

ESS 431 PRINCIPLES OF GLACIOLOGY
ESS 505 THE CRYOSPHERE

Lecture 15 – Sea Ice I: Formation, structure, and relation to the climate

Due Monday, November 27 2017, at start of class

Marshall, S., 2012. *The Cryosphere*. Chapter 5, p.104–126.

Maykut, G., 1985: *An Introduction to Ice in the Polar Oceans*. Report APL-UW 8510. p 1–42.

Also see the tutorial on sea ice at: <http://www.nsidc.org/seaice/intro.html>

1. Give three notable differences between Arctic and Antarctic sea ice.
3. Great Salt Lake in UT has maximum salinity about 27% (270ppt). At approximately what temperature would water this salinity freeze? Have you ever put your hand in liquid water that cold? You can try it at home!
3. In freshwater, does the whole water column need to be at the freezing point for ice formation to begin? Why? What about in sea water? Why?
4. Related to the previous question, what properties of the ocean control the onset of freezing?
5. Does sea ice grow by adding ice to the top or the bottom? How about melting in the Arctic? Melting in the Antarctic?