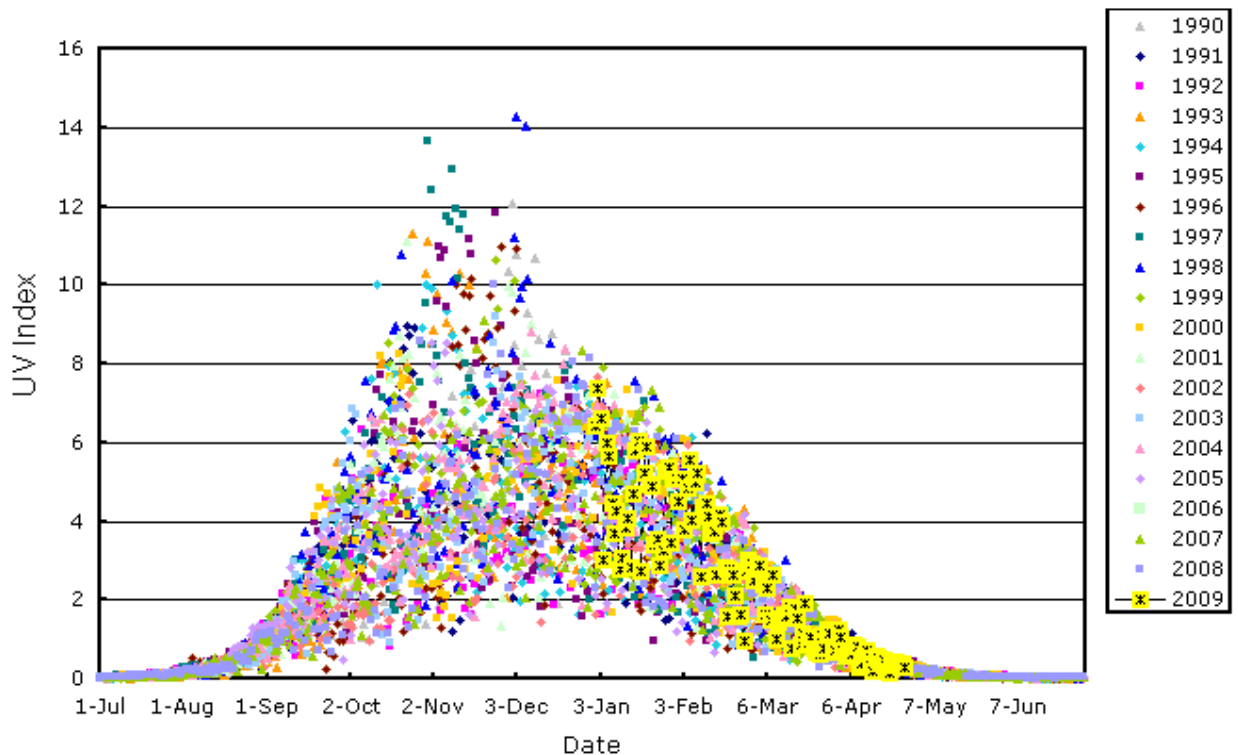


## The Antarctic Ultraviolet (UV) Monitoring Program: A New NOAA ESRL Global Monitoring Division (GMD) Effort

P. Disterhoft, P. Kiedron and S. Stierle

NOAA Earth System Research Laboratory, 325 Broadway, Boulder, CO 80305; 303-497-6355, E-mail: patrick.disterhoft@noaa.gov

Since the discovery of the Antarctic ozone hole the National Science Foundation (NSF) has supported a polar (Arctic and Antarctic) UV monitoring program. There is a continuous dataset for more than 20 years at several polar sites. Recently, the NSF requested that NOAA continue the Antarctic portion of this program. The Global Radiation Group of NOAA ESRL's GMD is moving forward to assimilate this program into current UV radiation monitoring efforts. The measurement of the biologically effective portion of the UV spectrum, UV-B is environmentally important. There are potentially UV-sensitive ecosystems within the boundaries of the Antarctic circumpolar current and also within the areas influenced by the dynamic processes of the polar vortex that push ozone-depleted air into lower latitude regions that cross southern South America. As an example, the current through the Drake Passage into the Shackleton fracture zone acts to lift iron-rich nutrients from the ocean floor. This process feeds the seasonal phytoplankton bloom that occurs in the Scotia Sea, a base component of the food change that is affected by UV dose. Other various species that could be affected by much higher than normal UV exposure that inhabit the areas in and around the Antarctic waters are seals, penguins, birds, fish, krill, etc.



**Figure 1.** The daily maximum UV index values for the Antarctic peninsula site at Palmer Station are shown for the ozone hole seasons 1990 through 2008. The graph is provided by Biospherical Instruments Inc. Notice the large increase in dose rates that coincide with the ozone hole event, Sept-Dec. These are extremely large values for latitude 64 degrees south. Table Mountain, Colorado (40 degrees north and elevation of 1,689 masl) typically sees its highest UV index values around 10. Rapidly changing irradiance levels have been shown to be more biologically damaging than long continuous elevated exposures.