Carbon cycle anomalies in 2023 as viewed by the Orbiting Carbon Observatory missions

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Oral

2023 was the warmest year since the global climate records began, and included a number of notable. Accompanying the warmest temperature, extreme climate events occurred throughout the globe. It is still not known, however, how these extreme climate anomalies affect terrestrial biosphere carbon cycle or how these carbon flux anomalies affect the magnitude of regional carbon sink over multiple years. In this talk, we will first review how observations from OCO-2 havehelp advanced the understanding of interannual variations of terrestrial biosphere carbon fluxes. We will then present estimates of the impact of 2023 climate anomalies on regional net carbon flux anomalies and its component fluxes, and assess how the regional dependence of the carbon flux response of the carbon fluxes to climate anomalies depends on climate region. We will end with a discussion on the implications and an outlook of assessing the impact of climate anomalies on terrestrial biosphere carbon cycle fluxes with the increasing records from OCO-2 and OCO-3.

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