

## References and Further Reading

### Chapter 16: Earth's Climate System

In this chapter we focused attention on spatial and temporal variations in Earth's climate. Some of the most dramatic changes in the modern climate system are evident from the Arctic region. The National Snow and Ice Data Center (NSIDC; <http://nsidc.org/>) is an excellent site for everything you could ever want to know about snow and ice. The NSIDC site's State of the Cryosphere section discusses the use of snow and ice as an indicator of climate change (<http://nsidc.org/sotc/>). The NSIDC has collected a series of paired photo images of Alaskan glaciers, some taken over intervals of more than 100 years. The USGS has a repeat photography project for Glacier National Park that shows similar "before" and "after" images (<http://nrmsc.usgs.gov/repeatphoto/>).

Much of the data that is used to understand climate is archived by the folks working at the National Climatic Data Center (NCDC, <http://www.ncdc.noaa.gov/oa/ncdc.html>).

Check out the State of the Climate reports on the Climate Monitoring pages (<http://www.ncdc.noaa.gov/oa/climate/research/monitoring.html>) and the climate trends for a city in your state at the US Cities Analysis pages (<http://www.ncdc.noaa.gov/oa/climate/research/cag3/city.html>).

The UK Met Office does a nice job of describing the world's characteristic climate regions (<http://www.metoffice.gov.uk/education/data/>). Compare these to the world's

biomes as discussed by the University of California's Museum of Paleontology at (<http://www.ucmp.berkeley.edu/exhibits/biomes/>).

You can learn more about cold climate landscapes by visiting the NSIDC site for glaciers or you could examine the glaciers of the North Cascade Mountains at a detailed site hosted by Nichols College, MA, (<http://www.nichols.edu/departments/glacier/>).

Information on dry, hot environments is available from the USGS online text, Deserts: Geology and Resources by A.S. Walker (<http://pubs.usgs.gov/gip/deserts/contents/>).

For more on how climate changes over time, we really like the NCDC's Climate Timeline at <http://www.ngdc.noaa.gov/paleo/ctl/>. This site describes the natural variability of weather and climate measured on time intervals from days to 100,000 years. The timeline is part of NCDC's more comprehensive Paleoclimatology site (<http://www.ngdc.noaa.gov/paleo/paleo.html>) that describes how scientists unravel the record of past climates. Another useful site is Paleoclimatology: Introduction at NASA's Earth Observatory (<http://earthobservatory.nasa.gov/Study/Paleoclimatology/>). As all of these sites illustrate, climate has changed over time and our understanding of these changes can inform our interpretations of recent climate changes discussed in Chapter 17.