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Time-series of biomass burning products from ground-based FTIR measurements at Reunion Island (21°S, 55°E) and comparisons with the CTM IMAGES

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Reunion Island (21°S, 55°E) is part of the Network for the Detection of Atmospheric Composition Change (NDACC), a network dedicated to performing high-quality long-term ground-based observations of atmospheric trace gases at globally distributed sites. Up to now, only a few NDACC stations are located in the Southern Hemisphere, and particularly very few at tropical and subtropical latitudes. Furthermore, Reunion Island is situated in the Indian Ocean, at 2000 km from southeast Africa and at only 700 km from Madagascar. It is therefore a good location to study the transport of biomass burning products from these regions to Reunion Island. Ground-based Fourier transform infrared (FTIR) solar absorption observations are sensitive to a large number of biomass burning products. At present, we have a record of such FTIR observations at Reunion Island from three measurement campaigns, namely in October 2002, from August to October 2004, and from May to October 2007, and from continuous observations that started in May 2009. The measurements in 2007 and 2009-2010 allow the observation of seasonal variability. In this work, we present retrieved time-series of several biomass burning products such as C_2H_2, C_2H_6 and HCN. These ground-based data are compared to the CTM IMAGES. The Lagrangian particle dispersion model FLEXPART is used to explain the day-to-day variability of these species by the transport pathways.