

STAGE DE RECHERCHE de MASTER 2^{ème} ANNEE

Master FRS/MPT

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LABORATOIRE : LISA (UMR CNRS 7583- UPEC, Créteil) et LATMOS (UMR CNRS 8190 – Sorbonne Université, Paris)

SUJET DU STAGE : Rivers of smoke seen from space over Austral Africa

COORDONNEES DU RESPONSABLE :

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NATURE DU SUJET :

Théorie	Un peu
Modélisation num.	Un peu
Expérimentation	Pas du tout
Analyse de données	Beaucoup
Instrumentation	Pas du tout

POURSUITE :

Ce stage peut-il donner lieu à un sujet de thèse ?

Oui

SUJET :

Widespread, coherent bands of smoke from forest fires are regularly observed to cross the southern African sub-continent near the end of southern Africa's dry season. Owing to the sharply defined boundaries of the smoke plume, these features are generally referred to as 'rivers of smoke' and can be several hundred kilometers wide and extend over a few thousands of kilometers while flowing off the southeast coast of Africa. Massive amounts of aerosols and gases are then advected towards the southern Indian ocean, with potential important implications for the radiative budget and the marine productivity of the region.

The objectives of the internship are:

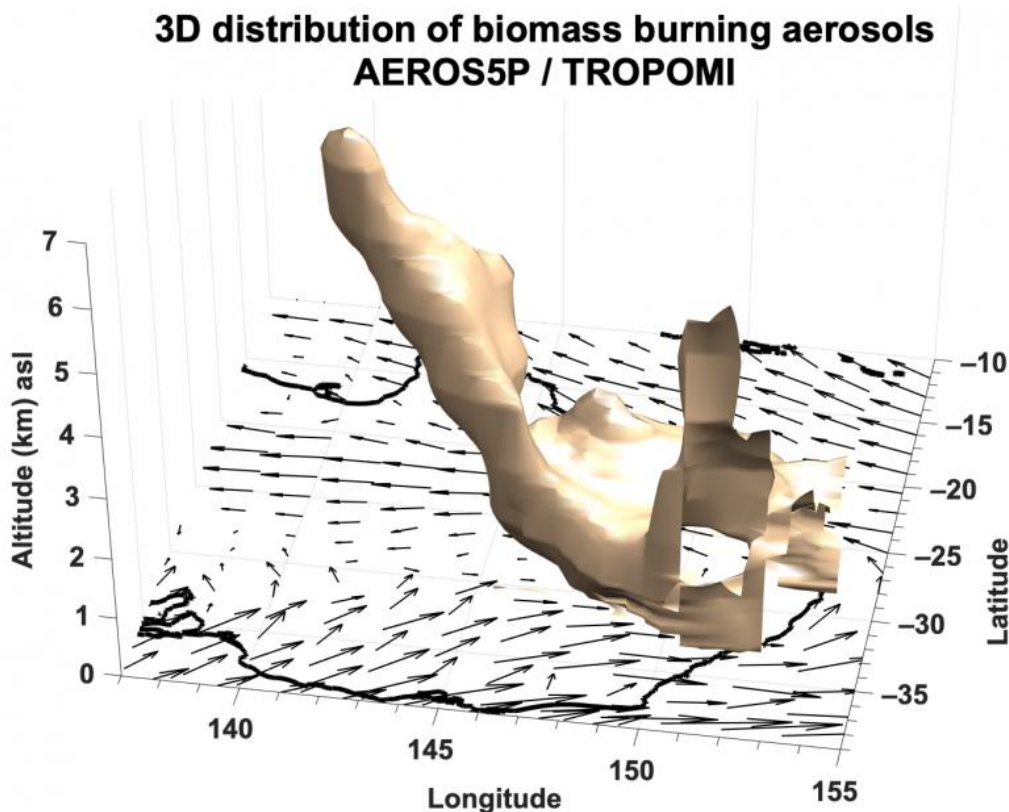
(i) Perform a climatology of river of smoke events based on satellite observations of the 3D distribution of aerosols derived from the new product

developed by LISA called AEROS5P (see figure and INSU web News below) and other aerosol and trace gas satellite products for a period of more than 10 years,

(ii) Identify the main transport paths classified and weather regimes associated with the observed river of smoke events during the 2008-2021 period,

(iii) Assess the representation (timing, location, characteristics) of the river of smoke events as simulated by the chemistry-transport model of the European center (ECMWF CAMS).

(iv) Liaise AEROS5P and other satellite observations over the southwest Indian Ocean with ground-based observations acquired at La Reunion using the suite of in situ and remote sensing instrumentation deployed in the framework of the ACTRIS and NDACC international programs. This part of the study will first be focused on the month of September 2017, during which at three river of smoke events have been sampled in La Réunion, as well as during the AEROCLO-SA (AErosol, RadiatiOn and CLouds in southern Africa) field campaign conducted over Namibia during that month.



<https://www.insu.cnrs.fr/fr/cnrsinfo/une-nouvelle-cartographie-tridimensionnelle-des-panaches-de-feux-de-foret>