Scattering and Absorption Cross-sections of Atmospheric Gases in the Ultraviolet-Visible Wavelength Range (307 - 725 nm)

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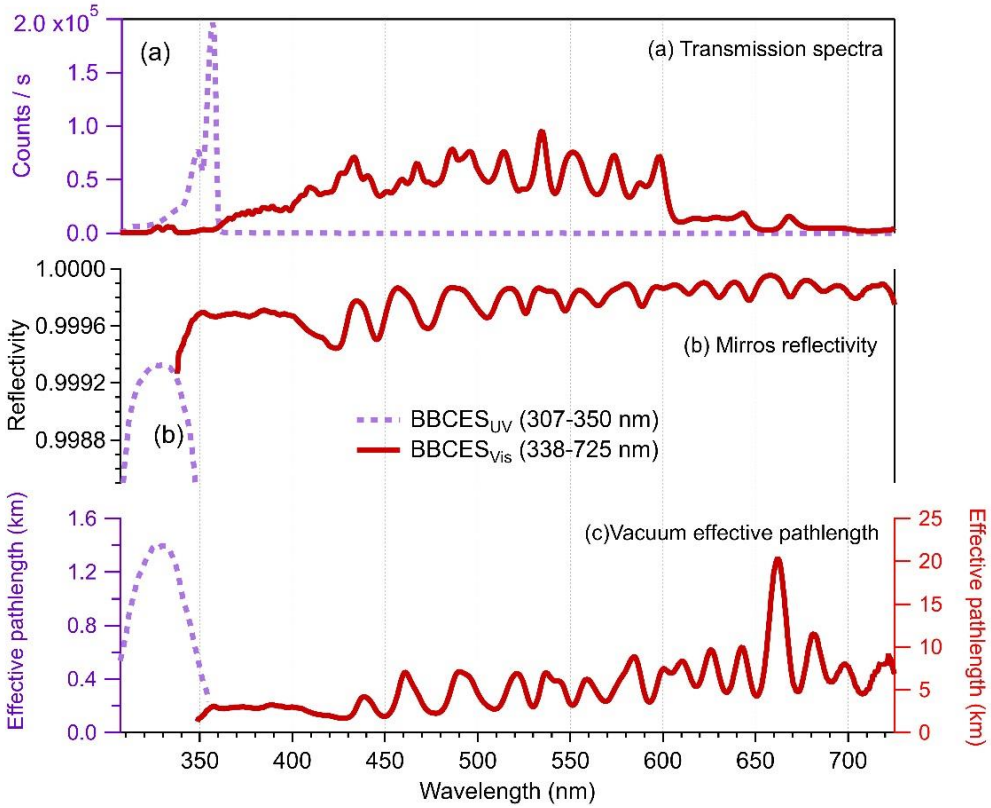

Figure S1. Performance of the BBCES system. (a) Cavity transmission spectra of N_2 at 1015 hPa and 295.65K. (b) Mirror reflectivity measured using N_2 and He as references. (c) The vacuum effective optical pathlength of the cavities.

