7.5. San Diego, California

San Diego is the only network site at low latitude. In contrast to most other locations, data is presented over the whole year. Figure 7.5.1 shows the seasonal variation of total column ozone in San Diego. The variability in ozone is much smaller when compared to the Arctic and Antarctic sites and there is virtually no trend in ozone over the period considered (1991-2000). The average ozone levels and variability in the ozone column are clearly larger in spring than in fall.

Figure 7.5.2 shows spectral irradiance measurements integrated over the wavelength range 298.51 - 303.03 nm. Of all measurements presented, this integral is the most sensitive to changes in total column ozone and solar angle. Since day-to-day changes in ozone are much smaller in San Diego than at the austral sites, no clear ozone-related peaks can be observed in this short-wavelength integral. Due to the seasonal cycle in solar angle, summer values are more than a factor of 10 higher than winter values. The annual cycle in noon-time erythemal irradiance (Figure 7.5.3) is very similar to the cycle of the 298.51 - 303.03 nm integral. However, because of the lesser influence of total ozone column, typical erythemal irradiance values in summer are only a factor of 5 larger than typical winter values.

The general pattern seen in noon-time measurements can also be seen in daily doses (Figure 7.5.4 – Figure 7.5.6). The cycles observed in both plots are similar to those seen in noon-time values. The variability in daily dose is higher in spring than in fall, both for short-wave UV and visible irradiation. Data from the 400-600 nm band (Figure 7.5.6) indicate higher variability in February-July than during August-January, which is caused by seasonal differences in coastal fog and cloudiness. In general, measurements in 1999 and 2000 agree well with radiation levels observed historically.

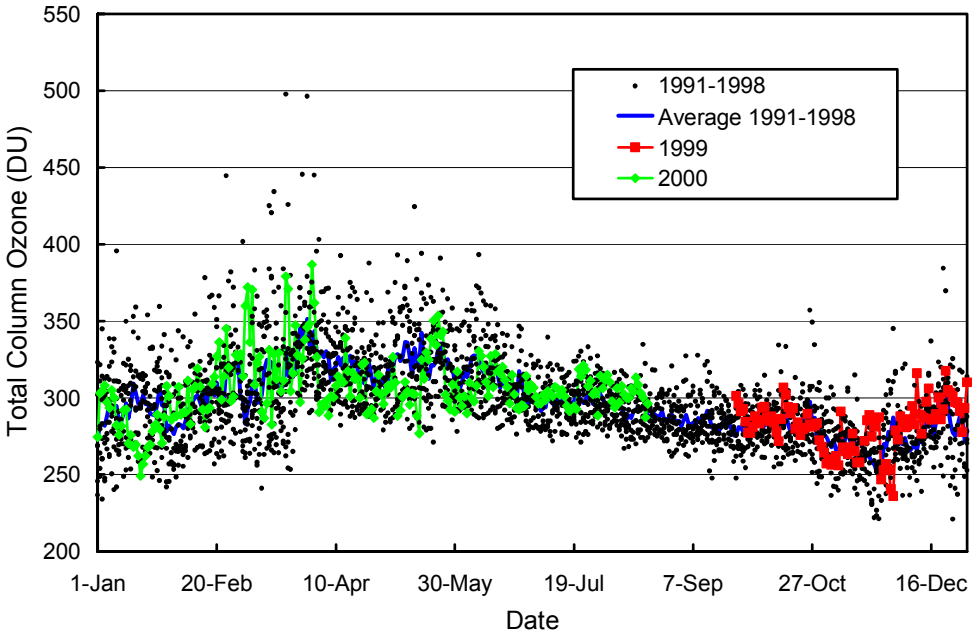

Figure 7.5.1. *Total column ozone at San Diego. TOMS/Earth Probe measurements from 1999 (squares) and 2000 (diamonds) are contrasted with ozone data from the years 1991-1998 recorded by TOMS /Nimbus-7(1991-1993),TOMS/ Meteor-3 (1993-1994), NOAA/TOVS (1995-1996), and TOMS/Earth Probe (1997-1999) satellites.*

