**ESS 431 PRINCIPLES OF GLACIOLOGY**

**ESS 505 THE CRYOSPHERE**

**Lecture 04 – Snow: Formation in the atmosphere**

*Due Monday, October 7 2019, at start of class*

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| McClung, D., and P. Schaerer, *The Avalanche Handbook*, 43–52.Marshall, S., 2012. *The Cryosphere.* Chapter 4, p.65–72. |

1. What are the four primary atmospheric mechanisms that drive cloud formation and precipitation?
2. What is the key common process between all four of these mechanisms that leads to (super)saturation of an air parcel?
3. Can clouds form at less than 100% relative humidity? Why or why not?

1. What is the difference between rime and frost?
2. Is snowfall greater on the eastern or western slopes of the Cascade Mountains? Why?
3. (a) Sketch the shape and record the name of an ice crystal forming at -15°C and high humidity. (b) Sketch the shape and record the name of an ice crystal forming at -35°C and 0.1g/m3 supersaturation. (c) Sketch that same ice crystal after it passes into warmer air (-15°C) at the same supersaturation level.