

An Airborne Three-Channel LED-Based Broadband Cavity Enhanced Absorption Spectrometer for Measurements of Atmospheric Trace Gases

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We report the development and deployment of a three-channel airborne Broadband Cavity Enhanced Absorption Spectrometer using light emitting diodes (LEDs) as the light source, capable of covering the broad UV-vis spectrum by adapting the wavelength-sensitive components such as the ringdown mirrors, LEDs and CCD detectors to the target wavelengths. The instrument has been deployed in a few field campaigns, with focuses on the nighttime $\text{NO}_3/\text{N}_2\text{O}_5/\text{NO}_2$ and on IO, respectively. Results from these campaigns are presented, with atmospheric implications discussed.