

ESS 532, Atmospheric Sciences 511 Winter 2017
“Snow and Ice on the Earth's Surface”
Instructors: Knut Christianson and Stephen Warren

Topics:

geography of snow and ice; climates of Antarctica and Greenland
physical chemistry of ice and water
formation of ice crystals in clouds
thermal properties of snow and ice
snow metamorphism
sea-ice formation and structure; growth and melt of sea ice
interaction of solar and infrared radiation with snow and sea ice
colors of ice and snow
remote sensing of snow and sea ice; radio-echo sounding of glaciers
effects of wind on snow
snow surface energy budget
glacier mass balance
Snowball Earth
recent changes in Antarctica and Greenland

Textbooks

E.R. LaChapelle, 1969: *Field Guide to Snow Crystals*. University of Washington Press.
Reprinted 1992 by International Glaciological Society.
D. McClung and P. Schaerer, 2006: *The Avalanche Handbook*. The Mountaineers.
K.M. Cuffey and W.S.B. Paterson, 2010: *The Physics of Glaciers*, 4th edition. Elsevier.

