

Solar Spectrum at Various Altitudes in the Earth's Atmosphere

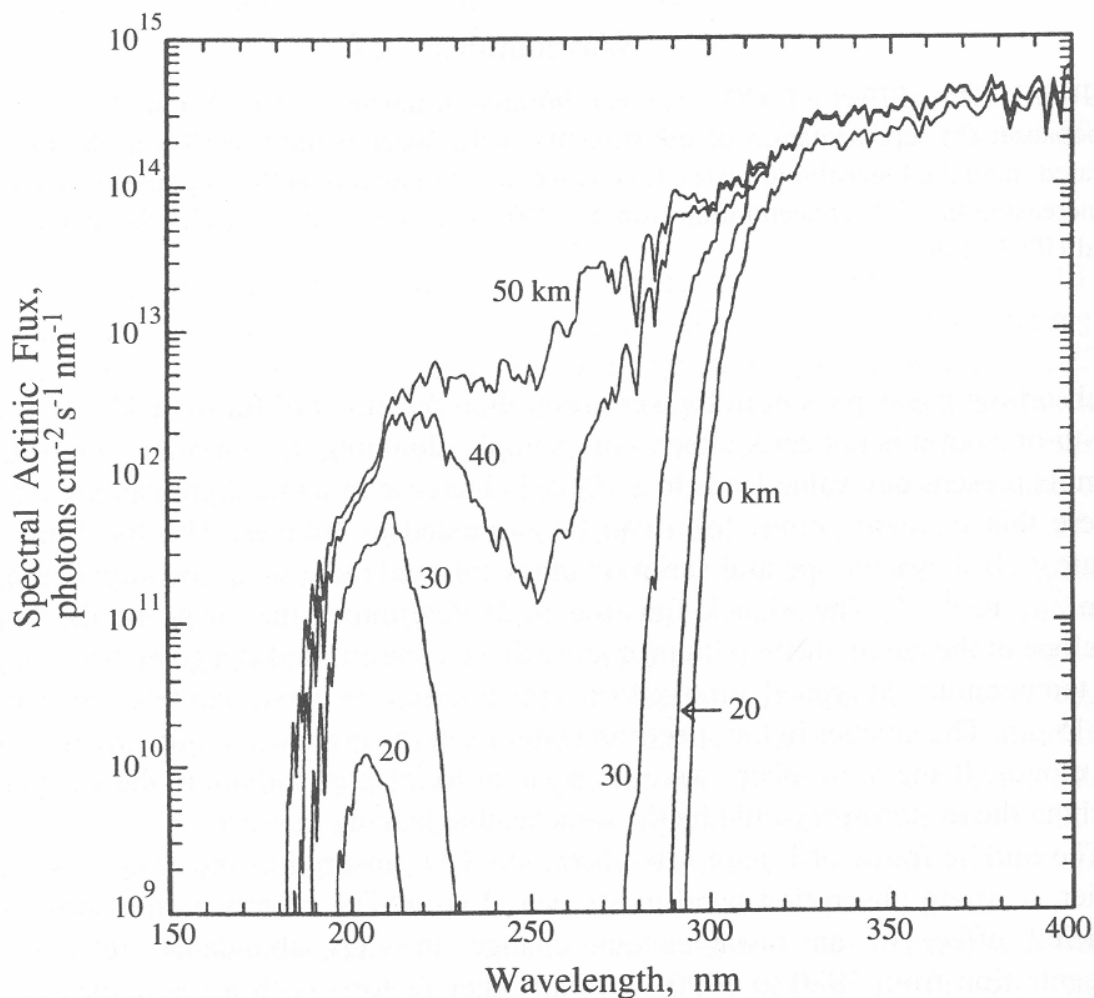
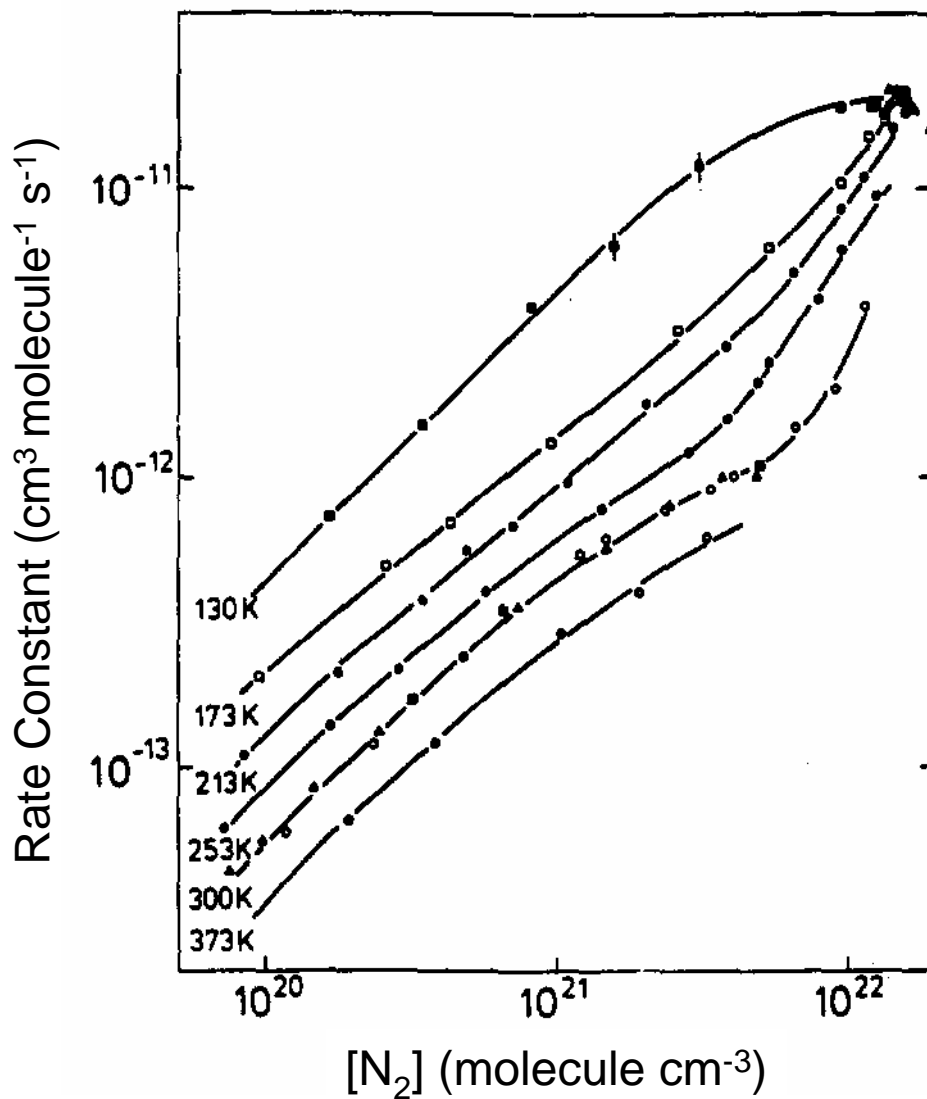


