

BVOCs concentration in the Reunion Island tropical forests and the impact on photooxidants formation during the BIO-MAÏDO 2015 campaign.

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In March-April 2015 took place an intensive field campaign in the Reunion Island : BIO-MAÏDO 2015 campaign. The main objective of the campaign was to study the interactions between forests, gases, aerosols and clouds in this unique tropical natural science lab (Dufлот et al, in prep).

During this campaign volatile organic compounds (VOCs) including biogenic volatile organic compounds (BVOCs) were sampled at different part of the Reunion island. BVOCs (including isoprene, terpenes, and some oxygenated compounds) have different temporal and spatial variations depending on vegetation, on plant species and on environmental factors (ambient temperature, light intensity, air pollution..) (Seinfeld and Pandis, 1998, Kesselmeier and Staudt, 1999). BVOCs are important atmospheric constituent of the troposphere. Due to high reactivity they have an important impact on the tropospheric hydroxyl radical (OH) and ozone (Granier et al., 2000; Poisson et al., 2000; Pfister et al., 2008), thus thave a significant influence on the oxidative capacity of the atmosphere (Houweling et al., 1998; Taraborrelli et al., 2012) on regional and global scales.

BVOCs were studied at different locations: Maido Observatory (2160m) with semi-continuous measurement (12 March – 9 April 2015); Tamarins forest; Cryptomeria forest; Primary forest (Belouve) and Mare Longue forest .

BVOCs were sampled on adsorbents cartridges containing 250 mg Tenax TA and analysed later with a gas-chromatography-mass spectrometer. Formaldehyde concentrations were determined at the Maido observatory using an AEROLASER 4021 instrument, based on the so called “Hantzsch“-reaction, and with a 30s resolution.

Isoprene was the most important BVOCs concentration found in the Reunion Island forest, especially from the endemic Tamarins trees, followed by limonene and alpha-pinene. Formaldehyde at the Maido facility show a strong diurnal variation and a maximum concentration during day-time from 1 to 4 ppbv.

The local emission of BVOCs from Reunion Forest and the role of BVOCs as precursors of photooxidants will be discussed.