Name(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Waves lab: Collecting real time data**

***Developed by Melissa Hicks, Onondaga Community College, NY; OOI Data Labs 2020 Fellow***

**Collecting real time data for use in the classroom:**

Together in Lab: Go to the NOAA website: <http://www.ndbc.noaa.gov/obs.shtml> or google the Buoy Number. Or you can enter the buoy number into google.

You will need to convert knots to ft/sec for your wind data.

1. 1 knot = 1.69 feet/second (ft/sec)

* If no Average wave period, we will use Dominant wave period.

**Atlantic Ocean**

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| --- | --- | --- | --- | --- | --- |
| Buoy number | Wave Height (ft) | Wind speed (kts) | Wind speed (ft/sec) | Wind direction | Ave. Wave Period (sec) |
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**Pacific Ocean**. 

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Buoy number | Wave Height (ft) | Wind speed (kts) | Wind speed f/sec | Wind direction | Ave. Wave Period (sec) |
|  |  |  |  |  |  |
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*Remember: Wind is named for the direction it comes from: So if NE—then coming from the Northeast.*

**Section 2: Dynamic Air-Sea Interactions**

Go to this website: <https://datalab.marine.rutgers.edu/explorations/2019/airsea.php>

Click on the box that says ‘Exploration’ and answer the following questions using the graph provided. You will note that you can roll your mouse over the datasets to see the exact date, time, Max wave height and Peak Wave Period.

1. Across what time periods are you able to see wave data in this graph?—be specific to the day.
2. What are the minima and maxima of these variables?
3. Are the minima/maxima of the variables coincident—occurring at the same time?
4. Describe any trends you see with wave height and wave period?

Now, click back one to the “Dynamic Air-Sea Interactions main page.

And click on the ‘Concept Invention’ box. Click on each successive ‘Next’ box so that you see the “Wind Speed” graph under the Max wave height and wave period graph and Next again to see the “Current Speed”. Then answer the following questions.

1. Compare the datasets and describe any correlations or relationships you see. (DO NOT interpret the data)
2. What effect does wind speed have on waves and surface currents?
3. What natural process may have been responsible for the collective air-sea changes you observed?

Now, click back one to the “Dynamic Air-Sea Interactions main page.

And click on the ‘Application’ box. When the site loads you are able to see the previous figures displaying maximum wave height, peak wave period, wind speed, and surface current speed data from the Coastal Pioneer Central and Surface Moorings. You will also see a new figure showing barometric pressure and precipitation during the same time period. The precipitation data are incomplete.

1. How do changes in atmospheric pressure correlate with the other variables?
2. What type of weather is commonly associated with Low Pressure systems?
3. Draw a prediction for the precipitation and then check your prediction with the actual.
4. How did your predicted precipitation compare to the actual?
5. With the additional data, what natural process do you hypothesize is responsible for the collective air-sea changes you observed?

Check out this link: <https://www.youtube.com/watch?v=2W9mD6_4QBk>

1. If you lived in a coastal area of the northeast of the US, how might this event affect your life?