



## **Ozonesonde and aircraft measurements in the tropical West Pacific from the CAST field campaign**

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The Coordinated Airborne Studies in the Tropics (CAST) campaign comprised of ozonesonde launches and an aircraft campaign in the West Pacific in January-March 2014. Previous field campaigns in this region have highlighted an area to the east of Papua New Guinea and near the Solomon Islands as sources of deep convection and anomalously low ozone in the tropical tropopause layer (TTL). The CAST campaign provides a unique dataset of ozonesonde launches from Manus Island, Papua New Guinea, close to the hypothesized source region.

CAST was performed in coordination with two sister campaigns, CONTRAST and ATTREX, bringing the FAAM BAe 146, NCAR Gulfstream V and NASA Global Hawk aircraft respectively to Guam. The aircraft campaign allowed an unprecedented comparison between ozonesondes and aircraft, which was used to verify the ozonesonde measurements and support the choice of background correction; this correction is of paramount importance in the tropics as the background constitutes half of the measured signal.

The data obtained from the CAST ozonesondes suggest that the lowest ozone concentrations, at  $\sim 15$  ppb, found in the tropical tropopause layer were accompanied by easterly winds from an area of deep convection, suggesting the air was lifted quickly from the marine boundary layer. The evidence from the CAST campaign suggests that the anomalously low near-zero ozone measured during previous campaigns in the tropical West Pacific is an artefact of the ozonesonde behaviour at low pressures (high altitude) – the low-ozone measurements can be recreated with the CAST ozonesondes if the background is not properly treated.