There is a need to more systematically quantitate the phenomenon of enriched concentrations of halocarbons and other trace gases in antarctic snow and ice, especially for snow-ice samples that date from the 19th century to the present. The immediate goal of our work is to establish a halocarbon concentration profile for troposphere-stratosphere polar regions; this requires geophysical investigation of the role of polar atmospheric and precipitation processes for removing trace gases, especially chlorofluorocarbons. Thus we may better understand how these processes affect possible manmade changes in the chemistry of the atmosphere and in the earth's climate through the inadvertant accumulation of chlorofluorocarbons in the troposphere-stratosphere.

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Advanced Technology Satellite-1 experiment at South Pole Station

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The National Aeronautics and Space Administration's (NASA) dual air density (DAD) program begins in November 1975 with the launch of two polar-orbiting Explorer satellites, A and B, with an apogee of 1,500 kilometers and a respective perigee of 350 and 700 kilometers. The satellites are equipped with mass spectrometers to simultaneously measure various constituents in the upper atmosphere.

The polar atmosphere's complexity makes the South Pole area of prime interest. Measurements from these satellites will be telemetered to ground equipment and recorded on magnetic tape at Amundsen-Scott South Pole Station. NASA needs to receive this DAD data as soon as possible for reduction at Langley Research Center, Langley, Virginia.

To relay DAD satellite data from the South Pole to Langley Research Center, NASA has installed equipment at South Pole Station to interface with Advanced Technology Satellite-1 (ATS-1). ATS-1 is at 149°W.; although considered synchronous, it has developed a figure-eight deviation from subsatellite point due to sun and moon magnetic effects. In June 1975 the southern swing of this figure eight was about 7°S., which gave a look angle from South Pole Station of about −1.8° elevation. The figure-eight continues to elongate at a rate of 0.01° per month.

The first transmission attempt from South Pole Station through ATS-1 was in January 1975 with a look angle of −2.3° elevation. The system was tested again in May 1975 with a look angle of −1.9°. Although both tests were negative, we are optimistic that further testing in the fall of 1975 will succeed when ATS-1 reaches an elongation of about −1.5°.

New equipment for radio-echo sounding

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In 1973 the National Science Foundation, the Scott Polar Research Institute (SPRI), and the Technical University of Denmark (TUD) established a cooperative program to improve radio-echo sounding techniques in Antarctica. Responsibility for developing and constructing a new 60-megahertz radar based on previous equipment developed by SPRI and TUD (Evans and Smith, 1969; Christensen *et al.,* 1970) was assigned to TUD.

The work by TUD consisted of constructing an antenna system and two complete sets of radar electronics. The antenna system is a linear array of four dipoles suspended under the wing of an LC-130 Hercules airplane flown by U.S. Navy Antarctic Development Squadron Six (VXE-6). The system operates at 60 megahertz with a peak power of 10 kilowatts, a mean power of 250 watts, and a good match in the bandwidth of 50 to 70 megahertz (voltage standing wave ratio less than 1.6). The dipoles