FIGURE 4.11 Solar spectral actinic flux ($\text{photons cm}^{-2} \text{s}^{-1} \text{nm}^{-1}$) at various altitudes and at the Earth's surface (DeMore et al. 1994).

From John H. Seinfeld and Spyros N. Pandis, *Atmospheric Chemistry and Physics*, Hoboken, NJ: John Wiley & Sons, 2006.

Pseudo Second-Order Rate Constants for the $O_2 + O$ Reaction



From H. Hippler, R. Rahn, and J. Troe, *Journal of Chemical Physics*
1990, 93, 6560-6569.

Rate Constant and Rate of O₂ Photolysis

(note that j_{O_2} is what we refer to as k_1)

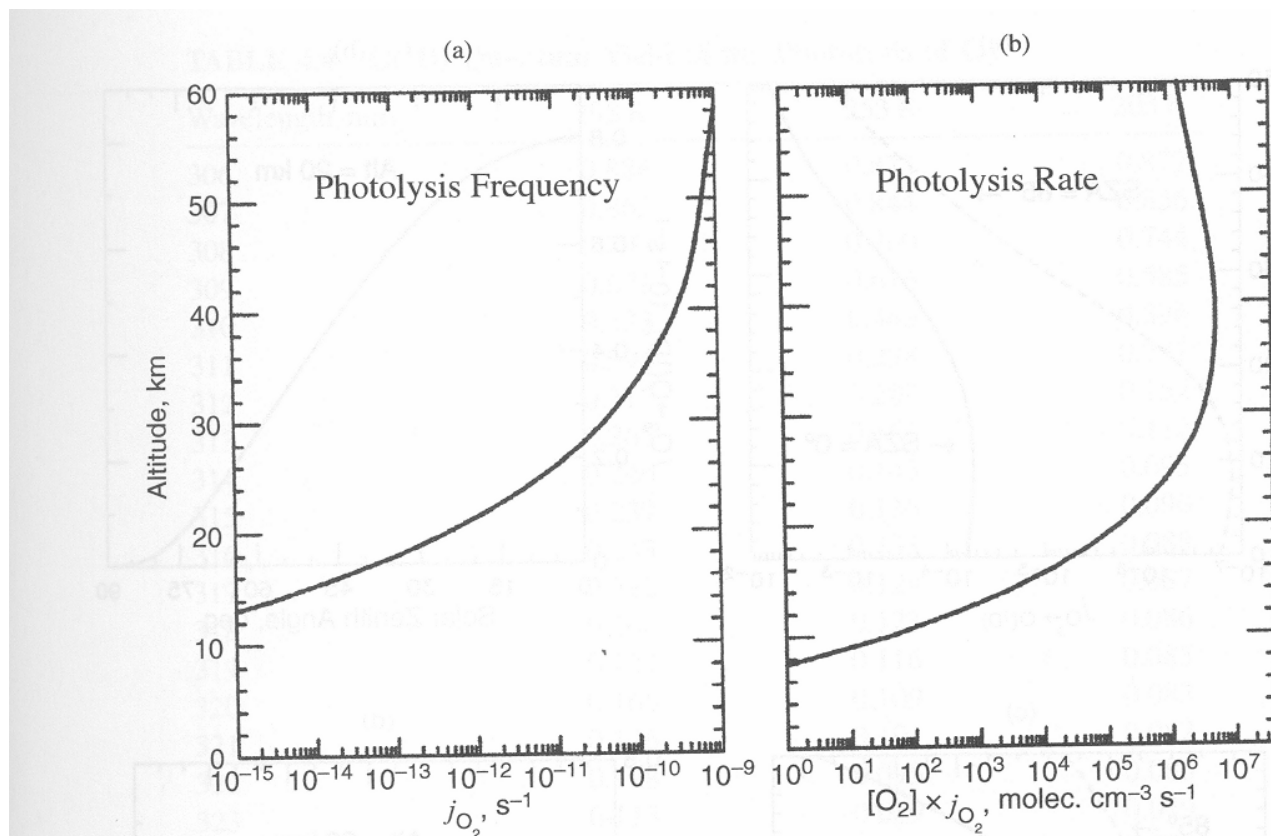


