

HOLE IN THE SKY: CONSEQUENCES OF A SUNTANNED EARTH

A. A Cautionary Tale Courtesy of NASA

1. Earliest O₃ measurements by U.S.
2. British measurements
3. A major take-home message
4. Why scientists disagree
5. How “truth” emerges

B. The Culprit: Chlorofluorocarbons

1. Characteristics of CFCs
2. Chemistry of CFCs in stratosphere
3. Why ozone “holes” are at the poles

C. Consequences of Ozone Decline

1. Proportional UV increase
2. Effects on plants
 - a) decreased biomass
 - b) function of controls
 - c) increased susceptibility to disease
 - d) experimental set-up: the tanning parlors
 - e) effects on agricultural productivity
 - f) effects on loblolly pines
 - g) summary of UV effects on crops

3. Effects on aquatic ecosystems:

a) decreased phytoplankton productivity and consequences:

- (1) major carbon sink
- (2) base of aquatic food chain

b) damage to aquatic larvae

4. Effects on animals

- a) cancer in animals
- b) skin cancer in humans
- c) eye damage, cataracts
- d) immune system damage
- e) genetic damage
- f) amphibian mortality

D. Making Connections to other Global Changes

E. The Montreal Protocol