

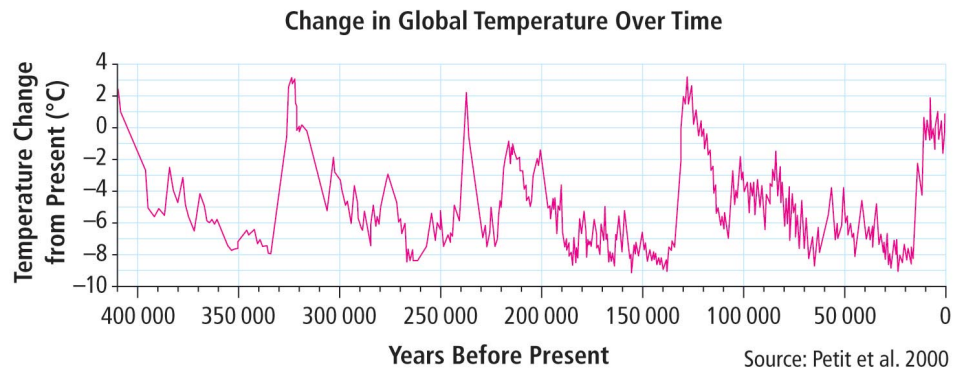
## Chapter 11.2 Human Activity and Climate Change (pg. 482-496)

How is climate changing around the world?

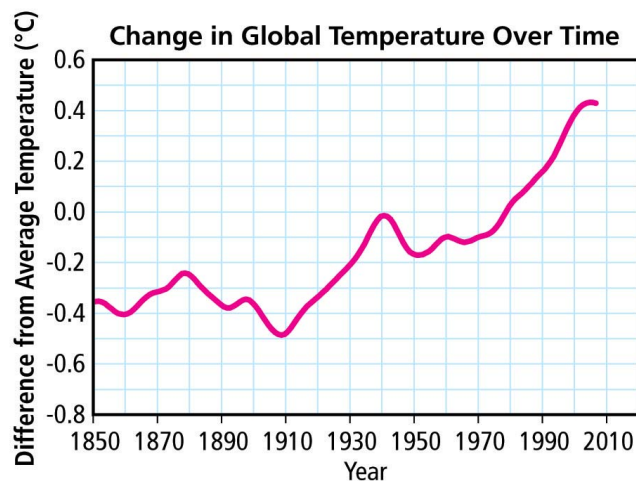
### Global Warming

**Climate Change** – changes in long-term weather patterns in certain regions

- Global warming – the increase in global average temperature



**Figure 11.14** Estimated change in average global temperature at Earth's surface over the past 400 000 years



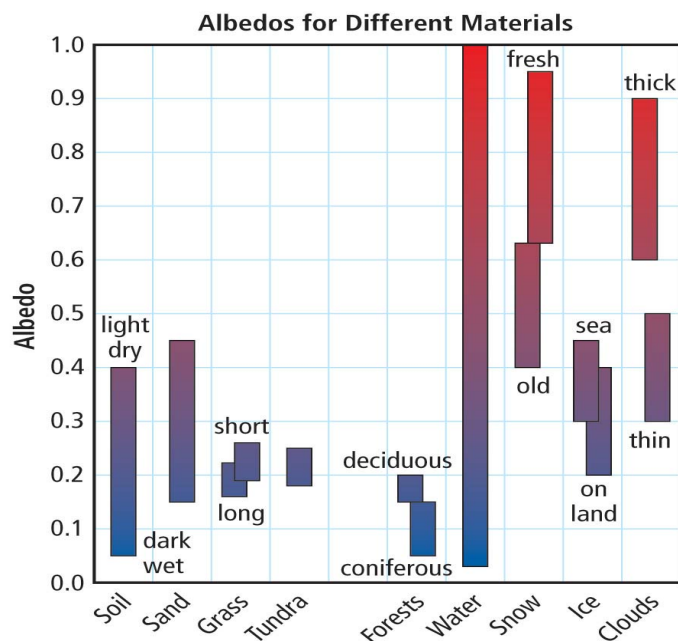
**The Enhanced Greenhouse Effect** – increase in atmosphere to absorb and emit thermal energy

