

Research engineer at CNRM (Météo-France/CNRS) for the production and the analysis of satellite climate data records of Essential Climate Variables

Application deadline: July 1st 2018

Duration of contract: 12 months (up to 36 months subject to performance)

Start: September-November 2018

Context:

Surface albedo has been defined as an Essential Climate Variable (ECV) due to its impact on climate and its role as indicator of environmental degradation. For example, changes of land cover may modify the albedo of the surface (aka, the quantity of energy reflected back to space), thus altering the energy balance of our planet. Albedo varies in space and time as a result of natural processes (snowfall, vegetation growth, etc.) and human activities (forest clearing, crop sowing/harvesting, etc.). Remote sensing from space offers the only viable tool of measuring and monitoring the global heterogeneity of the albedo of the Earth's surface.

The Copernicus program of the European Commission (<http://www.copernicus.eu/>) provides reliable and up-to-date information on how our planet and its climate are changing to help decision makers to define environmental policies and decide mitigation actions. In 2018 the first long term time series (called Climate Data Record, CDR) of satellite surface albedo will be made available thanks to the CNRM in the framework of the Copernicus Climate Change Service (C3S). In the next 4-year phase of C3S the CNRM will prepare the second collection of satellite albedo CDRs.

The objective of the open position is to take in charge the evolution of the existing scientific algorithms in C3S for the retrieval of surface albedo from different sensors (AVHRR, SPOT/VGT, PROBA-V and Sentinel-3). The candidate will improve them up to state-of-art research and will prepare the second collection of albedo CDR. The candidate will also take advantage of existing complementary sensors to propose a multi-sensor albedo product. The candidate will analyze the inconsistencies between albedo and other satellite ECVs. One key objective will consist in the detection of potential trends in the time series and in the quantification of the impact on climate.

The successful candidate will join the remote sensing team of the CNRM, which is the Météo-France research laboratory and contributes to the observation of land surfaces at the continental scale through spaceborne remote sensing techniques. Today the remote sensing team is composed of 6-7 people working on the retrieval of radiative properties of the Earth's surface and the overlaying atmospheric aerosols in the visible and near infrared domains.

Required skills:

The candidate must hold a PhD in optical remote sensing (or related field) with skills in various domains:

- Experience with processing great volumes of data, such as 10000x10000-pixel images, is required.
- Knowledge on radiative transfer and retrieval of biophysical properties from satellite are needed. Experience in the field of remote sensing in the visible and near infrared domains will be highly appreciated. Solid background in physics, mathematics and statistics will also help.
- Preferred programming languages are python and Fortran. Knowledge of appropriate [python packages](#) will be [appreciated](#), as well as HDF5 and NetCDF file formats. A minimal proficiency in linux is required.
- A good level of English is necessary for reading and writing technical and project documentation, as well as to participate to teleconferences within the C3S consortium.

According to her/his abilities and interests, the candidate will also have the opportunity to participate in the research activities of the team and publicate his/her findings in scientific articles.

Practical aspects:

The candidate will be based at the CNRM laboratory in Toulouse. Toulouse is a vibrant city that is recognized world-wide for its space research institutes and space industry. The net monthly salary will be between 2600 and 3200 euros commensurate with experience. The net salary includes French social security.

Application procedure:

Interested candidates should send the following documents by e-mail to Drs D. Carrer and X. Ceamanos (dominique.carrer@meteo.fr, xavier.ceamanos@meteo.fr):

- Resume detailing experience in research, technical skills, scientific publications and proceedings
- A sample of research publication or communication
- Motivation letter explaining research interests and motivation for the job
- The names and contact details of two referees