



What do you know?

Weather vs. Climate

**“Climate is what we expect.
Weather is what we get.”**

– Mark Twain

Weather Vs. Climate

- Weather – the **day to day** environment conditions in an area.
- Climate – **long term** environmental conditions of an area.



Here is some data below about Wallaceburg's climate on labour day weekend. Why is weather not sometimes not as useful as climate?

Sept. 1st, 2002

Max Temp: 26.9 °C

Min Temp: 17.7 °C

Mean Temp: 22.3 °C

Sept. 1st, 2012

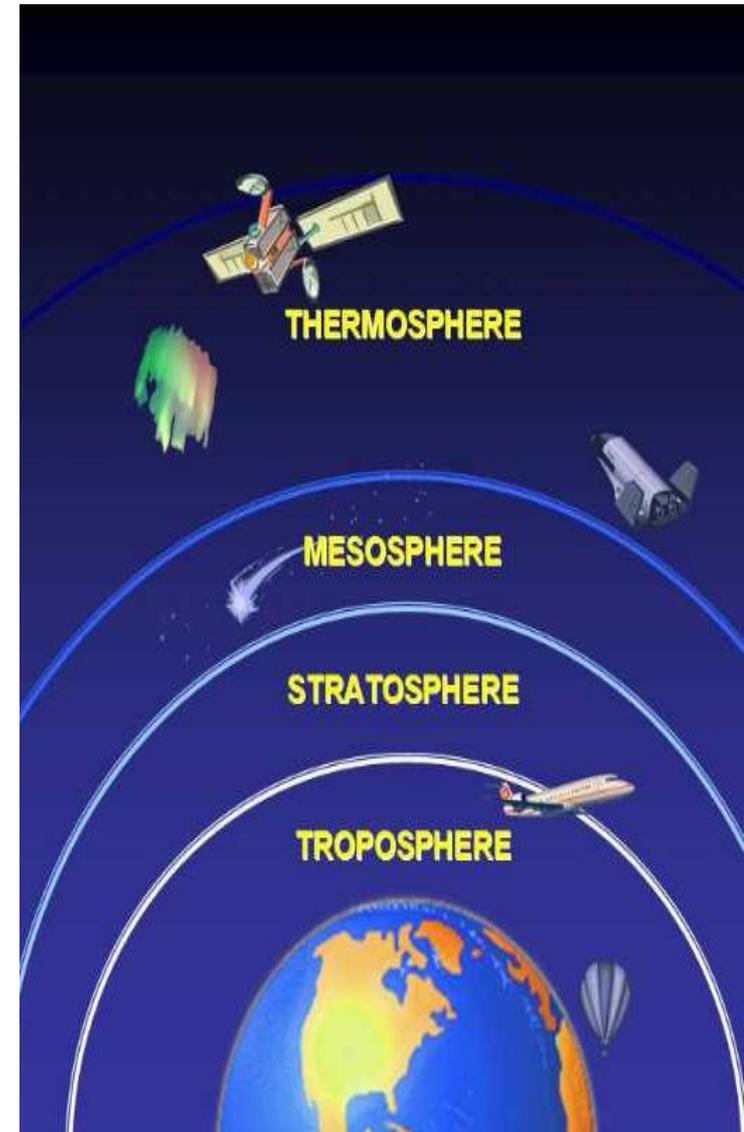
Max Temp: 16.5 °C

Min Temp: 11.1 °C

Mean Temp: 13.8 °C

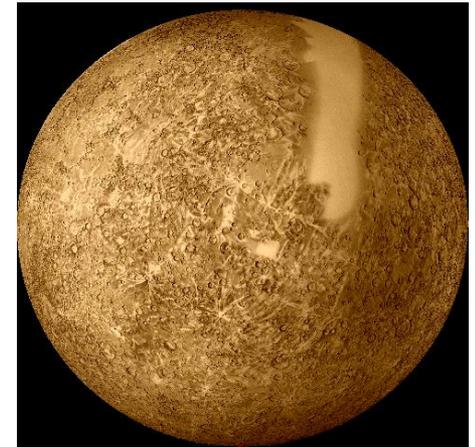
The atmosphere

- **Layers of mixed gases** (acts as a protective layer, like the skin of a tomato)
 - **Troposphere** – where we fly, and where weather occurs
- **Gases include:**
 - 78% nitrogen**
 - 21% oxygen**
 - 1% Ar, CO₂, He, H₂, O₃, H₂O**

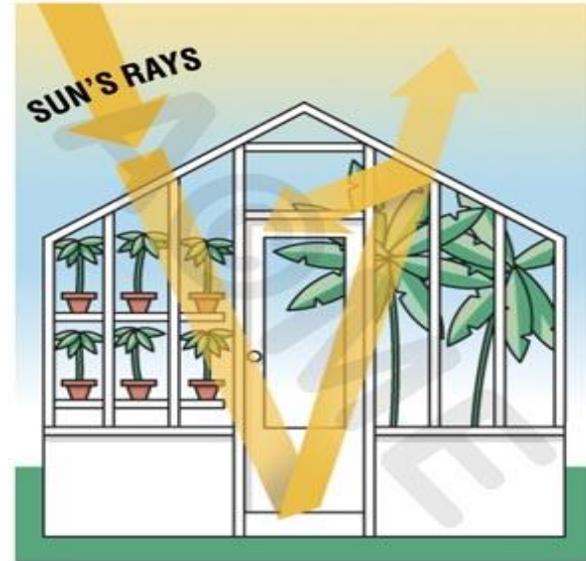


What If we didn't have an atmosphere?

