



Development of a Fabry-Perot Interferometer for Ultra-Precise Measurements of Column CO2

NASA Technical Reports Server (NTRS), et al., Emily L. Wilson



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Bibliogov, United States, 2013. Paperback. Condition: New. Language: English . Brand New Book ***** Print on Demand *****. A passive Fabry-Perot based instrument is described for detecting column CO2 through absorption measurements at 1.58 microns . In this design, solar flux reaches the instrument platform and is directed through two channels. In the first channel, transmittance fringes from a Fabry-Perot interferometer are aligned with CO2 absorption lines so that absorption due to CO2 is primarily detected. The second channel encompasses the same frequency region as the first, but is comparatively more sensitive to changes in the solar flux than absorption due to CO2. The ratio of these channels is sensitive to changes in the total CO2 column, but not to changes in solar flux. This inexpensive instrument will offer high precision measurements (error 4) in a compact package. Design of this instrument and preliminary ground-based measurements of column CO2 are presented here as well as strategies for deployment on aircraft and satellite platforms.



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