

## Instantaneous Radiative Kernels for Tropospheric Ozone: Satellite Observations and Model Evaluation

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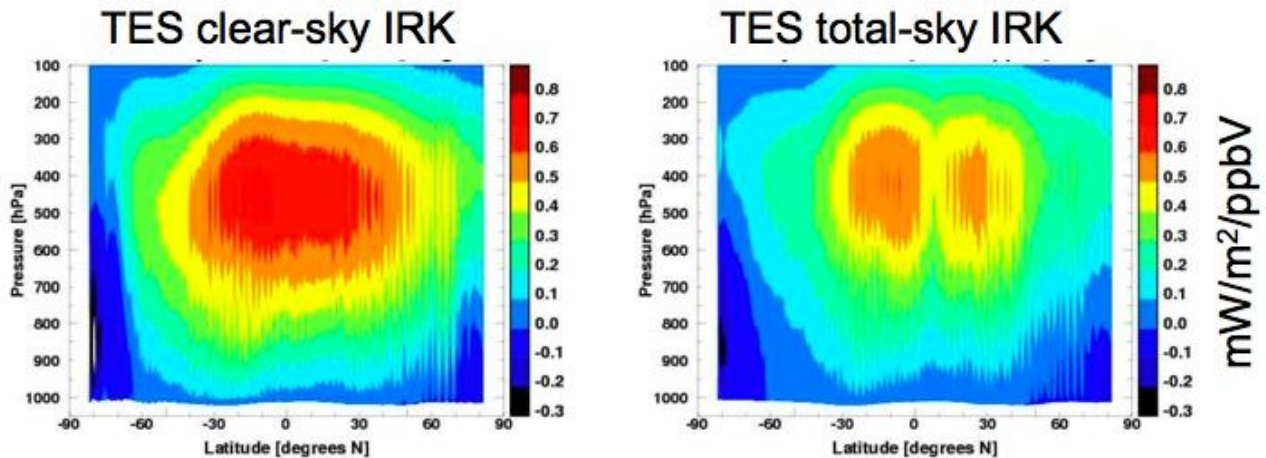
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Radiative kernels representing the Top of Atmosphere flux response to a change in an atmospheric state variable are essential to understanding radiative feedbacks in climate change predictions. Using infrared spectra for the 10 micron ozone band and corresponding Jacobian calculations from the Tropospheric Emission Spectrometer (TES) on the NASA Earth Observing System-Aura, we can compute Instantaneous Radiative Kernels (IRK) for the vertical distribution of ozone. By storing TES radiance Jacobians for the final converged retrieval iteration and estimating anisotropy we derive ozone IRK profiles (in  $\text{W}/\text{m}^2/\text{ppb}$ ) for all observation types: ocean, land, cloudy and cloud-free conditions. Along with ozone IRKs for August 2006, we will show comparisons of climate model ozone distributions to TES measurements with corresponding radiative implications of ozone differences.



**Figure 1.** The zonal mean distribution of TES clear (left) and total sky (right) Instantaneous Radiative Forcing Kernels (IRFK, in  $\text{mW}/\text{m}^2/\text{ppbV}$ ) in August 2006. [Aghedo et al, submitted to JGR-Atmos. 2010].