FIGURE 4.14 Photodissociation rate coefficient for O₂, j_{O_2} , and O₂ photolysis rate as a function of altitude at solar zenith angle $\theta_0 = 0^\circ$. (Courtesy Ross J. Salawitch, Jet Propulsion Laboratory.)

From John H. Seinfeld and Spyros N. Pandis, *Atmospheric Chemistry and Physics*, Hoboken, NJ: John Wiley & Sons, 2006.

Accuracy of the Chapman Mechanism

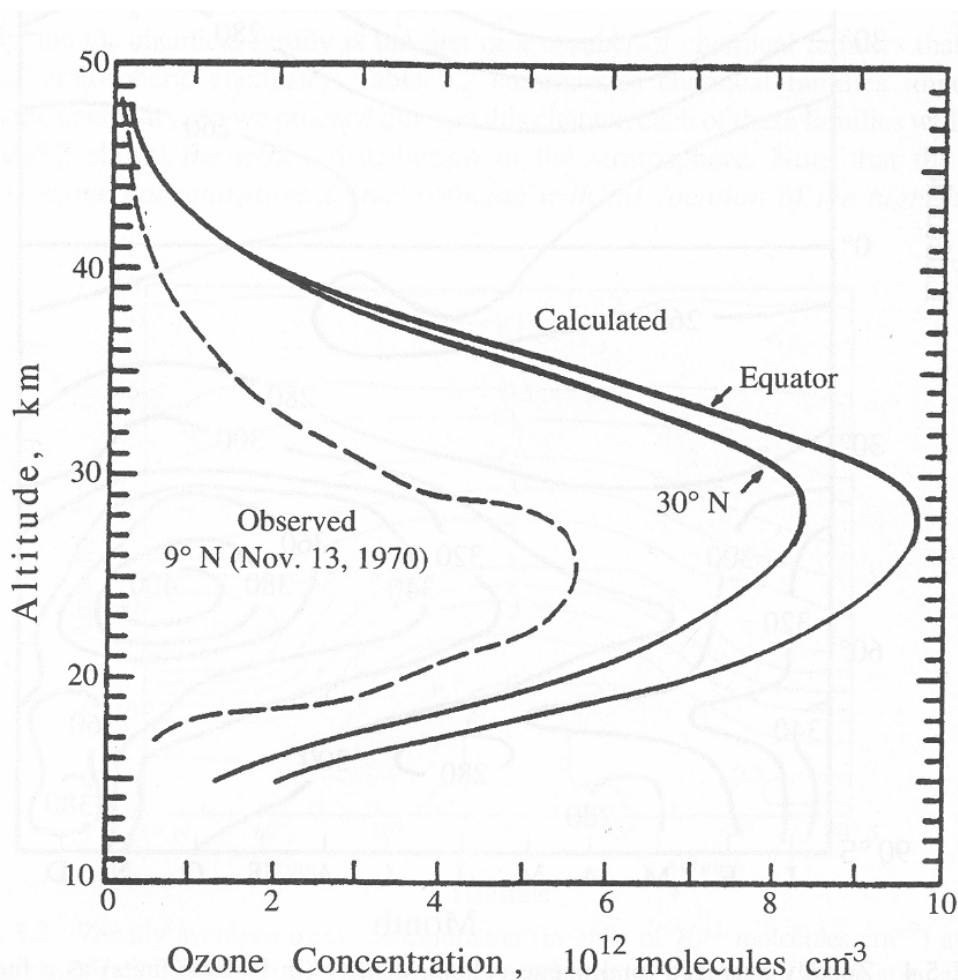


FIGURE 5.5 Comparison of stratospheric ozone concentrations as a function of altitude as predicted by the Chapman mechanism and as observed over Panama (9°N) on November 13, 1970.

From John H. Seinfeld and Spyros N. Pandis, *Atmospheric Chemistry and Physics*, Hoboken, NJ: John Wiley & Sons, 2006.