



Biomass burning signals over the South Atlantic Ocean before and during the El Niño event of 2015/16

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The Max Planck Institute for Biogeochemistry (MPI-BGC) has been operating a Fourier-Transform Spectrometer (FTS) on Ascension Island (8° S, 14° W) as part of the Total Carbon Column Observation Network (TCCON). Since 2012, this instrument has been observing column-averaged dry-air mole fractions (commonly referred to as X_{gas}) of greenhouse gases like CO₂, CH₄, CO, N₂O and others.

Due to its location in the southern trade wind zone, the station is downwind from Africa most of the time. Different parts of the total column above the station are influenced by fluxes from different regions. Especially the lower layers of the free troposphere just above the planetary boundary layer (PBL) show strong biomass burning signals. XCH₄ and especially XCO are strongly enhanced during the northern and southern African burning seasons. For XCO, enhancements of 50-100% in the total column can be observed on the time scale of days.

Transport model simulations suggest that biomass burning signals from as far as the Eastern Indian Ocean may be detected over Ascension Island. Most of these effects are not visible from observations in the PBL. The 5-year time series allows a first look at the effect of the 2015/16 El Niño on the biomass burning patterns in the Southern Hemisphere.