# LAB 1 – THE COLLECTION OF OCEANOGRAPHIC DATA

# Name: Section number \_\_\_\_\_\_\_\_\_\_\_\_\_

Complete the lab and use this form as your answer sheet. Type answers in the Text boxes which will expand as you type in them

# Lab 1.1 HOW ARE THE DATA ABOUT THE OCEAN COLLECTED?

1. Which instrument measures the intensity of an earthquake or the shaking of the Earth?

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1. If you want to study life on the bottom of the ocean and need to observe a squid for a long period of time, but have limited funds, would you use an HOV or ROV?  Explain why you chose your answer.

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1. Explain the difference between a Telemetered versus Cabled Array.

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1. Which type of sensor can be deployed off a ship, can detect depth, salinity and temperature of the water and take discrete water samples at specific depths?

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1. Which type of platform would you use to monitor wind speed and wave height?

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# LAB 1.2 – WHERE ARE THE OOI ARRAYS LOCATED?

1. Complete the following table, identifying the ocean basin where each OOI array is located, the nearest land mass, and the nearest country, major city or U.S. state.

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| Array | Ocean Basin | Nearest Land Mass |
| Papa |  |  |
| Pioneer |  |  |
| Endurance |  |  |
| Irminger Sea |  |  |
| Southern Ocean |  |  |

1. In the seas around Greenland water sinks to the seafloor and, over the course of about 1000 years, travels throughout the deep ocean basins eventually reaching the North Pacific Ocean.
   1. What array is closest to the point where water sinks?

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* 1. What array is closest to the end of the 1000 year circulation pattern?

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1. Another deep ocean water mass, called Antarctic Bottom Water, forms in the sea around Antarctica. Which of the OOI arrays is located closest to this point, so may give us data on how this water mass forms?

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1. If you wanted to study the differences between the shallow ocean on the east and west coast of the United States which arrays would have data from those locations?

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1. The Gulf Stream is a major ocean current that travels from south to north along the U.S. east coast. What array is best positioned to take measurements in this current?

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1. Each summer, eastern North Pacific gray whales feed in the Gulf of Alaska and Bering Sea and then in the Fall migrate southward along the coast of North America to their winter calving grounds in the warm waters around Mexico, where their calves are born. Which array(s) do they swim past during this migration?

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1. Based on the following map, name the 3 large estuarine systems near the future location of the Pioneer array near the MAB?

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1. In general, why are there 3 different colored blues in the map representing the ocean?

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# LAB 1.3 – HOW DO YOU KNOW EXACTLY WHERE YOU ARE ON EARTH?

1. In figure 1.3.5, how many degrees is each tick mark or graticule for latitude and for longitude?

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| Latitude: | Longitude: |

1. Which OOI Array is located at 42° 55′ 13” S, 42° 26′ 27” W?

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1. Which OOI Array is located at 50° 4′ 47” N, 144° 48′ 22” W?

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1. In figure 1.3.6, how many degrees or minutes is each tick mark or graticule for latitude and for longitude?

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| Latitude: | Longitude: |

1. What is the latitude and longitude of the Global Southern Ocean mooring?\_

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| Latitude: | Longitude: |

1. What is the latitude and longitude of the Global Irminger Sea mooring?

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| Latitude: | Longitude: |

1. What is the latitude and longitude of the Coastal Pioneer surface mooring?

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| Latitude: | Longitude: |

1. In figure 1.3.9, how many degrees or minutes is each tick mark or graticule for latitude and for longitude?

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| Latitude: | Longitude: |

1. What is the latitude and longitude of the Coastal Endurance surface mooring?

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| Latitude: | Longitude: |

1. What is the approximate range of latitude, to the nearest degree and minute only, that is covered by the mobile assets (represented by small airplane-looking icon on map) in the following diagram (Figure 1.3.10)?

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|  | Latitude |
| Northern limit: |  |
| Southern limit: |  |

1. What is the farthest west longitude, to the nearest degree and minute only, that is covered by the mobile asset? (note: the dotted lines represent the tracks of the gliders).

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# LAB 1.4 – OOI SCIENCE HIGHLIGHTS

1. Describe the zooplankton behavior during the eclipse.

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1. The LA Times article mentioned that land animals experience a drop in air temperature during an eclipse. Why do scientists know that the zooplankton reacted to light and not to a change in water temperature or some other factor?

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1. The video and article both displayed a graph of zooplankton diel vertical migration data. What does the graph look like? What was the difference in appearance on the day of the eclipse compared to the day before the eclipse?

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1. In the previous Lab 1 activities, you have learned about other types of platforms and sensors. Pick one other platform or sensor and explain how it could be used to study zooplankton behavior or solar eclipses in general.

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