

A Library of Whole Earth Spectra with AIRS

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We have investigated mid-IR spectra of Earth obtained by the Atmospheric Infrared Sounder (AIRS) instrument on-board the AQUA spacecraft to explore the characteristics that may someday be observed in extrasolar terrestrial planets. We have used the AIRS infrared ($R \sim 1200$; 3.75-15.4 microns) spectra to construct directly-observed high-resolution spectra of the only known life bearing planet, Earth. The AIRS spectra are the first such spectra that span the seasons. We also used the 4 Visible/Near Infrared Channels of AIRS to investigate the vegetation signatures that might be observed in the visible. Additionally, we investigated the diurnal and seasonal variations as well as spectral variations that would arise due to varying cloud amount and viewing geometry.