Name: Date:

Role Description: Drift Analyst

Using ocean buoys to study ocean currents

Scientists use a floating device called a buoy to study properties of the ocean. Buoys can be anchored in sea ice (using drills) or allowed to float in the ocean and drift with ocean currents. Attached to the buoys are various sensors that collect data like ocean temperature, salinity, as well as GPS devices to track the buoys location and drift path. By tracking the movements of a drifting buoy, we can better understand how water at the ocean's surface moves, otherwise known as *ocean currents.* Right now there are more than 200 active buoys in the Arctic!

When selecting an ice floe to attach the *Polarstern* to, MOSAiC scientists had to consider where that ice floe was most likely to drift. Utilizing ocean current data collected by Arctic buoys, MOSAiC scientists selected an ice floe that they predicted would likely 1) drift across the Arctic (*Figure 1*), and 2) keep the *Polarstern* out of Russia's Exclusive Economic Zone (EEZ) – an area that extends 200 nautical miles (~230 miles) over which Russia has the rights to natural resources and research data cannot be collected (*Figure 2*).

Analyst Questions:

1. As the drift analyst, which of the 6 ice floe characteristics (see below) can you help identify? Circle all that apply.

Drift across much of the Arctic	Close to thin ice (<1.5 m)	Must not drift into EEZ
Ice must be at least 1.5-2 meters thick	Low risk of breaking apart	Ice must freeze around ship

2. What information and expertise can you provide for your team given your role that will help you identify a perfect ice floe for your expedition? What will you be looking for?

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3. Practice:
    a. Find location 85°N, 105°E (see Figures 1 and 2).
    b. Would an ice floe in this location (85°N, 105°E) be perfect for attaching the Polarstern to? Defend your answer.

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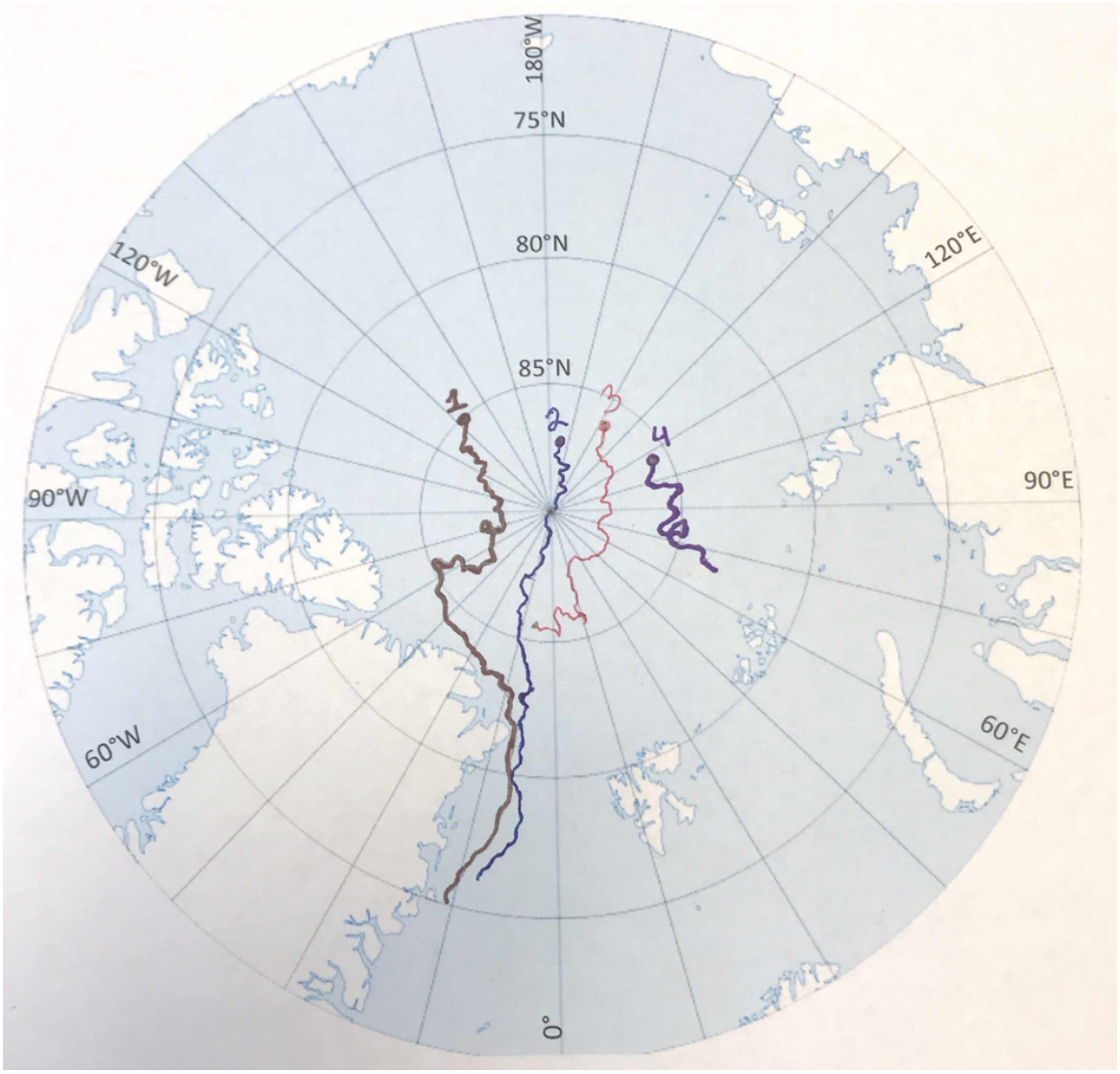

Figure 1 - This figure shows the drift path of 4 different buoys across the Arctic. The buoys started at the numbered points and then drifted with ocean currents south. *(Drift data from the Develping Arctic Modelling and Observing Capabilities for Long-term Environmental Studies (DAMOCLES) study)*

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Figure 2 - The thick blue line marks the seaward extent of Russia's Exclusive Economic Zone (EEZ), within which research data CANNOT be collected.