

Postdoctoral Fellowship, Research Physical Scientist at Météo France

Measuring soil and vegetation albedo from MSG/SEVIRI as a proxy for soil humidity and low chlorophyll content. Preparation to the transition with MTG-I.

The open position is to work on Meteosat Second Generation (MSG) programme in joining the Consortium of Land Surface Analysis Satellite Application Facility (LSA SAF) programme of EUMETSAT and hosted by IPMA (Portugal). The overall objective is to devise a dynamic method that will lead to a separation between the bare soil albedo and the vegetation albedo as it is relevant for a number of applications in meteorology. Such separation between soil and vegetation albedo will rely on the fractional vegetation cover and Leaf Area Index (LAI). So far, a method has been developed to treat long-term series of MODIS broadband surface albedo products for the whole globe. The proposed task here will be to work on an operational adaptation of this method to the spectral and broadband (VIS, NIR and SWIR) bands of the geostationary satellite system MSG/SEVIRI. The asset for working with SEVIRI sensor is that several observations can be acquired on the same day (limited to Europe and Africa) from which a daily surface albedo can be derived. The short-term variations of the snow-free surface albedo driven by humidity are more conspicuous than for polar systems. The estimate of soil humidity is particularly meaningful during the soil field capacity period and at the onset of vegetation (natural or crops). Proper determination of soil albedo yields a preamble to further extract the vegetation albedo than may become a proxy for low chlorophyll contents in the case of SEVIRI. This information is found useful during the onset and decay of the vegetation in support to the simulated vegetation cycle.

The candidate will benefit from a recent improved correction of aerosol on SEVIRI signal. Further, an adaptation of the MSG surface albedo algorithm will need to be achieved for the forthcoming MTG-I satellite. This latter to be launched in 2019 will have for passenger FCI (Flexible Combined Imager) which proposes a set of spectral bands close to MODIS with also 1km resolution. Actually, the Japanese geostationary satellite HIMAWARI-8 now operational has characteristics close to MTG-I. Data from HIMAWARI-8 will be considered to prototype the algorithm for MTG-I.

The candidate will collaborate on the impact assessment of soil and vegetation albedos in the SURFEX modelling platform through the water and carbon fluxes. Sensitivity analysis will be in parallel conducted to appraise the expected accuracy on the seasonal soil and vegetation albedos. The validation will carry on the phenology and inter-annual variability of soil and vegetation albedo products since the operations of SEVIRI in 2006.

The candidate will be based at Centre National de Recherches Météorologiques (Toulouse, France). She/he should have a good knowledge of the language programming (Fortran, C, C++, PYTHON) and should have notions of graphic software (PVWave, IDL, Matlab). It is required to have an excellent background in remote sensing science, aerosol radiative transfer, and some basic knowledge in meteorology.

The position is opening for post-doctoral. Researchers that intend to expand their scientific background in order to further postulate to French national competitions are encouraged to apply. A selection of the candidatures is performed as they are received. It must be foreseen travels in order to attend meetings and workshops, also to participate to international conferences.

The open position is to start by February 1st 2016. Application should be done by email by sending a resume with the list of publications, a letter of motivation, and at least two letters of reference.

The net monthly salary will vary between 2,500€ and 3,000€, depending on qualification. A one year contract is proposed, with a possible renewal for two more years. This salary is before income tax and includes health insurance.

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