**Global Warming Potential (GWP)** – ability of a substance to absorb and emit thermal energy (compared to CO<sub>2</sub>)

Table 11.1 (pg. 484)

- CO<sub>2</sub> - increase began during industrial revolution
  - Burning of fossil fuels (gas, oil, coal) is the greatest human related carbon source
  - Deforestation is a major carbon source
  - How can we reduce our CO<sub>2</sub> emissions?
- Methane (25x more powerful than CO<sub>2</sub>)
  - Major source is decomposing garbage in landfills
  - Other sources of methane?
- Other contributors to the enhanced greenhouse effect include Nitrous Oxide, Ozone, Chlorofluorocarbons

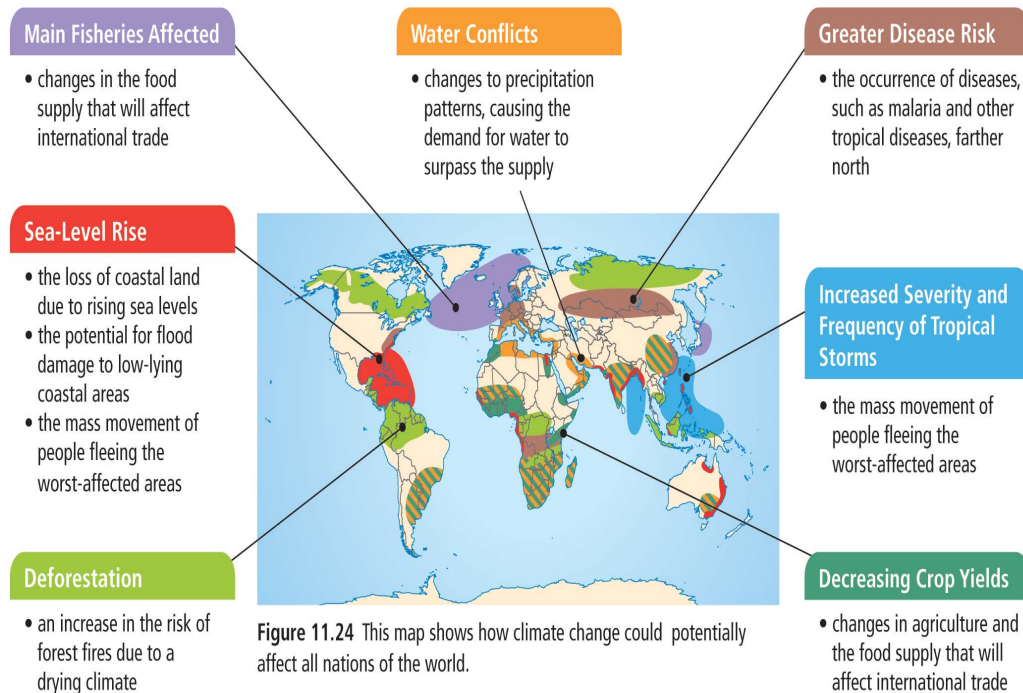
## Albedo and Climate



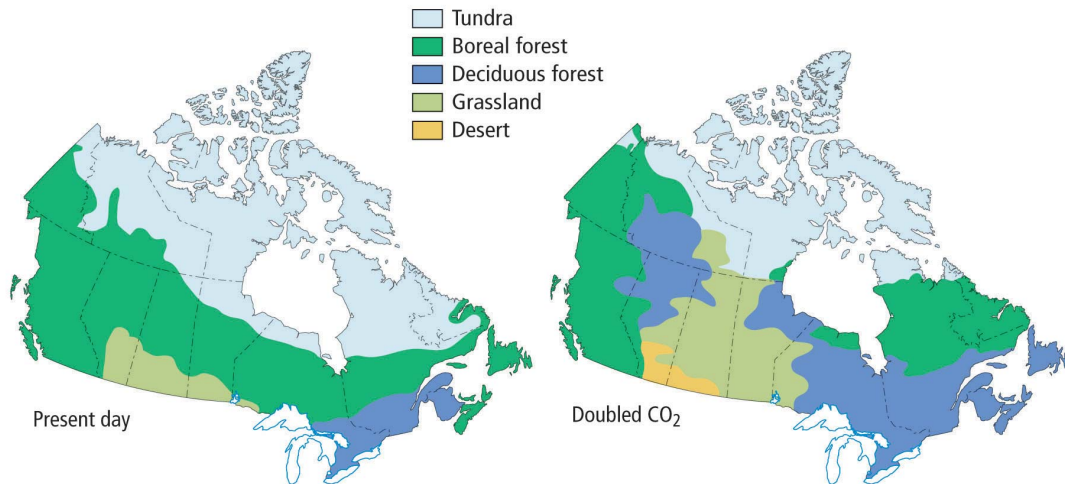
**Figure 11.20** Albedos for different surfaces vary widely

## Understanding climate change

- Making exact predictions on effects of climate change is very difficult
- Potential effects of climate around the world



