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GEOSTATIONARY IMAGING FABRY-PEROT SPECTROMETER (GIFS) FOR THE
MEASUREMENT OF TRACE GASES AND CLOUDS

Abstract

The Geostationary Imaging Fabry-Perot Spectrometer (GIFS) instrument is an example of a next-generation satellite concept, to be deployed on a geostationary satellite for continuous hemispheric imaging of trace gas concentrations (including the boundary layer) and clouds. GIFS uses an innovative tunable imaging triple-etalon Fabry-Perot interferometer to obtain images of very high-resolution spectral line shapes of individual lines in backscattered solar radiation, which contain trace gas and cloud information. An airborne GIFS prototype and the measurement technique have been successfully demonstrated in a recent field campaign onboard the NASA P3B over Wallops Island, Virginia. In this paper, we present the the GIFS instrument design and use GIFS airborne prototype measurements to demonstrate the instrument functionality and measurement capabilities.