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Historically, carbon cycle analyses have had latencies of several months to a few years. These latencies were due to both necessity (input datasets, e.g., inventories, can have similar or even longer latencies) and practicality (many questions about the carbon cycle involve processes taking place over very many years). Nevertheless, there is an increasing demand for products with latencies of less than a month. The protocol of the WMO's Greenhouse Gas Watch, for example, sets one month as its goal. This turnaround is unattainable using the retrospective stream of Orbiting Carbon Observatory 2 (OCO-2) column CO2 retrievals, which typically trail real time by a few months, but can trail by even longer during reprocessing campaigns. Current best practices are to use the retrospective stream because of its superior calibration, long-term consistency, and data coverage. This presentation will investigate the potential for using the OCO-2 forward stream, which has a latency of just a few days, in NASA's Goddard Earth Observing System (GEOS) Constituent Data Assimilation System (CoDAS), which currently uses OCO-2 retrospective retrievals to produce a global, gridded Level 3 CO2 product for the OCO-2 team. Preliminary results using the forward stream show that its data density is comparable to that of the retrospective stream in regions with sparse observations and thinning is mostly restricted to regions where the retrospective stream has dense coverage. Furthermore, outside of known temperature adjustment maneuvers, there is reason to be optimistic about the forward stream calibration. Time and results permitting, we will also present preliminary results assimilating TROPOMI CH4 into a similar system for methane.
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