

## **Ozone Hole Research 1987 NASA**

Ozone is an invisible upper atmospheric gas that protects all forms of life on earth from most of the sun's damaging radiation. Radiation that can cause skin cancer, eye damage, and suppression of the immune system. The harvesting of fish and plant life are also affected. A vast amount of aquatic life has its beginnings in the oceans near Antarctica. False color imagery of the South Pole from NASA's Nimbus 8 satellite provides scientists with a road map of daily changes in the ozone. By tracking this imagery for the past 9 years, they have discovered a trend. Each spring over Antarctica a hole in the ozone develops, and it has been getting larger year by year. To date, as much as 50-60% of the ozone in this area has been lost. These discoveries prompted a coordinated series of Antarctic ozone experiments.

Last fall an international effort, including some 150 scientists and engineers from NASA, National Oceanic and Atmospheric Administration, National Science Foundation and Industry worked together for 4 months to study this alarming environmental issue. Scientists used ground based instruments, and launched balloon borne payloads to sample air chemistry at McMurdo Station in Antarctica. At the same time, NASA's DC8 flying laboratory studied the lower atmosphere making long missions from Punta Arenas, Chile, into the area of ozone depletion. NASA's high flying ER2 plane, carrying a single pilot, and a handful of sampling instruments flew directly into an layer of atmosphere where the ozone was depleted.

A number of activities contributing to ozone loss have been pinpointed by the scientific and policy community. No longer do canned aerosol products contain chlorofluorocarbons or CFCs, but these harmful gases still get into the atmosphere because they are used as refrigerants, fire retardants, foam blowing agents, and solvents. As long as this persists, ozone will continue to be lost. Initial findings from the summers ozone expedition verified that there is a complex interplay between CFCs, chlorine containing gases, and the meteorology in certain parts of the world.

Ice crystals in the upper atmosphere convert the gases into a byproduct that destroys ozone. These ice crystals usually only form in the atmosphere of the South Pole because it gets so cold. This may explain why other parts of the world aren't dramatically affected by the depletion. Scientists still do not understand all the mechanisms of change, but thanks to the work of so many, we will soon have a more complete understanding of ozone loss, and it's threat to the world environment. In the early 1990s, a new generation of atmospheric satellites will probe even further into the problem.