

HOW LONG WOULD IT TAKE THE **OKEANOS EXPLORER** TO MAP THE WORLD'S OCEANS?



*This calculation takes into account the number of operational sea days for the vessel per year (190 days), the assumption that water shallower than 200 meters has already been mapped, a speed of 8 knots, and use of a predetermined EM302 swath angle table. All calculations were made using MatLab.*

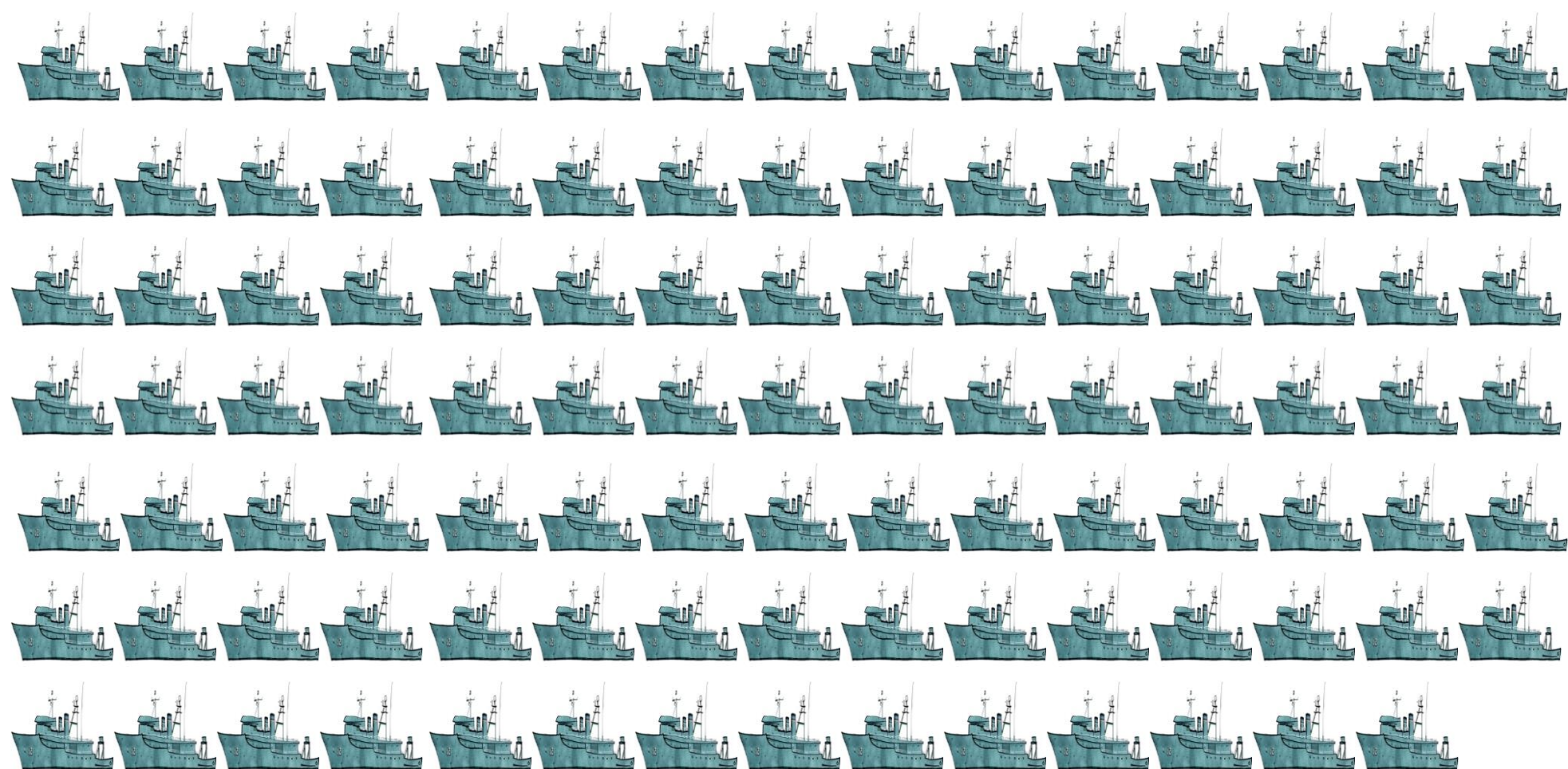
HOW MUCH DATA WOULD THIS PRODUCE?

