

7.6. Summit, Greenland

The instrument at Summit was installed in August 2004. This is the first volume presenting data from this site. UV measurements can therefore not be contrasted to measurements from previous years.

Partly due to unusually low temperatures in the Arctic lower stratosphere, stratospheric ozone depletion in January and February 2005 was the second highest ever recorded in the Arctic. Larger losses in ozone were only observed during the winter of 1999/2000. Despite near-record levels of chemical ozone destruction other atmospheric processes such as influx of ozone-rich air from mid-latitudes into the polar region restored ozone amounts to near average levels by March 2005. In Figure 7.7.1, TOMS/Earth Probe column ozone values from 2004 and 2005 are compared with ozone records from the years 1996-2003. Total ozone in February 2005 was lower than observations from all previous years.

Figure 7.7.2 shows UV irradiance integrated over the wavelength range of 298.51 - 303.03 nm, measured during 2004 and 2005. Noon-time solar elevations angles in February were smaller than 10° . UV levels depend strongly on the height of the Sun above the horizon. For this reason, UV measurements in this wavelength band remained low in February despite low ozone concentrations. Figures 7.7.3 and 7.7.4 show noon-time erythemally and DNA-weighted irradiance, respectively.

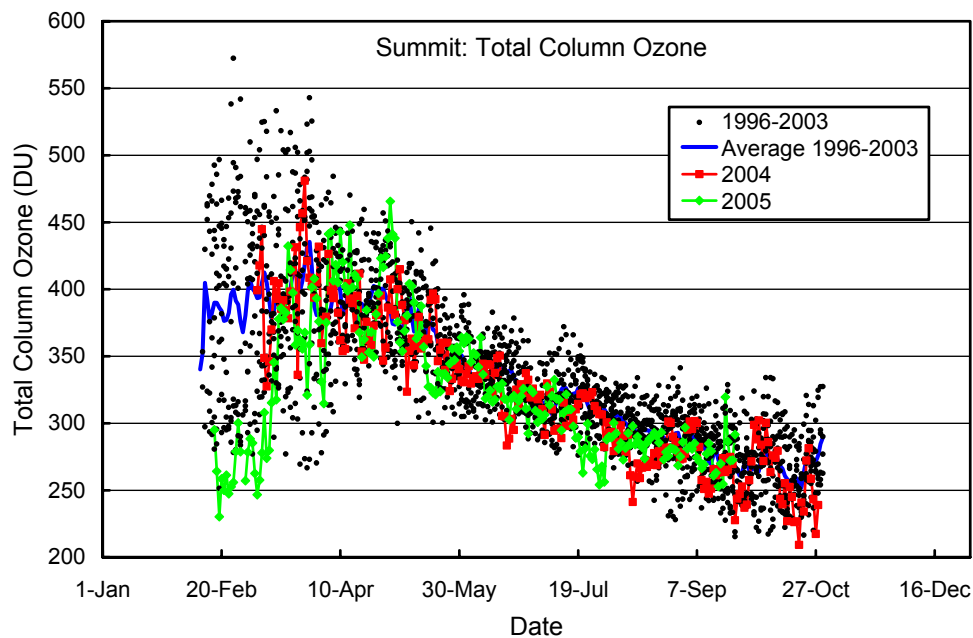


Figure 7.7.1. Total column ozone at Summit. TOMS/Earth Probe Version 8 data from 2004 (squares) and 2005 (diamonds) are contrasted with data from the years 1996-2003.

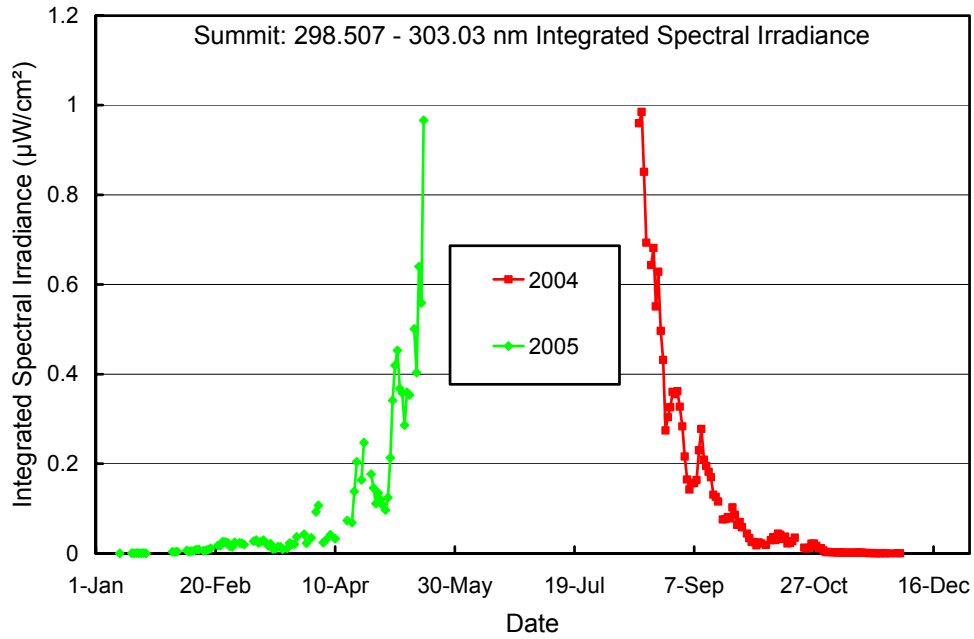


Figure 7.7.2. Noon-time integrated spectral UV irradiance (298.51 - 303.03 nm) at Summit from the years 2004 and 2005.

