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Impact of congestus clouds on the midlevel ozone concentrations

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We used simultaneous measurements from the TRMM 3B42 dataset and the SHADOZ ozonesonde network to identify high precipitation events and to construct height-time ozone anomaly patterns about Fiji and Samoa. The results clearly show an evidence of decreased (-10 ppbv) ozone concentrations in the middle troposphere ($\sim$ 6 km) preceding rainfall. Soundings from the IGRA dataset were used to calculate height-time divergence and RH anomaly patterns about high precipitation events. The results show that a mid-level divergence, likely due to congestus detrainment, is coincident with the mid-level ozone anomaly. An increased RH in the lower and middle troposphere, preceding peak rainfall, confirms presence of congestus clouds. The mid-level ozone and divergence anomaly features that precede rainfall are not seen in the GEOS-Chem model. The height, timing, and amplitude, of the mid-level congestus divergence, are not fully represented in the YOTC.