**2.66 x 10<sup>6</sup> TB**

*This estimate includes the cumulative daily output of data that is available for the public to use, as well as data generated and held on the ship.*

WHAT WOULD A **CAMPAIGN** TO MAP THE OCEAN IN **10** YEARS LOOK LIKE?

*A millennia of data collecting is unrealistic. We designed a campaign that would accomplish what the Okeanos could do in 1000+ years in a tenth of the time, ten years.*

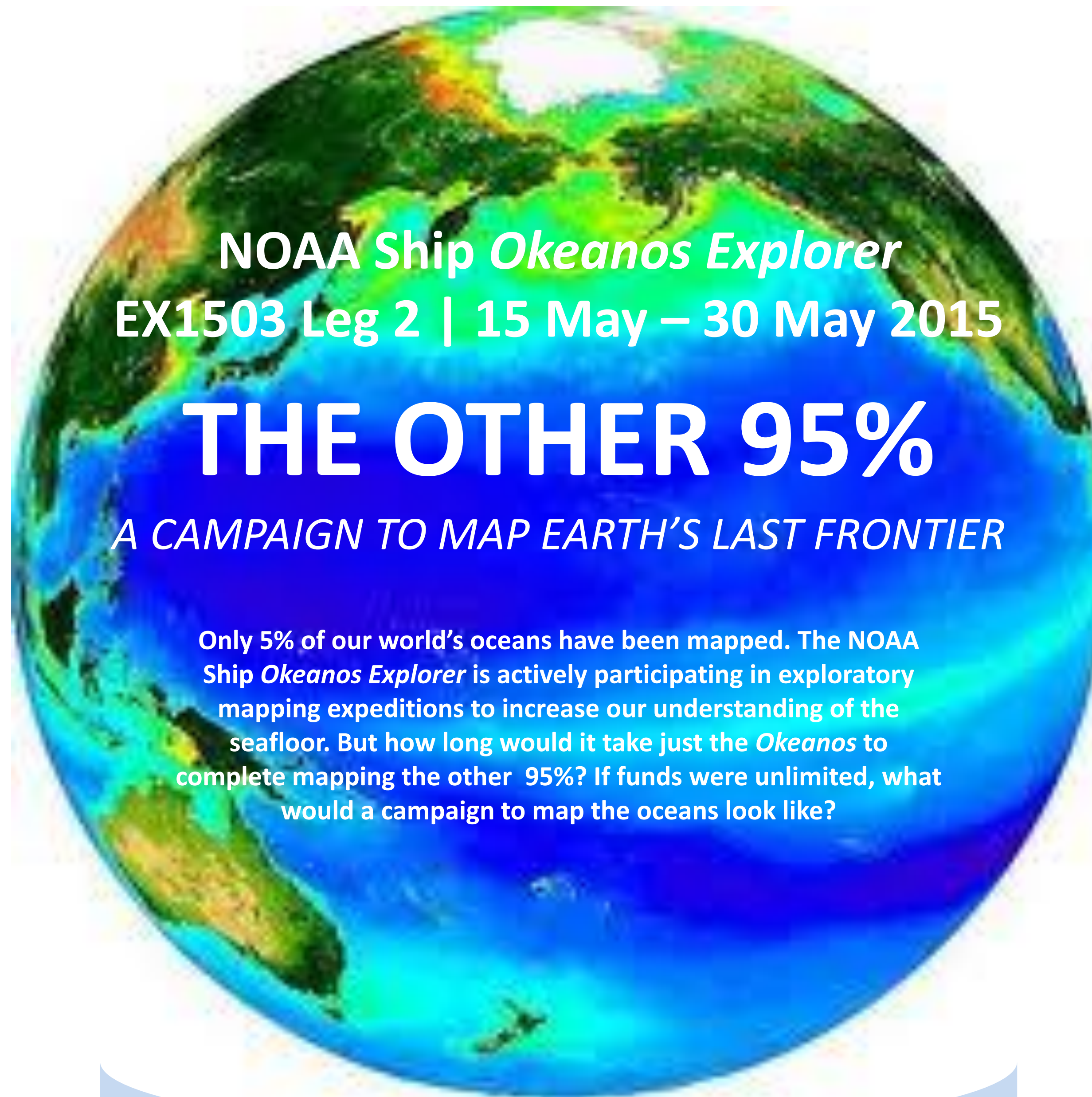
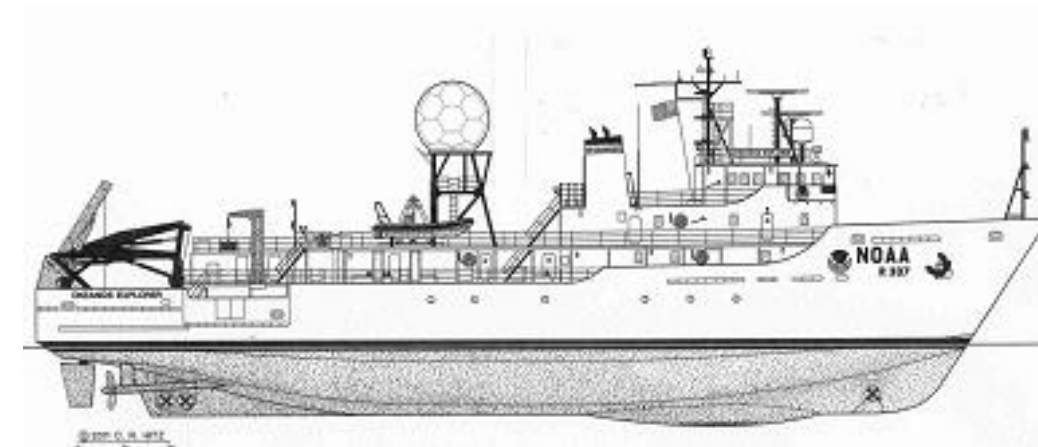


