

Atmospheric Sciences 5200
Final Exam Sample Questions, Part 2

1. According to satellite measurements that can detect even thin cirrus clouds, what is the average global cloud fraction?
2. Which instrument is better suited to detecting thin cirrus clouds: the millimeter wavelength RADAR of Cloudsat or the 500 nm laser LIDAR of CALIPSO?
3. List three factors that can contribute to a weak orographic rain shadow for the Cascade Range?
4. What situation produces a strong orographic rain shadow for the Cascade Range?
5. What region of an extratropical cyclone has strong warm advection?
6. What latitude of storm track favors this region to occur over the Cascade Range?
7. When are weak rain shadow storms more common in the Cascade Range: Autumn or winter? In El Niño or La Niña conditions? In our current climate or in a warmer climate?
8. What do polar mesospheric (noctilucent) clouds consist of?
9. What conditions are needed to form polar mesospheric (noctilucent) clouds?
10. How has global warming affected the occurrence of polar mesospheric (noctilucent) clouds? Explain how.
11. What conditions are necessary for hail formation?
12. Which situation will favor the largest hail to reach the ground (where it is well above 0° C), with all else equal? (a) Hail falls out of the cloud at a high level. (b) Hail falls out of the cloud at a low level.