ESS 431 PRINCIPLES OF GLACIOLOGY
ESS 505 THE CRYOSPHERE

Lecture 05 – Snow: Deposition, wind transport, metamorphism, physical properties

Due Wednesday, October 11 2017, at start of class

The Avalanche Handbook, pp. 52-72 (2006 edition).
Marshall, S., 2012. *The Cryosphere.* Chapter 4, pp. 72–89.

1) What is Inuktitut?
2) Describe depth hoar. Under what snow-pack conditions does it form?
3) Does snow melt first at the contact between snow-grain and pore space, or at grain-grain contacts? Why?

   Vapor pressure is a useful concept for understanding how and why particles leave condensed phases to enter a vapor. When the ambient (environmental) pressure is less than the vapor pressure, molecules tend to escape the liquid or solid, and enter the gas. Vapor pressure changes as a function of temperature, with that relationship defined by the Clausius-Clayperon relationship in Marshall. With that in mind, sketch the following (no need to be use numbers, just show trends).

4) Draw a curve representing atmospheric pressure as a function of elevation. Now, add a line (at fixed elevation) for a high temperature and low temperature vapor pressure for water. What intuition does this provide for the boiling temperature of water, as a function of elevation? Do you expect H_20 molecules to move from warm snow to cold snow, or vice-versa?