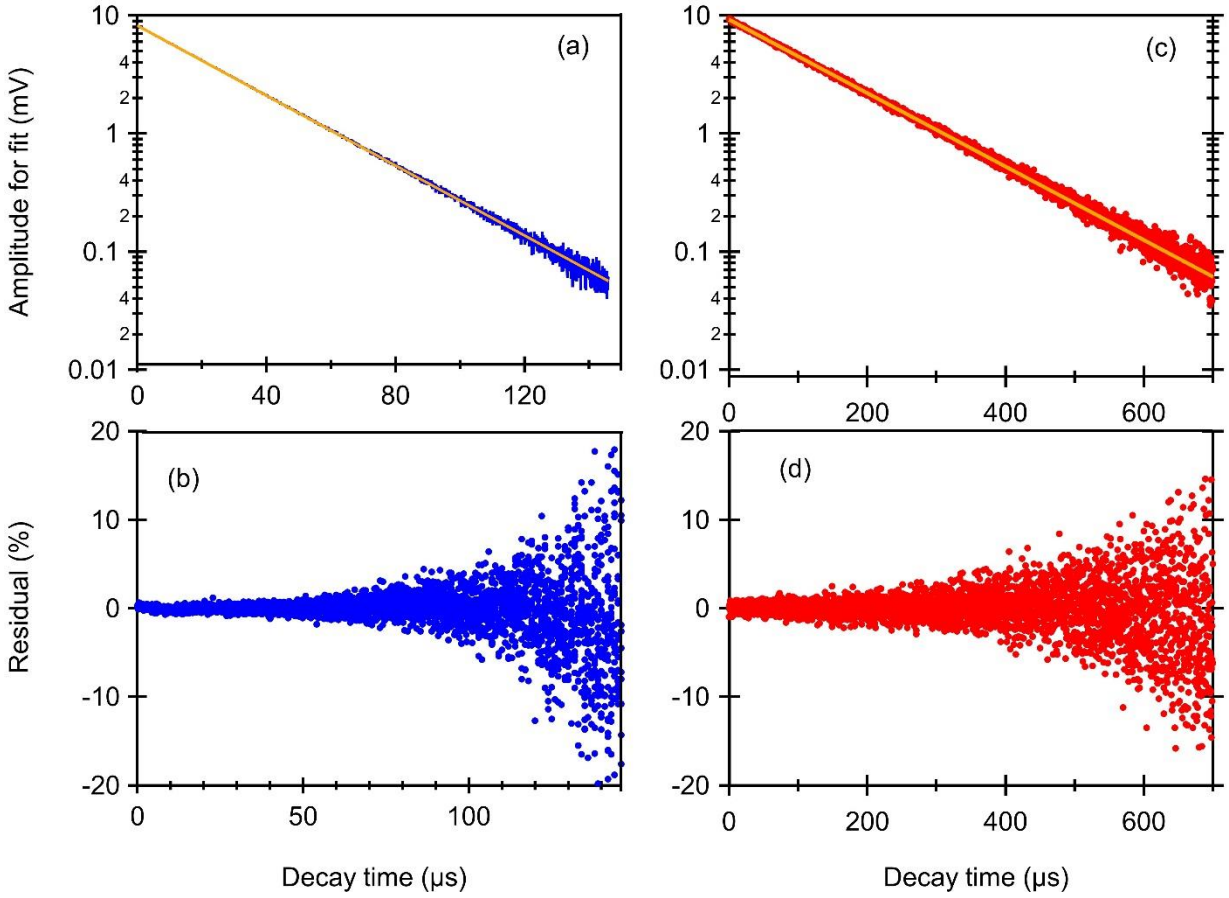

Figure S2: Validation of the CRD systems (404 nm left, 662 nm right). The measured light intensity (a,c) decay in a nitrogen-filled cavity fitted to an exponential decay (solid orange line) with time constant $\tau_{0\text{-}404}$ = 29.0 µ sec and $\tau_{0\text{-}662}$ = 162.9 µsec up to 5 e-folding times of τ_0. The residuals (b, d) show no apparent structure from other time constants, indicating the decays follow a single exponential.

