

## **MAST 4667/667: Introduction to Arctic Oceanography (Fall 2014)**

Study Guide Questions 01: Bathymetry and Glaciation (Due prior to class Sept.-2)

Jakobsson et al., 2014: The Dynamic Arctic, Quaternary Science Reviews, in press.

Please answer the questions concisely to prepare for the class on Sept.-2. For context, I used ~80 words and 8 numbers for all 10 questions.

1. What are the time scales on which Arctic sea ice, ice sheets, sea level vary?
2. When has the Arctic Ocean last been free of sea ice?
3. What was the sea level at the time when the Arctic was free of sea ice last?
4. What may be the cause for the bi-modal sea ice thickness (2-m vs . 1 m) observed and/or modeled over the last 10,000 years?
5. How may incoming solar radiation provide a feedback for a declining sea ice cover?
6. How would the bathymetry of the Arctic Ocean change if, as has happened over the last 20,000 years, global sea level was 120 meters lower than it is presently?
7. Where did all the water go when sea level was 120 m lower than it is today?
- 8.\* What are ice streams and how may they interact with the oceans?
9. Who provided the first bathymetric map of the Arctic Ocean when?
10. How does warm Atlantic water impact the Arctic Ocean?

(\* ) NASA video at <https://www.youtube.com/watch?v=0S4T2Q8sBW8> may help.