Name: _____   Date: _____

Role Description: Ice Thickness Analyst
Using observations from the ice and the air to measure ice thickness

EM-Bird

MOSAiC scientists used a variety of methods to measure the thickness of Arctic sea ice. The scientists used the EM-Bird (an instrument that uses microwaves and lasers) to make ice thickness observations over large areas and gathered more precise ice thickness measurements directly on the ice by extracting and analyzing ice cores. Ice thickness data collected from the EM-Bird and ice cores were used to develop ice thickness maps (Figure 1).

When selecting an ice floe to attach the *Polarstern* to, MOSAiC scientists had to consider the not only the strength of the ice (*thick ice is stronger and capable of holding heavy instruments)* but also how easy/difficult it would be to drill through the ice (*thin ice is easier to drill through, allowing scientists to more easily study the ocean below*). MOSAiC scientists used ice thickness maps to select an ice floe that they predicted would 1) be close to ice thick ice, and 2) be close to thinner ice.
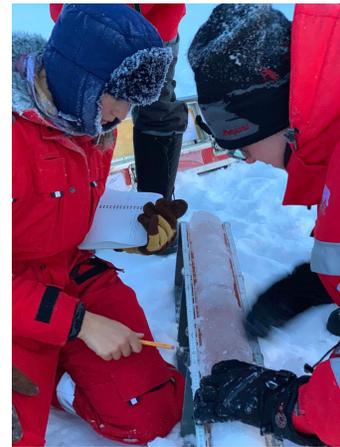
Analyst Questions:

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

Drift across much of the Arctic	Close to thin ice	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 suitable ice floe for your expedition? What will you be looking for?

Name: Date:

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

About this Map

This map shows Arctic sea ice thickness in meters (colors) measured on September 20, 2019. Map credit: The Polar Portal



Sea Ice Thickness, 20-Sep-2019
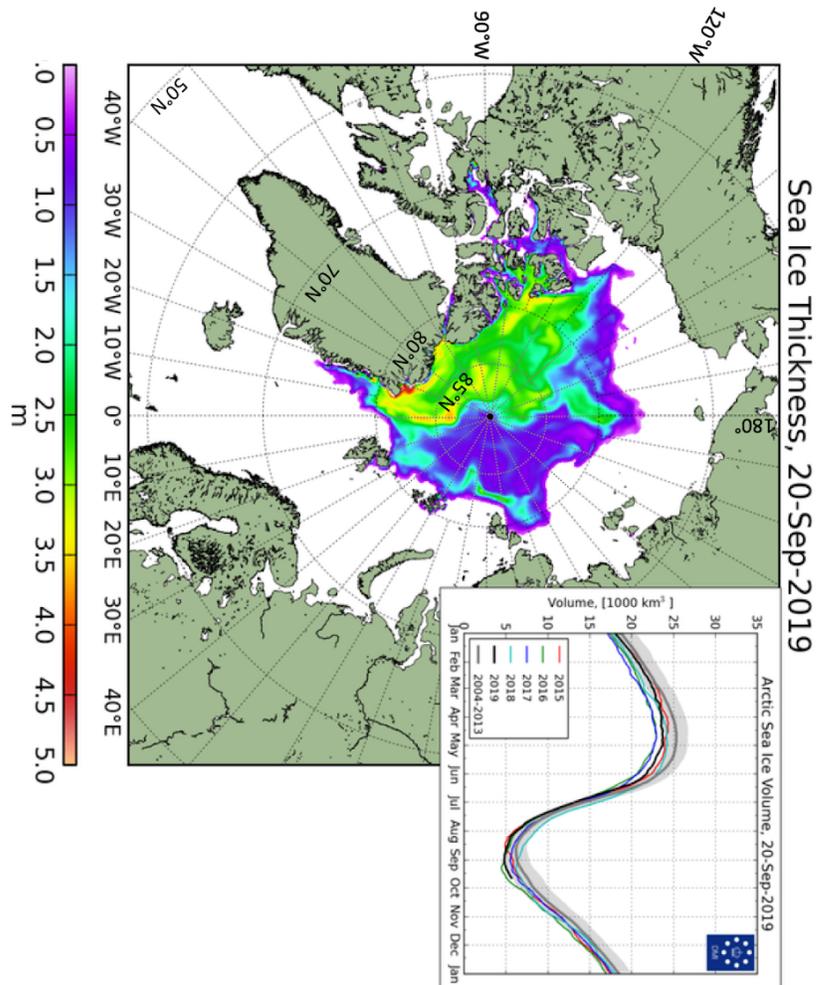
Figure 1 - The map above shows Arctic sea ice thickness data for September 20, 2019. The colors on the map correspond to different ice thicknesses (e.g., purple represents ice less than 1 meter thick).