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Remote sensing of greenhouse gases has advanced substantially in the past decade, as demonstrated by gains in accuracy and precision in retrieved atmospheric CO2. The growing constellation of greenhouse gas sensing instruments presents opportunities and challenges for making optimal use of multiple assets. One challenge is the partitioning of sources of uncertainty across instruments, across collections of retrievals for a given instrument, and for individual retrievals. This presentation will highlight lessons learned from a framework for uncertainty quantification (UQ) for the column concentration, XCO2, retrievals from the Orbiting Carbon Observatory-2 and -3 (OCO-2/3) satellites. The missions share similar retrieval algorithm methodology and data processing pipelines, but each has key instrument and observing characteristics that contribute to the overall uncertainty. A combination of empirical estimation, error analysis, and simulation inform a statistical model for the total uncertainty of individual retrievals and aggregated estimates for both missions. We present comparisons of these uncertainty estimates for the recent OCO-2 and OCO-3 science data products.
Meeting homepage
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