SIO 115 Homework 3 (due Friday 31 January): *Snow cover and lake-ice*

You will be graded on your writing style as well as the content of your answer. The marks for each answer are in parentheses. When submitting homework, please stick to the naming convention ***SIO115-Hw03-Lastname-Firstname.pdf****. Please email your answers to parndt@ucsd.edu with subject line* ***SIO115 Homework 3 Lastname Firstname*** *by the appropriate deadline.*

1. *Snow cover*.

(a) What two physical properties of snow cover make it important to climate system [2]

b) Why does the area of snow cover matter? [2]

c) Why does the thickness of snow cover matter? [2]

d) Why does the volume of snow cover matter? [2]

e) Which hemisphere has the highest variation in seasonal snow cover? [1]

2. *Snow cover monitoring*

Play the NASA ASO YouTube video (also linked on Slide 32 of this week's lecture slides).

(a) What three parameters of snow cover are important to measure and monitor? [3]

(b) Pick one of these parameters and explain how it is monitored [2]

(c) (i) If you know the snow depth, what other parameter do we need to get snow water equivalent? [1]

(ii) How do we determine this parameter? [1].

(d) (i) What is the trend in snow cover over the past 40 years? [1]

(ii) What impact might this trend have on the climate system? [1]

3. *Lake ice*.

(a) What are the two types of lake ice, and how does each type form? [4]

(b) What factors govern the timing of freeze up and break up of lake ice each year? [4]

(c) What is the general pattern being observed in freeze up and break up as climate changes? [2]