

Abstract Submitted
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Clouds, Cameras, and Composition: Characterizing spectral differences between co-located Pandoras MARGARET TURCOTTE SEAVEY, University of Maine, ALEXANDER KOTSAKIS, USRA/NASA GSFC, JOSEPH ROBINSON, UMBC JCET/NASA GSFC, ROBERT SWAP, NASA GSFC — Pandora spectrometer instruments are built and calibrated the same way, however there is variability in total column nitrogen dioxide (NO_2) between co-located Pandoras. The causes of spectral differences between co-located Pandoras should be characterized to quantify and reduce these differences. This characterization results in a better understanding of the instrument and how atmospheric and instrumental variability can impact retrieved NO_2 . There are a variety of factors that can contribute to spectral differences between co-located Pandoras. Clouds never appear in perfect shape and there are different cloud types that form at different altitudes. Instrumentation setup affects the retrieved total column NO_2 because the optional camera searches for the greatest light input while the traditional non-camera Pandora instruments searches for the Sun using calculated sun position based on latitude and longitude. It has been observed that total column NO_2 observations by co-located Pandoras capture identical characteristics throughout the day but there are instances where the delta between observations is different. We can reasonably say that NO_2 is heterogeneous by nature and through a combination of these factors leads to the delta being different between co-located Pandoras. Future work is needed to further quantify the impacts of the field calibration reference, cloud optical thickness, and hyperlocal NO_2 heterogeneity on the correlation between co-located Pandoras.

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