
 [JJ] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-CG Complex & General

[A-CG41]Biogeochemical linkages between the ocean and the atmosphere during phytoplankton blooms

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Multi-scale vertical and horizontal ocean mixing processes can strongly influence the distribution of dissolved and suspended substances including macro- and micro-nutrients, and may impact on phytoplankton bloom formation. The changes in nutrient dynamics generally affect the abundance, composition and metabolic activity of marine organisms such as phytoplankton and bacteria during the bloom. Marine phytoplankton can produce volatile organic compounds (VOCs) and marine atmospheric aerosols, which strongly influence on atmospheric chemistry. Primary and secondary organic and inorganic components produced via marine phytoplankton activity can contribute to the Earth's radiative forcing, and in turn marine ecosystems including biogeochemical processes directly or indirectly. Therefore, the biogeochemical cycles have a tight linkage between the ocean and the atmosphere. In order to understand physical, chemical and biological processes relevant to phytoplankton bloom formation in the ocean, dynamics of VOCs and marine aerosols in the atmosphere, and the biogeochemical linkage between the ocean and the atmosphere, we welcome new interdisciplinary presentations and active discussions on physical, chemical, and biological sciences both from ocean and atmospheric fields in this session. Studies linked to the Surface Ocean-Lower Atmosphere Study (SOLAS) project are good examples, but other related studies are also invited.

[ACG41-P04]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.