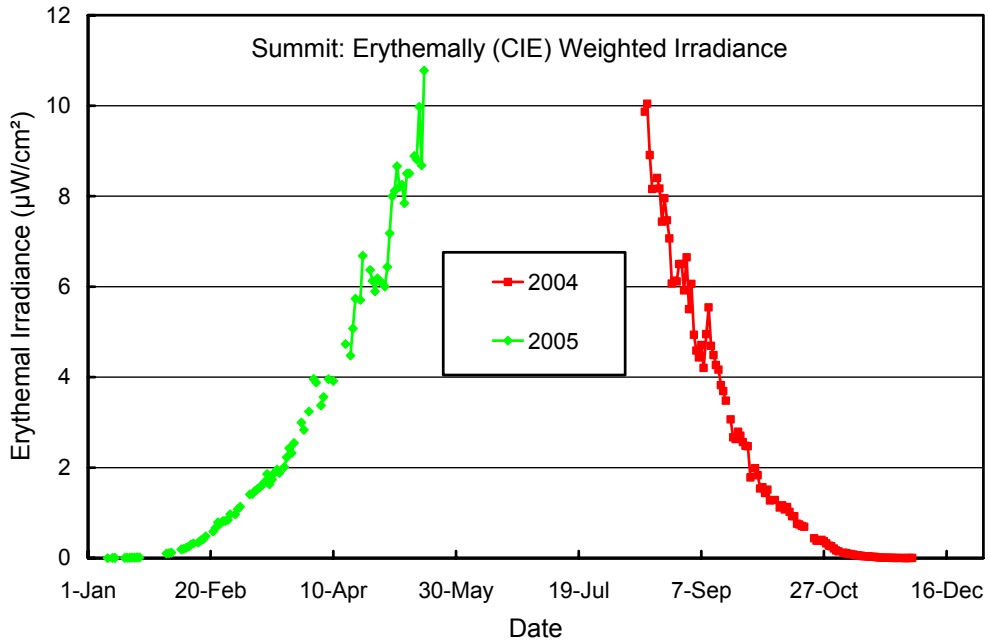


Figure 7.7.3. Erythemally (CIE) weighted irradiance at Summit from the years 2004 and 2005.

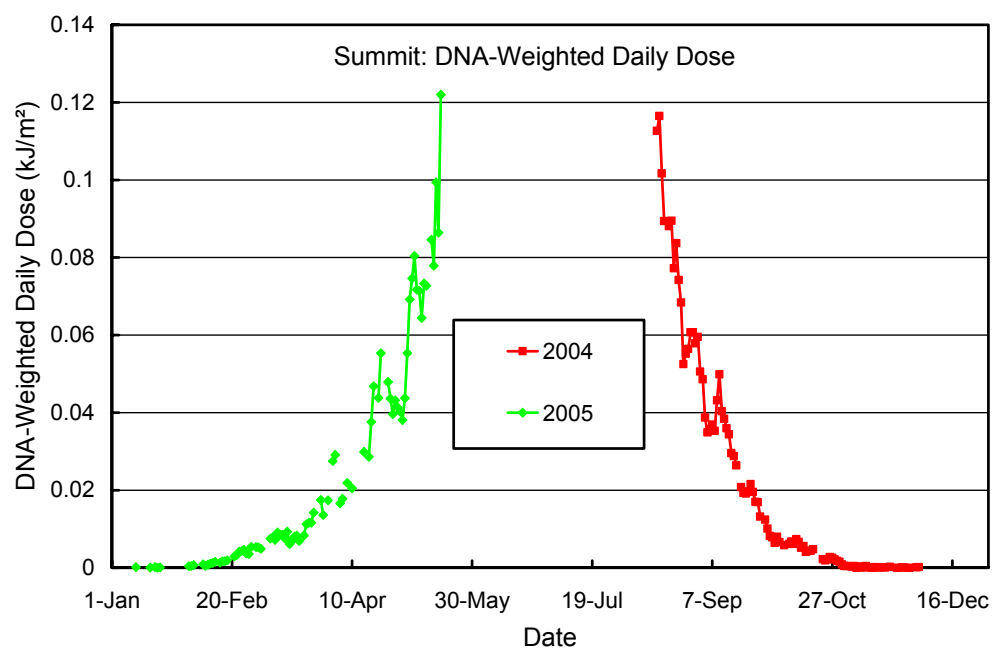


Figure 7.6.4. Daily DNA-weighted dose at Summit from the years 2004 and 2005.