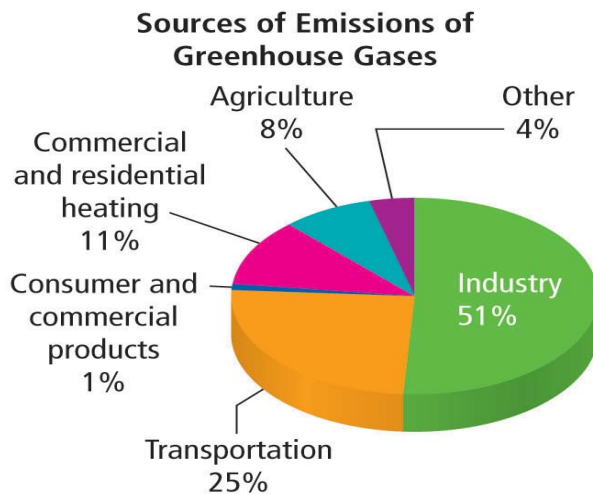
- In Canada: permafrost is melting, ice cover in the Arctic Ocean is shrinking, longer growing seasons, more precipitation, more forest fires etc



**Figure 11.26** Changes projected for Canada's biomes if the concentration of CO<sub>2</sub> doubles from what it was before the Industrial Revolution.

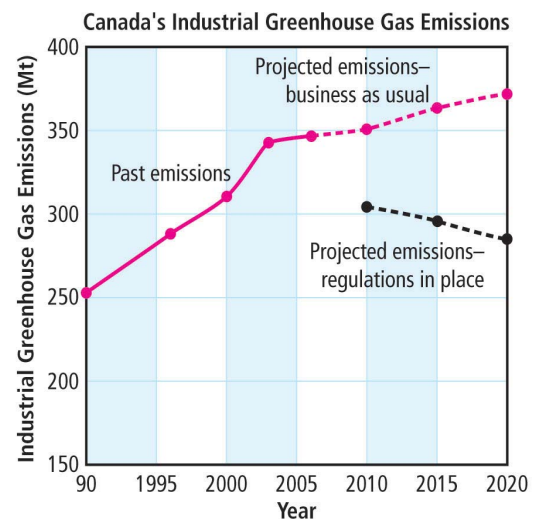
- In BC: most regions are warming, sea level is rising, glaciers are shrinking
- How else will BC be effected by climate change?

What changes can we make to our daily lives to reduce the amount of greenhouse gases emitted into the atmosphere?



Source: Adapted from Environment Canada

**Figure 11.30** Sources of emissions of greenhouse gases in Canada



Sources: The Pembina Institute and Environment Canada

**Figure 11.31** Two scenarios for Canada's projected greenhouse gas emissions: if business continues as usual, or if emissions are reduced to meet specific targets