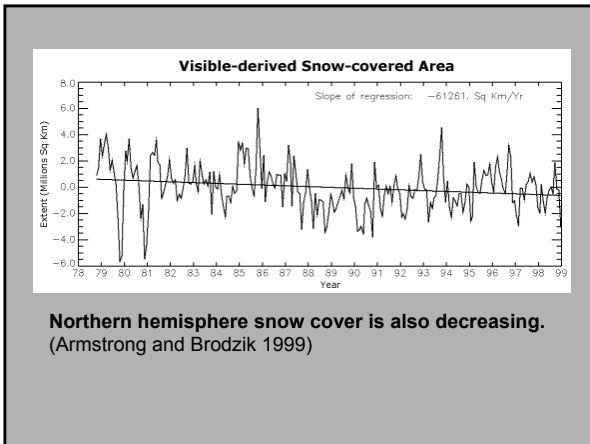
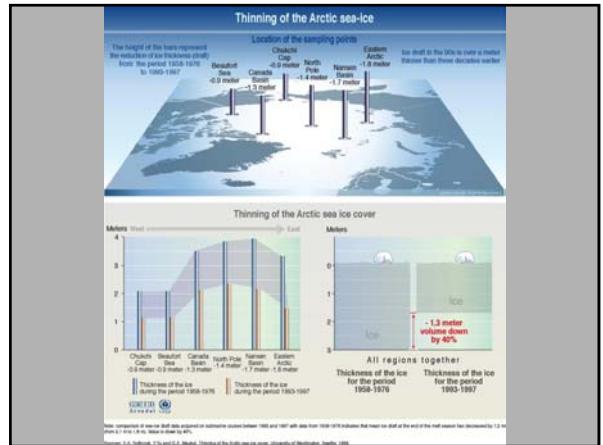
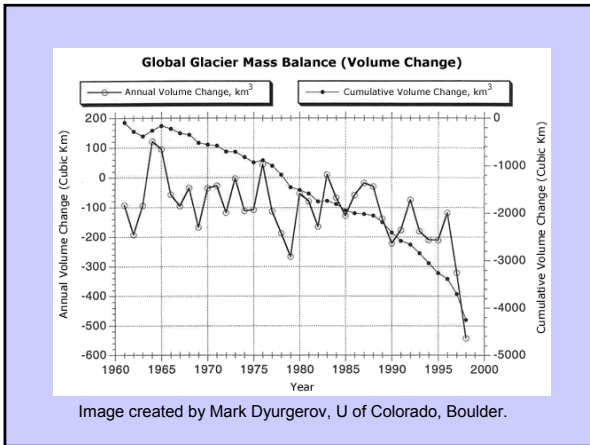


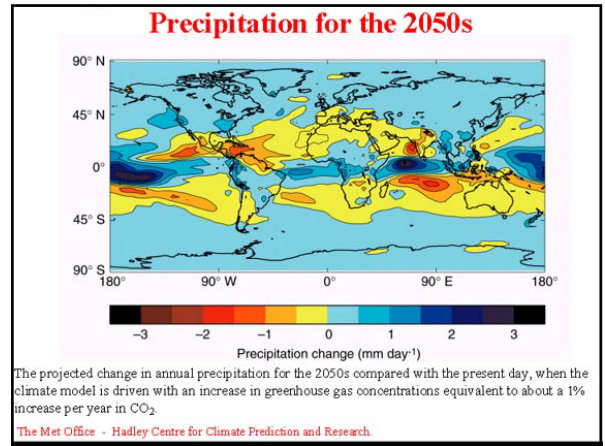
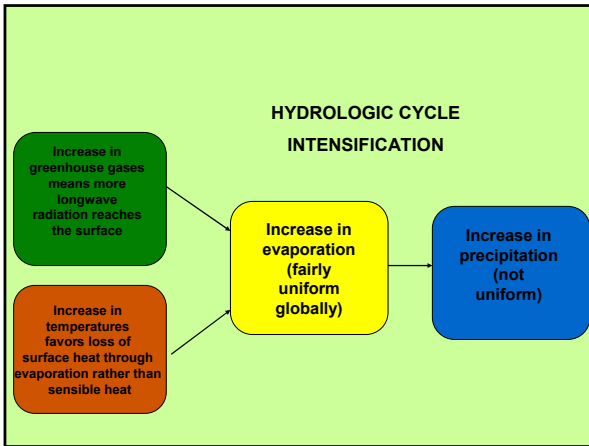
Mountain glaciers all over the world are in retreat. This is the Qori Kalis glacier in Peru in 1978.

Here is the same glacier in the year 2000. The lake covers 10 acres.



There are two main effects associated with climate change:

