OBJECTIVES

The OCTAVE project aims to provide an improved assessment of the budget and role of OVOCs in tropical regions, and especially over oceans, relying on an integrated approach combining in situ measurements, satellite retrievals and modelling.

Specific goals are:

- Generate a **2-year dataset** of OVOCs at Maïdo Observatory in Reunion Island using PTR-MS and FTIR instruments
- Identify and quantify **OVOC sources** at Reunion Island, with the help of
  - multivariate statistical analysis,
  - back-trajectory calculations and
  - 3-dimensional modelling
- Generate **improved global distribution** estimates of methanol and other OVOCs using remote sensing data from the IASI sensor
- Determine the impact of OVOCs on the **oxidizing capacity of the atmosphere**

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OCTAVE

Oxygenated Compounds in the Tropical Atmosphere : Variability and Exchanges

Photo: View of the Maïdo Observatory at Reunion Island

octave.aeronomie.be

WHY OCTAVE ?

Oxygenated Volatile Organic Compounds (OVOCs) have a major impact on the oxidative capacity of the atmosphere and on the climate. But, large discrepancies in OVOC budget estimates still exist.

To resolve this issue we have to :

- improve the representation of photochemical OVOC production
- reduce the uncertainties in terrestrial emissions of OVOCs and precursors.
- reduce the uncertainties in ocean/atmosphere exchanges of OVOCs and their precursors

Therefore we need :

- **more OVOC observations**, especially in tropical regions
- **an improved understanding** of OVOC sources and sinks
- a **quantification** of the impact of OVOC
  - on atmospheric oxidants, and
  - on the lifetime of methane
- **to improve atmospheric models**

MORE OBSERVATIONS

PTR-MS

PTR-MS will provide long-term high temporal resolution concentration measurements at ground level.

FTIR

FTIR measurements will provide total columns of many compounds, among which several OVOCs and related species

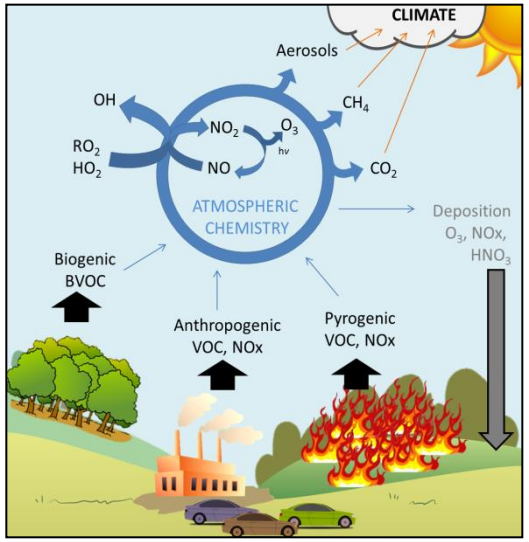
IASI

New methods will be used to retrieve the global distributions of several OVOCs with the IASI sensor for the period 2008-2018.

Others

Independent aircraft, ship-based and ground-based OVOC observations will be collected

MODEL STUDIES



A Bayesian inversion model will be applied on the in-situ measurements to estimate the sources and sinks based on source-receptor relationships calculated by the lagrangian model FLEXPART

The global atmospheric model IMAGES will be used to assess the role and budget of methanol, acetone and acetaldehyde in tropical regions, using all available observations.

An inverse modelling framework based on IMAGES will be used to constrain OVOC sources and sinks, and to obtain an improved global distribution.

Identify OVOC sources

Improve global distribution

Determine oxidizing capacity