The ocean occupies over 70% of the Earth’s surface. Surface waters are constantly in motion, and these circulation patterns exert a strong effect on global and regional climate and weather. Winds set up by differences in solar heating drive the ocean’s surface currents. The Earth’s rotation (Coriolis effect) and coasts shape the circulation. The deep circulation of the global ocean is driven by density differences between the cold Polar Regions and the rest of the ocean. Warm, salty water delivered to the Polar Regions is cooled, forming dense water that sinks to the deeps and then spreads throughout the world ocean. The interaction between the atmosphere and the ocean creates year-to-year changes that can have strong effects on our weather. One of the better-known changes is El Nino/La Nina Southern Oscillation, (ENSO), which results from fluctuations in wind and ocean surface temperature. Now scientists use real-time data and information from observation networks to interpret ocean and estuary conditions and make predictions about weather and climate.

**Part 1: National Oceanic and Atmospheric Administration Data Center**

**Directions:**

* Define each parameter below by using web resources (Google, etc).
* Then investigate observation networks using the [National Data Buoy Center](http://www.ndbc.noaa.gov/) website.
  + Go to the website and click on an area nearest you.
  + Choose a station and click on it.
  + Record the most recent data for each parameter at the station you chose below.
* *If your station doesn’t report on every parameter, click on other stations to find one that does. You may not find any station reporting certain parameters.*

**Wind speed, gusts and direction**  
    Definition:   
    Data values:  
**Temperature: Air & water**  
    Definition:  
    Data values:  
**Pressure: Atmospheric, tendency**  
    Definition:  
    Data values:  
**Tides/Water level**  
    Definition:  
    Data values:  
**Waves: Height, period, direction**  
    Definition:  
    Data values:

**Part 2: Center for Coastal Margin Observation & Prediction SATURN Network**

**Directions:**

* Go to[SATURN Observation Network: Endurance Stations](http://www.stccmop.org/datamart/observation_network)website.
* Scroll down to the map of the Columbia River estuary and click on a green marker.
  + These stations measure data in real-time.
* Define each of the parameters below.
* Record the units used to measure this parameter
* Record the most recent data values for each parameter.

**Salinity**  
 Definition:

Units of Measure:  
    Data values:

**Temperature**  
 Definition:

Units of Measure:  
    Data values:

**Dissolved Oxygen Concentration**  
   Definition:

Units of Measure:  
    Data values:  
**Turbidity**  
 Definition:

Units of Measure:  
    Data values:

**CDOM**  
 Definition:

Units of Measure:  
    Data values:

**pCO2**   
 Definition:

Units of Measure:  
    Data values:

**Conductivity**  
 Definition:

Units of Measure:  
    Data values:

**Chlorophyll**  
    Definition:

Units of Measure:  
    Data values:

**Nitrate**  
 Definition:

Units of Measure:  
    Data values:

**Oxygen Saturation**  
 Definition:

Units of Measure:  
    Data values:

**pH**  
 Definition:

Units of Measure:  
    Data values:

**Part 3. Answer the questions below**

1. What is the ocean temperature off the coast nearest your home or your favorite ocean area?
2. What parameters were only available at a few stations?
3. Were you unable to find any parameters?
4. Why do you think these parameters are not more widely measured?