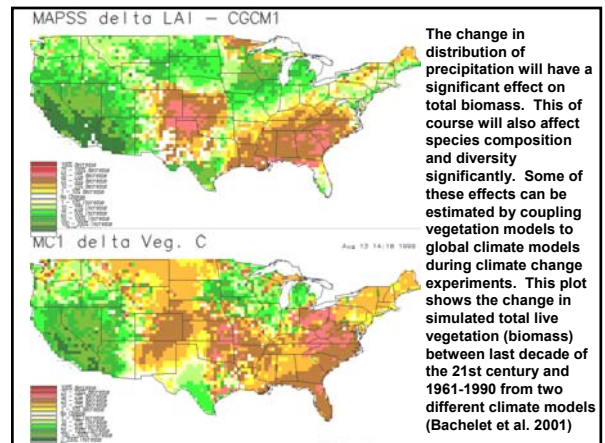
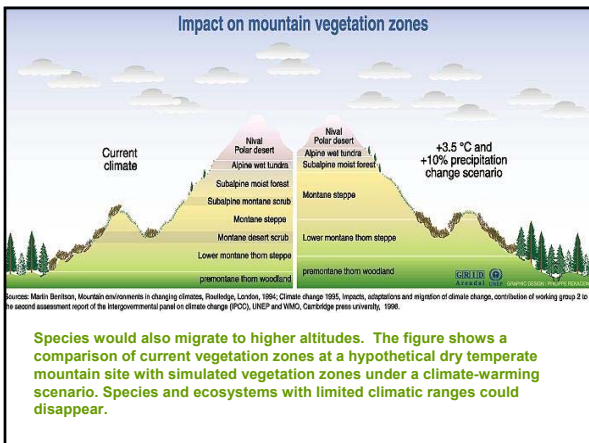
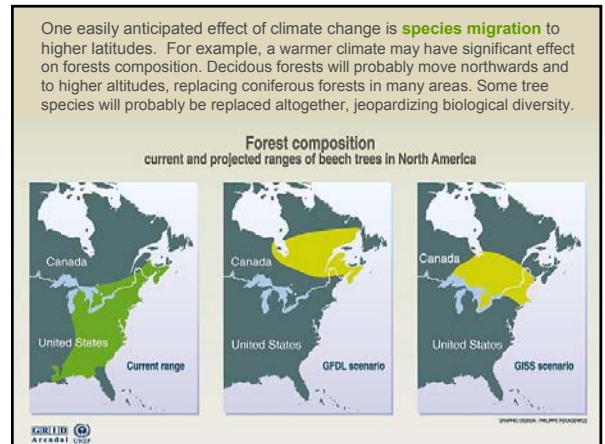
- (1) An increase in global mean temperature, which we have discussed already.
- (2) An increase in evaporation everywhere, driven by increased greenhouse gas concentrations and increased temperatures. The increase in evaporation also implies an increase in precipitation, because the atmosphere can't store water vapor indefinitely. There is no clear consensus on how the increase in precipitation will be distributed. However, we do know that it will not be distributed uniformly. This increase in evaporation and precipitation is known as the intensification of the hydrologic cycle.



Effect on ecosystems

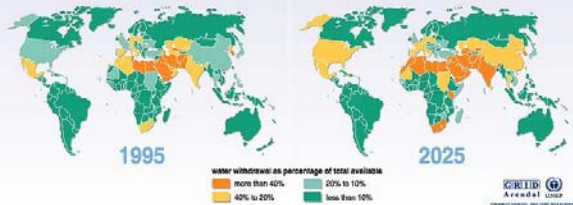
Ecosystems will be forced to adapt to climate change for two reasons:

- (1) temperatures will be warmer.
- (2) precipitation will be distributed differently.



The increase in evaporation everywhere and the increase in precipitation in some regions means that water resources will be redistributed. This, combined with the pressure of increasing population, makes water resources a key issue for the coming century. This is a particularly important issue in the western United States.

Freshwater stress

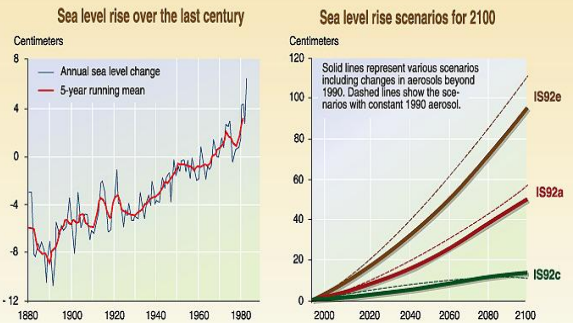


Why will sea level rise as the climate warms?

We discussed the effect of changes in the size of glaciers and ice sheets on sea level in the context of the 100,000 year glacial-interglacial cycles that have characterized earth's climate over the past 1 million years.

In addition, sea level will rise as the climate warms due to the thermal expansion of seawater-- i.e. the fact that seawater expands as it warms.

Sea level rise due to global warming



About 2/3 of the observed sea level rise is probably attributable to thermal expansion of seawater; the remainder is due to melting of glaciers

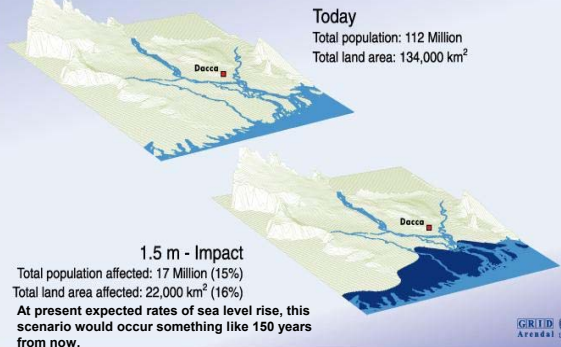
source: Climate change 1995, The science of climate change, contribution of working group I to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge University press, 1996. Sea level rise over the last century, adapted from Gornitz and Labeyrie, 1987.

South Florida Shoreline Change after a 1-Meter Rise in Sea Level



Potential impact of sea-level rise on Bangladesh

Bangladesh, one of the world's poorest nations, is also the country most vulnerable to sea-level rise. The population is already severely affected by storm surges. Catastrophic events in the past have caused damage up to 100 km inland.



A changed climate also implies changes in the distribution of vector-borne diseases...

Potential dengue transmission in case of temperature rise

