (Fahrenheit)	Beaufort Force (0-12)	Expected Sea Conditions
41025	<i>Monitor</i> National Marine Sanctuary (Diamond Shoals)								
DUCN7	Duck Pier, NC								
CLKN7	Cape Lookout, NC								

3. What do you think the water temperatures at the offshore buoy differ from the **water** temperatures observed at the onshore buoys?
  
4. What do you think causes differences in **air** temperatures between the *Monitor* National Marine Sanctuary buoy and the Duck Pier buoy?

5. Based on the recorded data is today a good day to visit the *Monitor* National Marine Sanctuary? Why/why not?

**Now Let's compare ocean conditions at 3 points in time at Buoy # 41025. The USS *Monitor* sank in a storm on December 31, 1862.**

1. Complete the following chart based on records from the USS *Rhode Island*, the vessel that saved some of the crew from the *Monitor* and historic and real time data from NOAA Data Buoy 41025

Buoy #	Site Name	Date of Observation	Wind Speed (knots)	Wave Height (ft)	Air Temperature (Fahrenheit)	Water Temperature (Fahrenheit)	Beaufort Force (0-12)	Expected Sea Conditions
USS <i>Rhode Island</i> log book	<i>Monitor</i> National Marine Sanctuary	12/31/1862	10	Not recorded	56	68		
41025	<i>Monitor</i> National Marine Sanctuary	12/31/2006						
41025	<i>Monitor</i> NMS							

2. Are the conditions the same or different at the site for the 3 years of recorded data?

3. Based on the Beaufort Scale reading was December 31, 1862 an optimal day for sea travel off Hatteras? What might account for these results?