1086-86-1091 **W. Van Snyder*** (van.snyder@jpl.nasa.gov), 4800 Oak Grove Drive, Mail Stop 183-701, Pasadena, CA 91109-8099. *Combining line-by-line and pre-frequency-averaged models in the radiative-transfer equation.*

The clear-sky non-scattering radiative-transfer equation describes the propagation of radiation through a cloud-free atmosphere. In remote sensing, it is not uncommon to measure radiation from the atmosphere using a receiver that has a broader band than a spectral line. In these cases, one evaluates the equation for several frequencies, to model spectral lines accurately, and then averages the results as weighted by the channel's response. For atmospheric constituents that have small spectral variation within the filter, it is more efficient to pre-compute the absorption cross section and average that as weighted by the channel's response. The presentation describes how to combine the two methods to achieve accurate results quickly. (Received September 18, 2012)