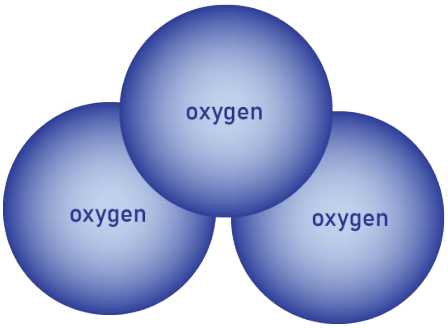
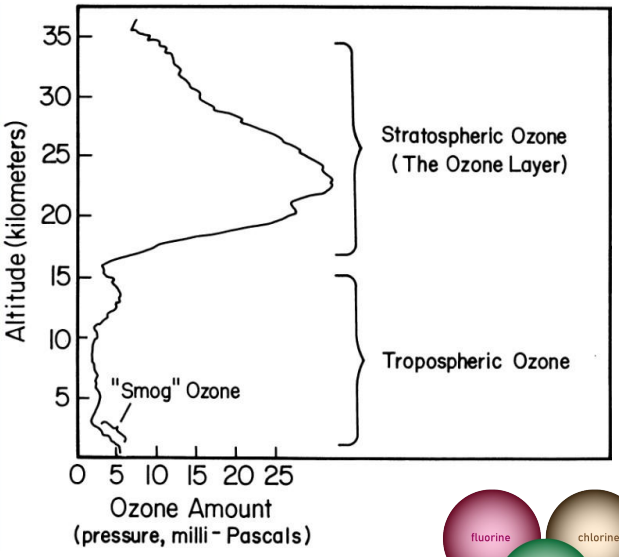
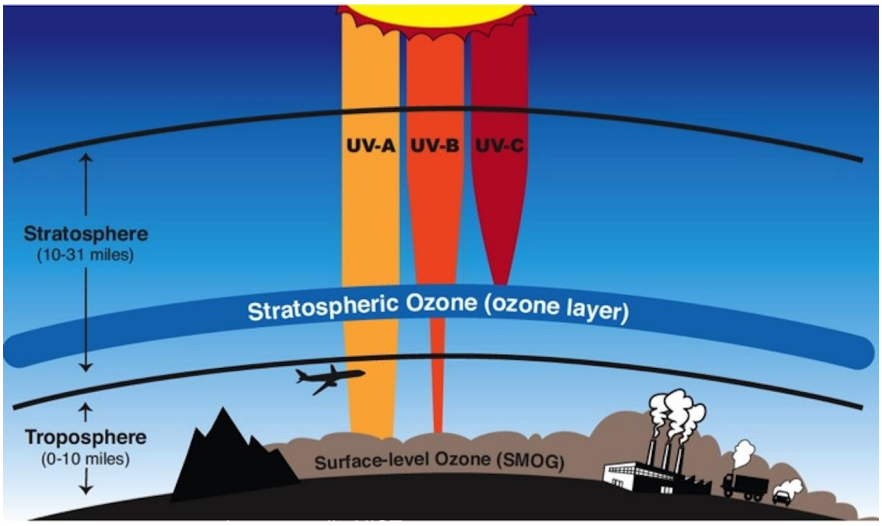
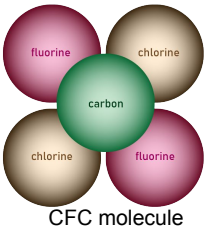
Learn more about: Ozone



Ozone is a molecule made of three oxygen atoms. Ozone is found in two parts of the atmosphere. **Ozone in the troposphere** is harmful to human health. It is created in a chemical reaction between sunlight and nitrous oxides (NO_x) or Volatile Organic Compounds (VOCs). **Ozone in the stratosphere** is called the **ozone layer**. 90% of ozone in the atmosphere is found in the stratosphere. Ozone blocks a lot of UV light, and is therefore protective against cancer.



