



Stage de recherche au LACy **Laboratoire de l'Atmosphère et des Cyclones**

UMR8105 - Université de La Réunion, 97490 Saint-Denis de La Réunion

Titre du stage :

**A climatology of wildfires in the southern hemisphere:
contribution to the aerosol load in Reunion Island**

Nom et statut du responsable de stage :

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Description du stage :

Scientific context.

At the scale of the planet, the Indian Ocean region is a rather clean area, often assumed to have a quasi-pristine atmosphere during certain periods of the year (Duflot et al., 2011). In this region, Duflot et al. (2022) demonstrated that one aerosol type, namely biomass burning, was responsible for two thirds of the aerosol optical depth (AOD) variability, and that, over all aerosol classes, the AOD in Reunion Island in the South West Indian Ocean (SWIO) had an increasing trend of +0.02 per decade. The main aerosol type responsible of that increase is yet to be investigated. The SWIO is also a crossroad of biomass burning aerosol transport from African, South American and Australian wildfire origin (Bègue et al., 2021; Duflot et al., 2022). Recently, and probably linked to the expansion of global drylands under a warming climate, unprecedentedly strong extreme bushfires have occurred in the Southern hemisphere (Khaykin et al., 2020; Bègue et al., 2021).

Objectives.

- Mapping the occurrence, power, burnt matter, flaming phase, location and life time of all wildfires in the southern hemisphere, and those reaching Reunion Island
- Possibly duplicate this work for the northern hemisphere

Methodology/Tools.

- Review and inter-comparison of FIRMS, GFED and GFAS database
- Use of the database selected, or a combination of them
- Use of FLEXPART v10.4 (modeling products for ACTRIS user)

Outputs.

- Quantify the occurrence, power, burnt matter, flaming phase, location and life time of all wildfires in Reunion Island
- Climatology; trends (if dataset is large enough)
- Contribution to the tropospheric aerosol load in Reunion Island