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## **Refined measurements of the foreign-broadened continuum of water vapor in the 6.3 $\mu\text{m}$ band at -30 °C**

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Radiation downwelling to Earth's surface in the spectral region from 5 to 7.7  $\mu\text{m}$  (the  $\nu_2$  band of water vapor, 1300-2000  $\text{cm}^{-1}$ ) is important for the total downwelling radiation budget. In this spectral region, at temperatures near -30 °C, the atmosphere is dry enough that the foreign-broadened continuum of water vapor makes a significant contribution to the atmospheric emission. Temperatures near -30 °C are characteristic of the near-surface temperature in the polar regions (in the Austral summer for the Antarctic Plateau, and in winter in the Arctic). Previous work reported continuum coefficients in the  $\nu_2$  band that were retrieved from two sets of measurements of downwelling atmospheric emission made at temperatures near -30 °C at Dome C, Antarctica during the austral summer of 2003/2004, with the Polar Atmospheric Emitted Radiance Interferometer (PAERI). Here we refine our previous results using 18 additional atmospheric emission measurements made during the same field season in Antarctica. We also determine the impact on the results of improvements to the calibration of the PAERI measurements. Compared to the previous measurements, the differences between the refined continuum and the Mlawer, Tobin-Clough, Kneizys, Davies (MT-CKD) continuum are found to be greater in the wings of the  $\nu_2$  band but are reduced near the center of the band.