Université de Guyane

POST-DOC POSITION

Remote Sensing of Urban Heat Islands on Guyana Field

Réf ABG-95295

CDD 12 Mois
Salaire > 25 et < 35 K€ brut annuel
Employeur : Université de Guyane
Lieu de travail : Cayenne - Territoires d'Outre-Mer - France
Champ scientifique principal : Informatique, Télédétection
Champs scientifiques secondaires : Sciences de l'ingénieur, Terre, univers, espace
Mots clés : Urban Heat Island, Satellite data
Date limite de candidature : 30/02/2021
Fonction : Recherche et Développement

Employer
UMR ESPACE-DEV is a joint research unit that develops and implements cutting edge technologies for environment and remote sensing. UMR ESPACE-DEV research have several teams located in French Guiana, Martinique, Montpellier, and Reunion Island. UMR ESPACE-DEV research promotes sustainable development for territories. French Guiana research team has developed an expertise for solar energy assessment using satellite images and forecasts using numerical weather prediction method and data assimilation methods.

Site web :
http://www.espace-dev.fr, https://www.univ-guyane.fr

Context
South America is one of the areas most vulnerable to the impacts of climate change, and in particular its northern Amazonian part - the Guyana Field- due to its high level of poverty. It appears necessary to conduct research on urban heat islands (UHI) in these neglected areas due to their high urbanization potential and their sensitivity to climate change. For this reason UMR ESPACE-DEV is involved in a research project entitled PERICLIM.

Job description:
The objective of the PERICLIM project is to create a satellite image processing chain in order to produce UHI data maps at a high temporal (15 min to 1 hour) and spatial (30m to 1000m) scale. The data produced will be analyzed in order to identify the parameters or descriptors that influence variations of UHIs in urban areas of the Guyana Field.
As part of the PERICLIM project supported by the UMR, the candidate will be in charge of the following missions:

- Acquire UHI information of urban areas of the Guyana Field from Landsat Modis Aster and GOES 16 satellites
- Produce UHI data at high spatial and temporal resolution on two urban areas of the Guyana Field by merging the data obtained with the different satellites
- Identify the parameters / descriptors that influence the variations of UHIs in these two urban areas.
- Make the developed methodology operational-ready
- lead the dissemination of project results via journal publications, conference presentations, media presentations, etc.

Proposed method: The territory will be partitioned according to its climatic characteristics using parameters relating to urban morphology and land use (eg LCZ Local Climate zones) This LCZ classification will establish a reference system for the selection of urban areas for the calculation of the intensity of UHI. The intensity of UHIs will be estimated by the surface temperature difference (LST) between the urban and surrounding reference areas. Land Surface Temperatures (LST) will be obtained from the data

Note : the plane ticket to come to French Guyana will be paid by the employer

Start of the mission: 01/03/2021

Profil

The successful candidate will have:

- **Successfully completed PhD or Engineering degree in Atmospheric science or computational science**
- **Strong programming skills**
- **A knowledge of satellite images and tools for downloading, processing and analyzing this type of image would be highly appreciated**

Objectives

The main steps are:

Bibliographic survey : A bibliographic survey will be performed on existing methods for detecting IHU
Study : Carrying out maps of the UHIs of the two main towns of the Guyana Field, starting with Cayenne and St Laurent, at high temporal resolution (15mn to 1H) and at high spatial resolution. Specification of the main descriptors responsible for the spatial and temporal variation of urban heat islands
Report writing : A report will be written describing the methodology and the results.

Application

Send CV and letter of application by mail : laurent.linguet@univ-guyane.fr