

Oxygenated Compounds in the Tropical Atmosphere–Variability and Exchanges (OCTAVE) project: Investigating the impact of marine/biogenic sources to OVOCs, halogens, and aerosols in the tropical marine atmosphere

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Oxygenated Volatile Organic Compounds (OVOCs) give significant impact on the atmospheric oxidative capacity and climate. Some OVOCs are abundant especially in marine atmosphere, which serve as key precursors of climatically active secondary organic aerosol (SOA) in the marine boundary layer. Moreover, ocean-derived atmospheric aerosols can affect radiative forcing via formation of cloud droplets and ice nuclei as well as biogeochemical cycle of bioelements. Atmospheric reactions of OVOCs and aerosols are closely linked to those of halogens, emissions of which are significant in the tropical oceans. However, current atmospheric models significantly underestimate the budget of OVOCs as well as SOA especially over tropical oceans. This is primarily due to very poor knowledge of sources and paucity of observations of OVOC/aerosol/halogen in tropical remote regions.

To improve our estimate of global budget of key OVOCs and their role in oxidants and aerosols originated from marine sources, international intensive field measurement campaign is planned to be conducted at the Maïdo observatory (2,200m a.s.l) in Reunion Island in the Indian Ocean. The measurement campaign will be made in March-June 2018, with integrated approach combining in situ/off-line measurements, satellite retrievals, and modelling. During the project, aerosol measurements aim to evaluate the contribution of marine/biogenic sources to submicron organic aerosols under the conditions of marine boundary layer and free troposphere. Detailed scientific research plan and goal of this project will be discussed in this presentation.

Keywords: Marine atmospheric aerosols, OVOCs, Tropical marine atmosphere, Halogen chemistry