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Abstract Title:
Detailed Evaluation of MODIS Fire Radiative Power Measurements
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ABSTRACT
Satellite remote sensing is providing us tremendous opportunities to measure the
fire radiative energy (FRE) release rate or power (FRP) from open biomass burning,
which affects many vegetated regions of the world on a seasonal basis. Knowledge of the
biomass burning characteristics and emission source strengths of different (particulate
and gaseous) smoke constituents is one of the principal ingredients upon which the
assessment, modeling, and forecasting of their distribution and impacts depend. This
knowledge can be gained through accurate measurement of FRP, which has been shown
to have a direct relationship with the rates of biomass consumption and emissions of
major smoke constituents. Over the last decade or so, FRP has been routinely measured
from space by both the MODIS sensors aboard the polar orbiting Terra and Aqua
satellites, and the SEVIRI sensor aboard the Meteosat Second Generation (MSG)
geostationary satellite. During the last few years, FRP has been gaining recognition as an
important parameter for facilitating the development of various scientific studies relating
to the quantitative characterization of biomass burning and their emissions. Therefore, we
are conducting a detailed analysis of the FRP products from MODIS to characterize the
uncertainties associated with them, such as those due to the MODIS bow-tie effects and
other factors, in order to establish their error budget for use in scientific research and
applications. In this presentation, we will show preliminary results of the MODIS FRP
data analysis, including comparisons with airborne measurements.