WE WOULD NEED **104** RESEARCH VESSELS

*A team of one hundred and four mapping research vessels would be required to map the ocean in one decade. This number is derived from calculations that determine how long it would take just the Okeanos Explorer to map the ocean. Remember, a standard research vessel operates for 190 days per year.*



**Ocean Exploration and Research**



*Only 5% of our world's oceans have been mapped. The NOAA Ship Okeanos Explorer is actively participating in exploratory mapping expeditions to increase our understanding of the seafloor. But how long would it take just the Okeanos to complete mapping the other 95%? If funds were unlimited, what would a campaign to map the oceans look like?*

**DIVIDE AND CONQUER: THE CAMPAIGN MISSION**

*We set a timeframe to map the ocean in ten years and calculated how many ships would be needed. Each vessel would map a specific geographic area. This method allows us to optimize time and technology. For example, wide angle sonars would be dedicated to mapping shallower areas, and Automated Underwater Vehicles (AUV) to map under ice-caps in polar areas.*

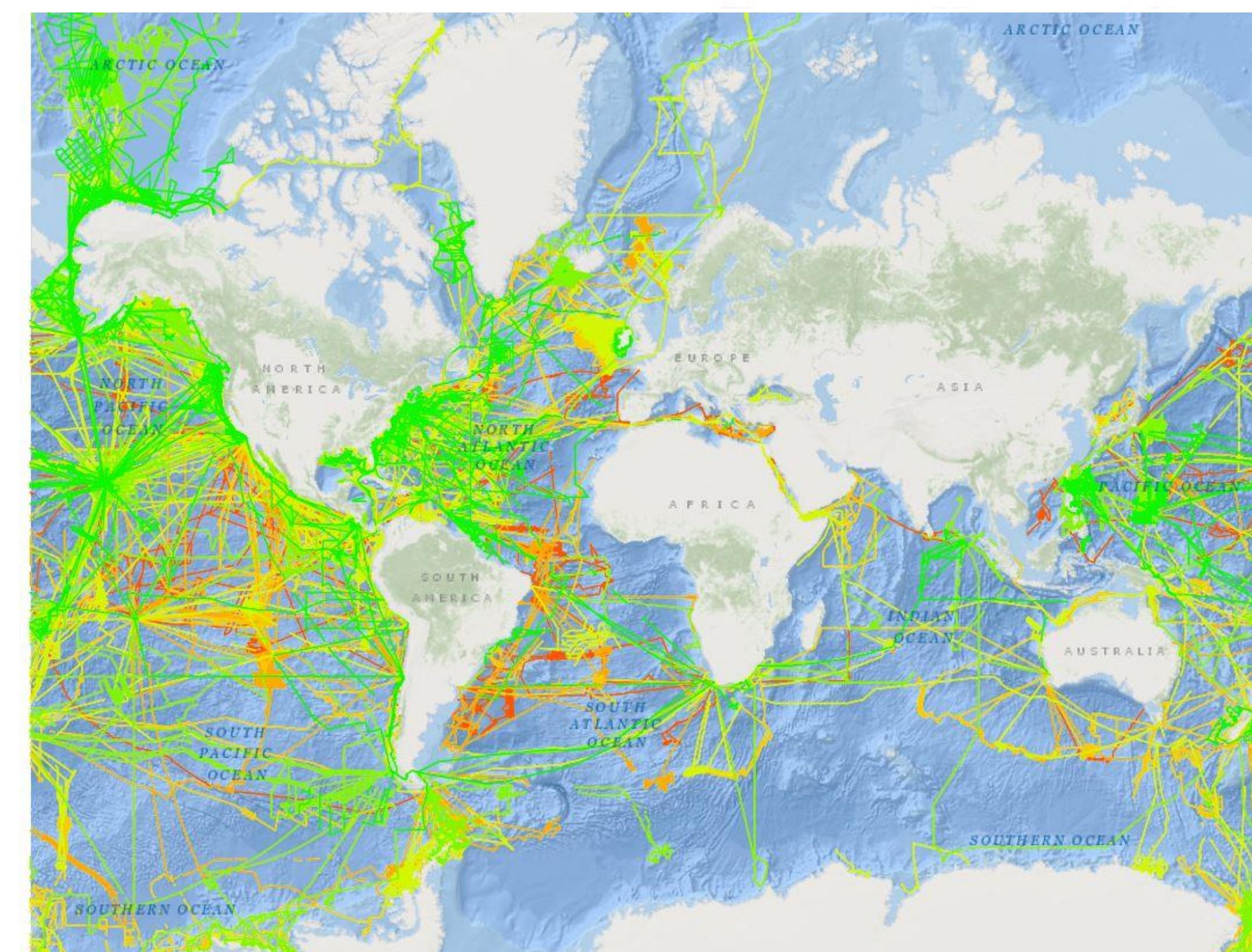
WHAT TYPES OF **TECHNOLOGY** WOULD BE USED?

- **Multibeam sonars**
- Kongsberg EM2040 (shallow)
- Kongsberg EM122 (up to 11000 meters)
- **AUVs**
- Remus 6000

*Each vessel is equipped with these technologies for optimal mapping*

WHAT **CHALLENGES** WOULD THE TEAM FACE?

- Weather
- **Unscheduled ship maintenance**
- **Data management**



*This image from the NGDC depicts 15.7 million nautical miles of survey lines received from international sources. Track lines have been enlarged for visibility. Note blank areas on the map include the Arctic and Antarctica regions. These areas have been poorly mapped, and are part of our areas of interest in the campaign.*

WHERE WOULD THE **MISSION** START AND WHICH AREAS ARE **PRIORITY**?

- Polar regions
- Plate boundaries
- Sites with potential energy and economic interests
- Sites of archaeological interest

