Research engineer position on remote sensing of land surface variables

Where: CNRM laboratory (Météo-France/CNRS), Toulouse, France
Application deadline: January 31st, 2020 (the final candidate could be selected before this date)
Duration of contract: 12 months (renewable subject to performance)
Tentative start: April 2020

Context:
Surface albedo (the ratio of reflected to incoming solar radiation) was defined as an Essential Climate Variable due to its impact on climate of the Earth. Changes of land cover may modify the albedo of the surface, thus altering the energy balance of our planet. Surface albedo varies in space and time as a result of natural processes (snowfall, vegetation growth) and human activities (deforestation, agriculture). Remote sensing from space offers an unique tool to measure and monitor the variations of the albedo of the Earth's surface.

The CNRM laboratory of Météo-France has been working on the remote sensing of land surface albedo in the visible and near infrared for 20 years. This work has been done in the framework of projects funded by spatial agencies and European programs. For example, the CNRM participates since 1999 in the LSA-SAF program (http://lsa-saf.eumetsat.int/), which aims to provide reliable information on the geophysical variables of land surfaces using EUMETSAT satellites. In particular, the CNRM is responsible of the research, development, and validation activities related to the estimation land surface albedo and incoming solar radiation based on different satellites (e.g. MSG, Metop, MTG-I, Metop-SG, etc.). The CNRM also participates in the Copernicus C3S-312b project (https://climate.copernicus.eu/) with the goal of providing consistent time series of surface albedo maps from the 80's until now using past and current satellites (NOAA/AVHRR, SPOT-VGT, PROBA-V). The satellite-derived information provided through the LSA SAF and C3S programs are used by the scientific community to help decision makers in the definition of environmental policies.

Objective:
With the upcoming arrival of the next generation of satellites, the CNRM is looking for a brilliant and motivated research engineer to take in charge the evolutions of the existing scientific algorithms for the retrieval of surface albedo and incoming radiation. The successful candidate will implement the latest scientific improvements and will adapt the algorithms for different spaceborne sensors. He/she will actively participate in the teleconferences with the other members of the project consortia. This position includes the participation into the review processes that are undergone to declare a satellite product operational, including the writing of technical documentation. The research engineer may also contribute to the analysis of the archives of satellite products to detect potential trends and to quantify the impact on climate. All this work will be done in collaboration with the team of 6-7 engineers and scientists working on the observation of land surfaces of the Earth through spaceborne remote sensing.

Required skills:
The desired research engineer should have a good knowledge on quantitative remote sensing and good programming skills for the processing of large volumes of data. Preferred programming languages are python and Fortran. Knowledge of HDF5 and NetCDF file formats is highly desired. A good proficiency in Linux command shell and software version tracking is required. The desired candidate should hold a degree in computer sciences, electrical engineering, physics, mathematics, or similar. The holding of a PhD related to environmental remote sensing is a plus. A good level of English is mandatory for reading and writing technical documents, as well as to participate to teleconferences.

Practical aspects:
The candidate will be based at the CNRM laboratory. Toulouse is a vibrant city that is recognized world-wide for its aerospace industry and research centers. The gross monthly salary will be between 3280 and 3890 euros commensurate with experience. This includes French social security.

Application procedure:
Candidates should send the following documents to dominique.carrer@meteo.fr:
- Resume detailing relevant experience, technical skills, and scientific publications (if any).
- Motivation letter explaining motivations for the job.
- The names and contact details of two referees.