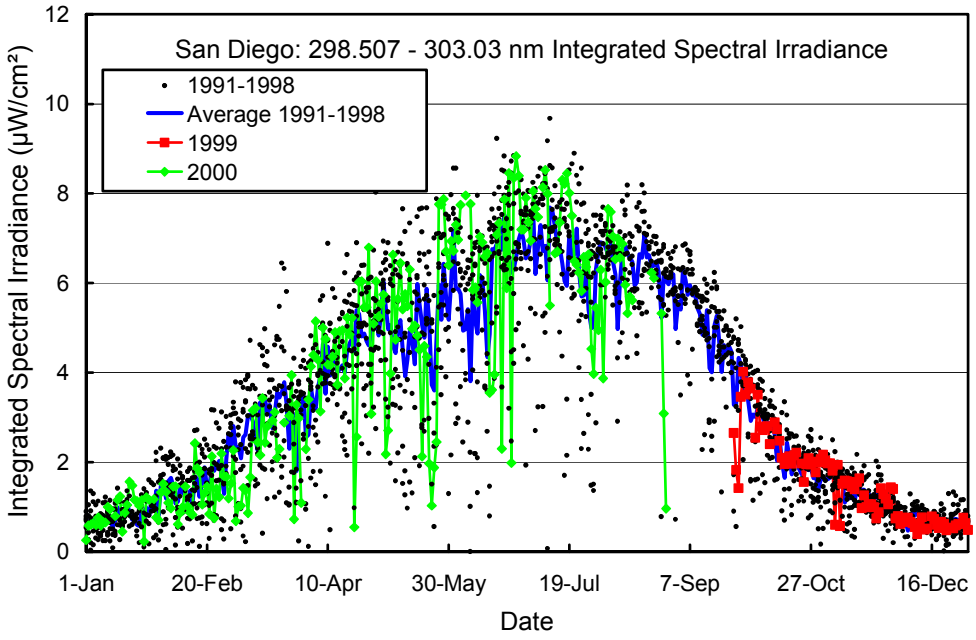

Figure 7.5.2. *Noontime integrated spectral UV irradiance (298.51 - 303.03 nm) at San Diego. Measurements from 1999 (squares) and 2000 (diamonds) are contrasted with individual data points and the average of measurements taken between 1991 and 1998.*

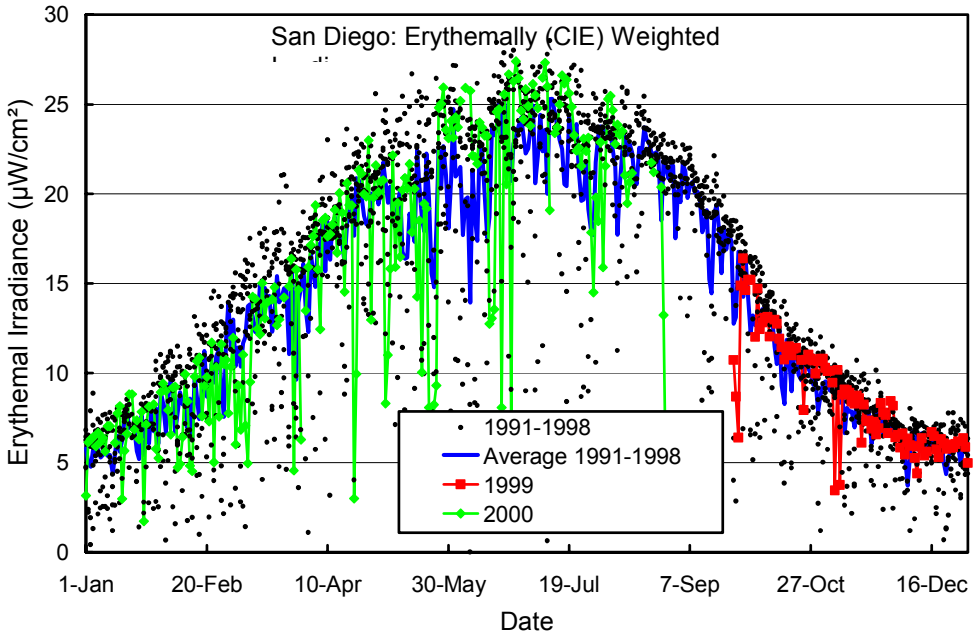

Figure 7.5.3. *Erythemally (CIE) weighted irradiance at San Diego. Measurements from 1999 (squares) and 2000 (diamonds) are contrasted with individual data points and the average of measurements taken between 1991 and 1998.*

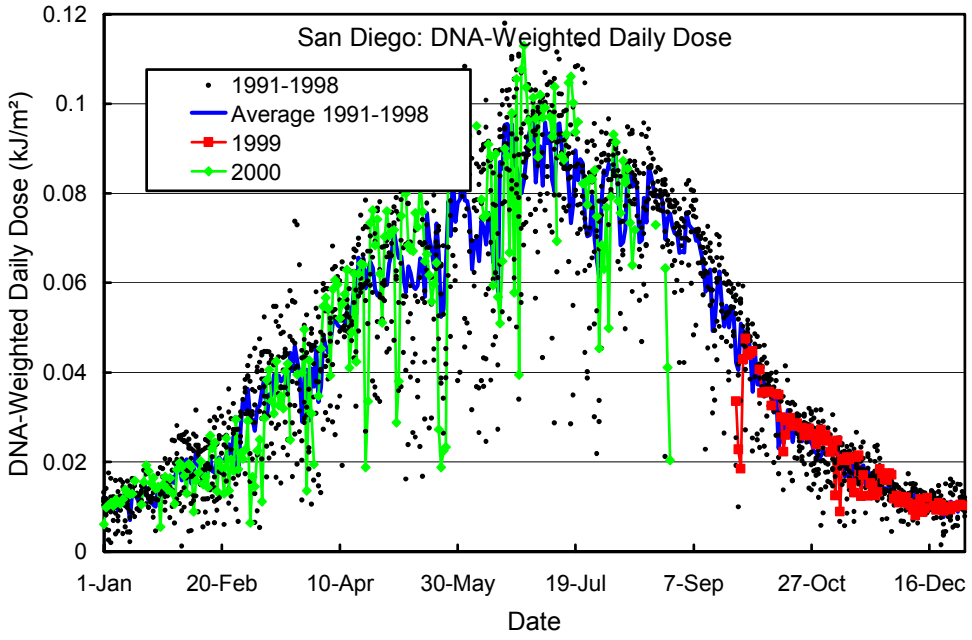

Figure 7.5.4. *Daily DNA-weighted dose for San Diego. Volume 9 measurements from 1999 (squares) and 2000 (diamond) are contrasted with individual data points and the average of measurements taken between 1991 and 1998.*

