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Ground-based measurements of column CO2 in the tropics

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Atmospheric inversion studies currently rely on a network of surface measurements from a combination of flask measurements and continuous *in situ* measurements. The surface in-situ measurements are highly precise but also have their limitations. Many regions are poorly sampled and the vertical transport has to be correctly represented in the models. These two factors limit the confidence in source-sink estimates derived from these measurements. Recently it has been shown that measured vertical atmospheric CO2 distributions are inconsistent with atmospheric models that estimate a large transfer of terrestrial carbon from tropical to northern latitudes.

Here we present first results of column CO2 from ground based solar absorption measurements in the tropics. Column CO2 measurements are independent of vertical mixing processes. The presented measurements are currently the only ground based column CO2 measurements in the inner tropics. The results are compared with collocated surface in situ measurements and TM3 model simulations.