- If the atmosphere did not absorb incoming heat, we would roast all day and freeze-dry at night and end up like sun-dried tomatoes
 - Mercury - + 427 to - 172 °C
 - Mars - + 27 to - 80 °C
 - Moon - + 107 to - 153 °C



Have you ever seen a greenhouse?

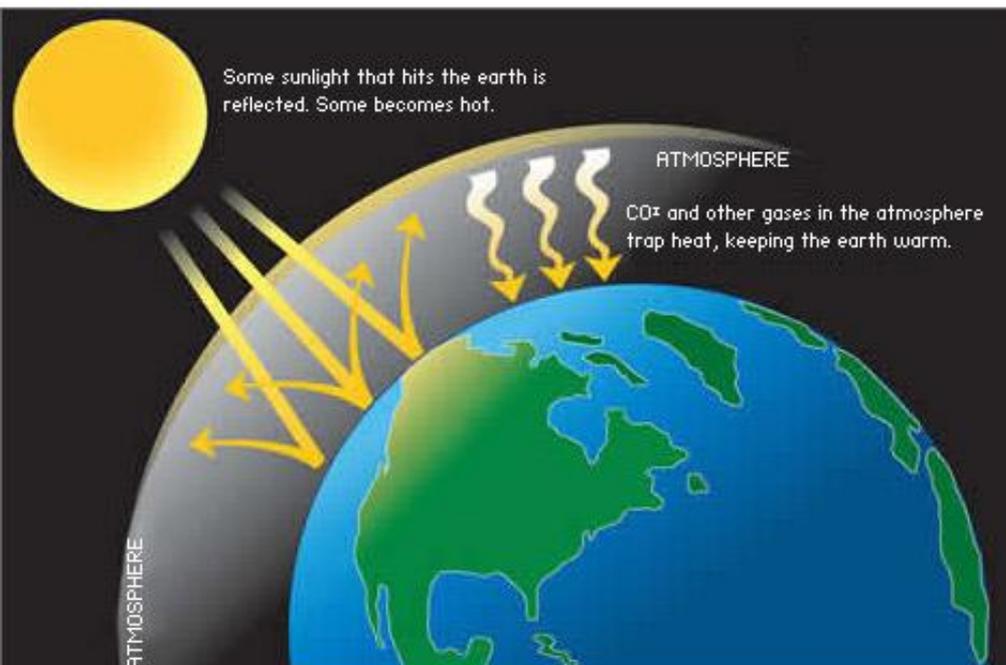


Greenhouses work by trapping heat from the sun. The glass panels of the greenhouse let in light but keep heat from escaping. This causes the greenhouse to heat up, much like the inside of a car parked in sunlight, and keeps the plants warm enough to live in the winter.

The Greenhouse Effect

The greenhouse effect involves the **gases in the atmosphere trapping in energy to keep global temperatures around an average of 15°C**. This is a **natural process** that occurs to make our planet livable.

The Greenhouse Effect



- Without this natural insulation, the average temperature on Earth would be -18°C, rather than 15°C!

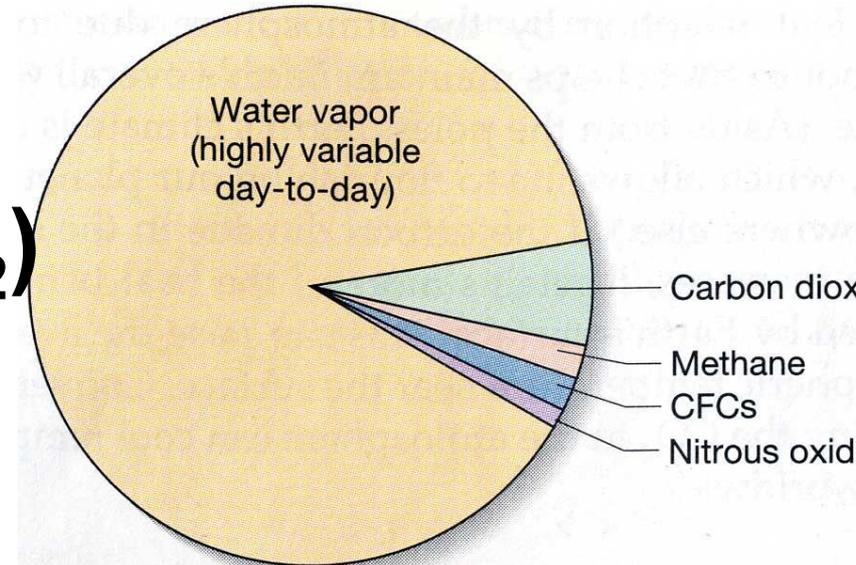
Greenhouse Gases

Water Vapour (H_2O)

Carbon Dioxide (CO_2)

Methane (CH_4)

CFC's



Sources of G.H.G.

Natural Sources:

- Volcanic eruptions (CO_2)
- Water vapour (H_2O)
- Forest fires (CO_2)
- Decomposition of carbonate rocks (CO_2)
- Swamps/marshes and animal farts. (CH_4)
- Melting ice (CO_2)