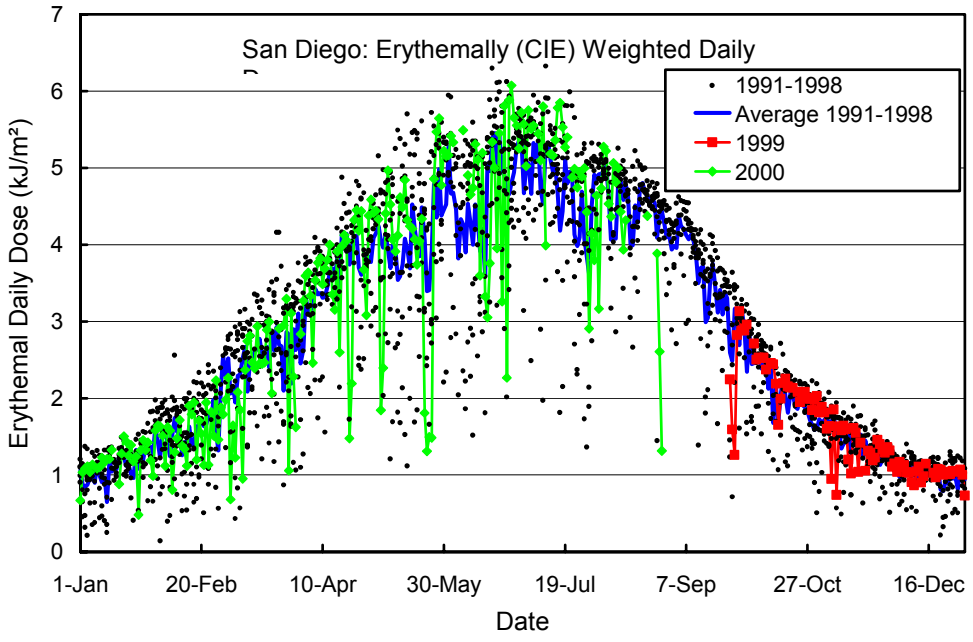

Figure 7.5.5. *Daily erythemal dose for San Diego. Volume 9 measurements from 1999 (squares) and 2000 (diamonds) are contrasted with individual data points and the average of measurements taken between 1991 and 1998.*

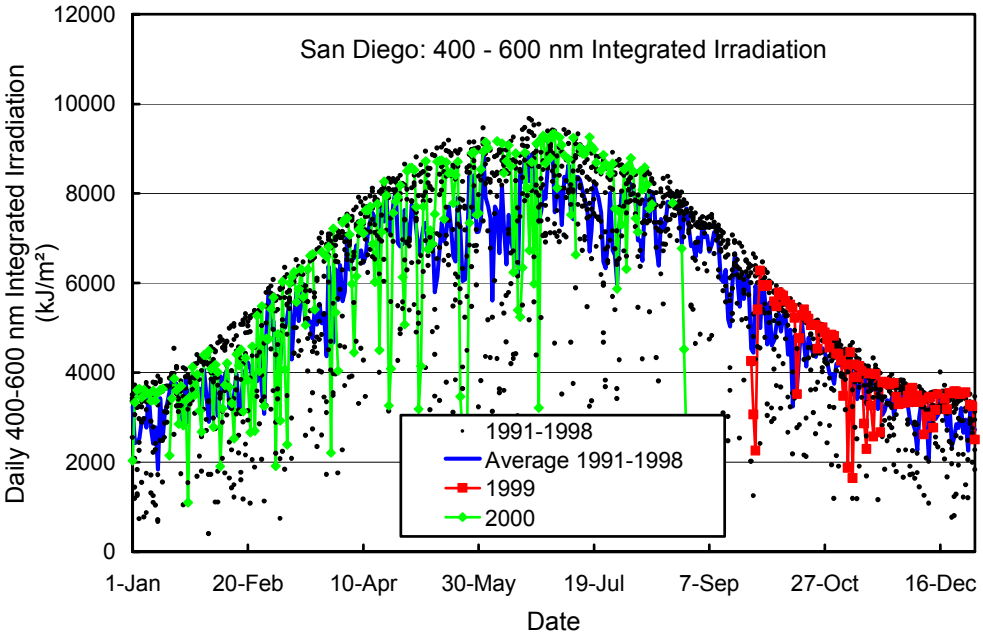

Figure 7.5.6. *Daily irradiation of the 400-600 nm band for San Diego. Volume 9 measurements from 1999 (squares) and 2000 (diamonds) are contrasted with individual data points and the average of measurements taken between 1991 and 1998.*