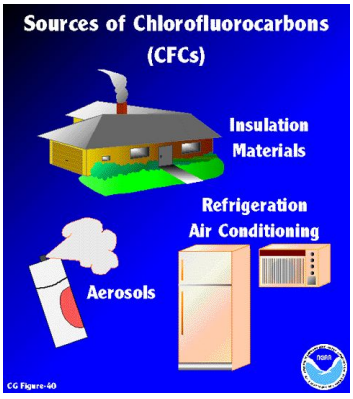




CFC molecule

The Montreal Protocol is an international agreement that eliminated the use of CFCs around the world.

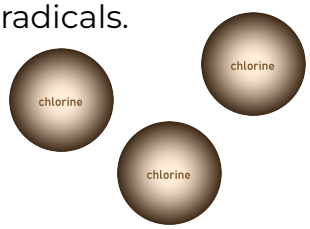
Around the world, **Chloroflourocarbons** (CFCs) entered the atmosphere from aerosols, insulation materials, refrigerators and air conditioners until they were banned.



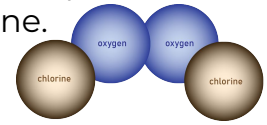
Every year a **chemical reaction** occurs in the stratosphere over the South Pole, creating a "hole" of less ozone.

Chlorine molecules are broken apart from larger molecules in a reaction with polar stratospheric clouds, which occur in the cold Antarctic winter.

As the first rays of light enter the atmosphere chlorine molecules are broken apart into chlorine free radicals.



Chlorine free radicals break apart ozone to create dichlorine dioxide. This molecule is unstable, releasing the chlorine to break up more ozone.

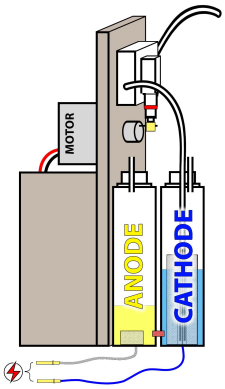


Learn more about: **Measuring Ozone**


Dobson D065 equiped with encoder, and laptop computer.

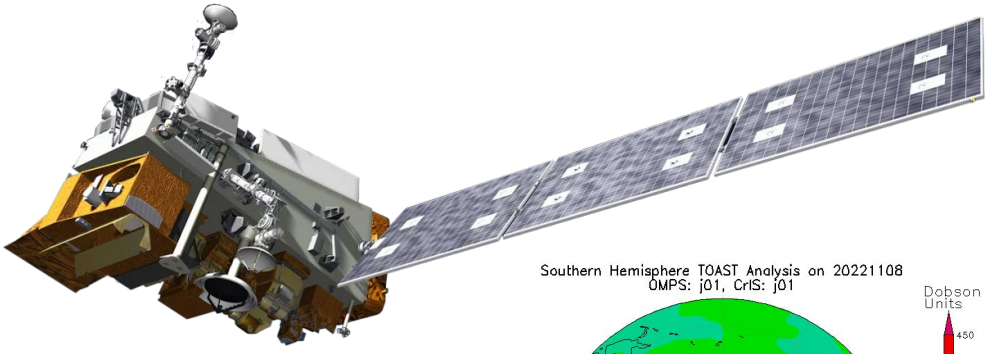
Dobson Ozone Spectrophotometer has been used to measure ozone since the 1960s. This instrument can measure ozone from the surface through all layers of the atmosphere. NOAA's Global Monitoring Laboratory uses a Dobson Ozone Spectrophotometer in 15 locations around the world.

NOAA's Global Monitoring Laboratory uses **Electrochemical Concentration Cell Ozonesondes**. These ozonesondes are attached to a weather balloon and launched into the atmosphere. At about 115,000 feet the balloon pops and it falls to the ground with a parachute.



The styrofoam package is an ozonesonde attached to a radiosonde, which measures weather data. The images on the right show the inside of an ozonesonde. Ozone reacts with an iodide solution, generating an electrical signal.

Ozonesondes are launched every week from many locations around the world, including the South Pole.



Ozone amounts are also observed from polar orbiting satellites, including NOAA-20.