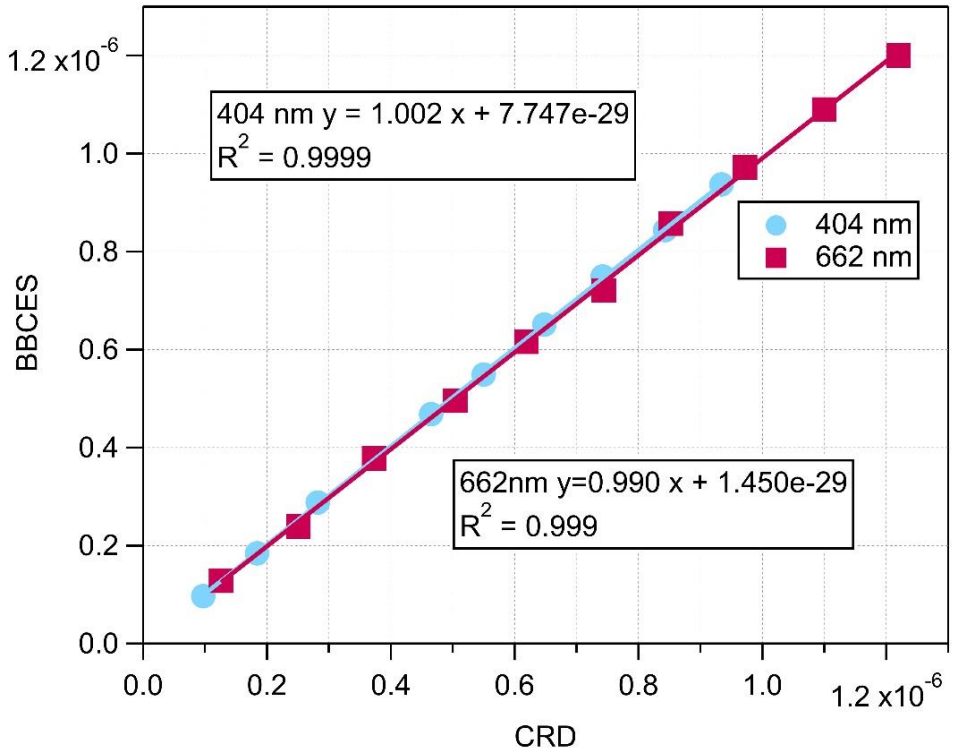

Figure S3. Correlations between the extinction coefficients (unit, cm^{-1}) obtained from the BBCES and CRDs.

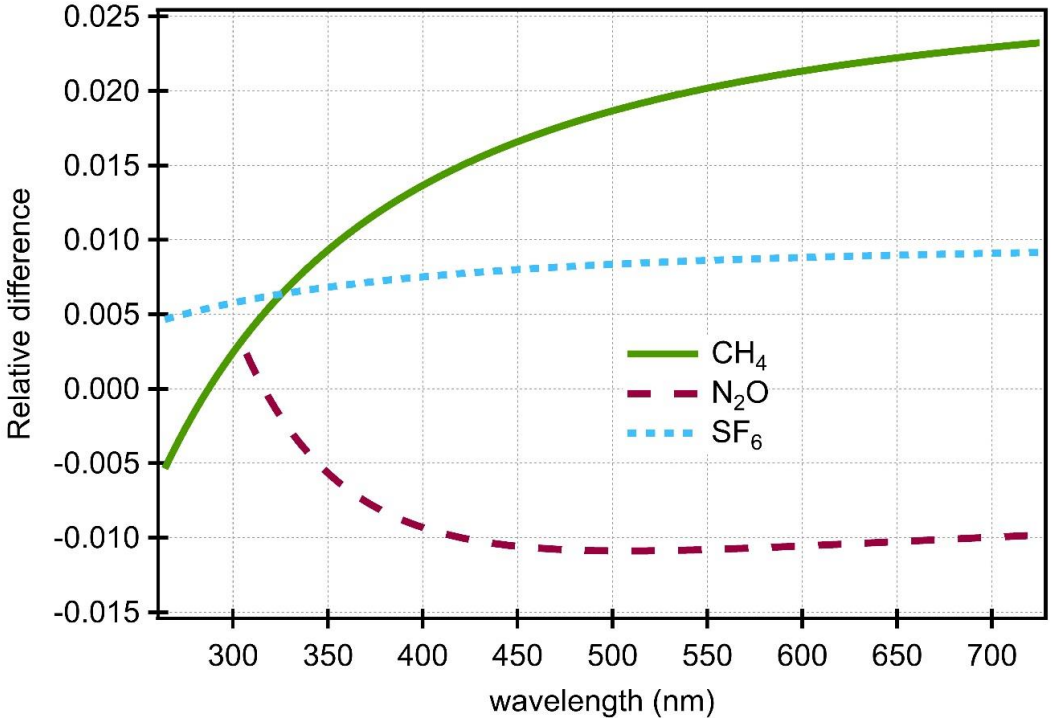

Figure S4. The relative difference of the Rayleigh scattering cross-sections calculated by the refractive index derived in this study and from literature.