



## Centre d'Etude en Météorologie Satellitaire (CEMS)

CNRM/UMR 3589 Météo-France/CNRS  
Avenue de Lorraine – B.P. 50747 – 22307  
LANNION Cedex - France

# Research engineer in fast radiative transfer modelling for Numerical Weather Prediction

**Subject:** 12-month renewable contract in applied satellite meteorology (W/M)

Starting date **April 1<sup>st</sup>, 2022**; funded by Eumetsat - NWPSAF

**Area of expertise:** Atmospheric sciences, Meteorology, Remote sensing

**Context:** In the framework of the NWP SAF project (Satellite Application Facilities for Numerical Weather Prediction), funded by Eumetsat, the CEMS participates in the development of the RTTOV fast radiative transfer model within a consortium led by the Met Office and composed of ECMWF, Météo France and the DWD. To date, it is the code of reference used by most National Meteorological Services for assimilating satellite data into their numerical weather prediction models.

In order to meet the computational constraints related to the large amount of satellite data to be assimilated, RTTOV is based on a parameterization of the atmospheric transmittance which depends on the spectral characteristics of the considered radiometric instruments. The CEMS "Sounding" team is in charge of generating the coefficients of this parameterization for all the instruments ranging from the ultraviolet to the far infrared. The processing chain of these coefficients is based on databases of atmospheric profiles (temperature, gas concentration ...), a line-by-line radiative transfer code (LBLRTM), a module for the estimation of the coefficients and several validation modules. This chain is the result of several decades of work and includes codes in Fortran, Python, Perl and Shell scripts. The recruited candidate will be in charge of the rationalization of the processing chain in order to make it more efficient and more versatile. In particular, it will allow changes in the processing chain for specific research applications. Finally, the candidate will have to deploy the chain on the HPC infrastructure of Météo France.

**Workplace:** The candidate will be assigned to the "Sounding" team of the Centre d'Etude en Météorologie Satellitaire (CEMS) attached to the Centre National de Recherche Météorologique (CNRM-UMR 3589 Météo-France / CNRS). The work will be done at the Centre de Météorologie Spatiale at Lannion (22, Côtes d'Armor).

**Duration :** 1 year renewable.

**Main duties and key responsibilities:** Under the supervision of the team leader and in close collaboration with other team members, the candidate will be in charge of the following tasks:

- Getting familiar with the current processing chain,
- Define a strategy to streamline this chain,
- Development of the chain on the CEMS computing servers,

### Météo-France

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- Validation of the chain,
- Deployment on the HPC infrastructure,
- Writing the documentation,
- Depending on the candidate's interests: participation in the scientific activities of the team related to RTTOV (machine learning, inversion, ...)

These tasks will be carried out in a context of European collaboration. Interactions with other organizations, including those that make up the consortium, will be required.

**Qualifications and experience required:** The candidate should hold a Master's degree in a scientific field (Mathematics, Computer Science, Physics, ...). Additional experiences in a field related to atmospheric sciences or geophysics would be appreciated. The candidate will master computer languages (Fortran, Shell script, Python, Perl,...) as well as the interpretation of data in different format (ASCII, NetCDF, HDF). The candidate will master the usual office software (word processing, presentation). The candidate will be fluent in English (read, spoken and written).

**Personal attributes:** The candidate will have to demonstrate scientific curiosity, autonomy, team spirit, responsiveness, analytical skills and rigor in the interpretation of results and their formatting. He will have to be able to report his activity to the project team. In this context, some trips to Europe are planned.

**Salary:** The gross monthly salary is between € 3280 and € 3890 depends on experiences.

**How to apply:** Applications must be sent by e-mail only by **January 31, 2022** to [jerome.vidot@meteo.fr](mailto:jerome.vidot@meteo.fr) and [jean-marie.lalande@meteo.fr](mailto:jean-marie.lalande@meteo.fr). They must contain a CV (including professional experience, computer skills and languages spoken), a letter of motivation for the position offered and preferably the contacts of two referees.

Any questions or requests for additional informations can be addressed to the two aforementioned e-mail addresses.