



Transport and physico-chemical impact of trace gases and aerosols over Indian Ocean

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Observations of ozone are performed with lidar and ozonesondes at Reunion Island University (21°S, 55°E) since the 90s. These observations display the annual cycle of free tropospheric ozone, in relation with the seasonality of austral biomass burning and stratosphere-troposphere exchange (Clain et al., 2010).

In order to further characterize the transport and physico-chemical impact of trace gases and aerosols over Indian Ocean, we analyse :

- African biomass burning emission GFED2 and GDRIBB inventories in 2009-2010.
- carbon monoxide partial columns obtained with FTIR at Reunion Island in 2007.
- aerosol measurements with lidar and photometer on board the Marion Dufresne vessel in Indian ocean in 2009.
- ozonesonde measurements at Kerguelen Island (49°S, 70°E) from 2008 to 2009.

These observations are analysed using FLEXPART dispersion model calculations and allow :

- to establish differences in African biomass burning emission GFED2 and GDRIBB inventories.
- to evidence an case of inter-hemispheric transport from south east Asia in the upper troposphere in July 2007.
- to determinate the composition, expansion and origin of a biomass burning aerosol plume in september 2009
- to highlight the variations of the ozone baseline in the free troposphere at Kerguelen, in link with biomass burning in South Africa and America.

Since 2012, a new altitude station is open at the Maïdo Mount and hosts remote sensing (lidar, spectrometers) and in situ measurements. The Maïdo observatory will allow to enhance southern hemispheric atmospheric observations in the framework of NDACC and AERONET. It is open to transnational access through the participation to the European project ACTRIS.