Post-doctoral contract at CNRM (UMR 3589 – METEO-FRANCE, CNRS)

Applications are invited for one 12 month post starting in the 2nd quarter of 2018, at within the National de Recherches Météorologiques (CNRM: http://www.umr-cnrm.fr/) , Météo-France within the Mesoscale Modeling Group (Groupe de Météorologie de Moyenne Echelle: GMME) in Toulouse, France, to work on the following subject :

Evaluation of a data assimilation strategy for large scale hydrological applications in preparation for the joint CNES-NASA Surface Water Ocean Topography (SWOT) satellite mission.

The Surface Water and Ocean Topography (SWOT) mission is a swath mapping radar interferometer that will provide global measurements of water surface elevation (WSE). One of the objectives of the CNES-NASA sponsored SWOT mission is to develop the capability to produce estimates of storage change for lakes and discharge for observable rivers and wetland fluxes over the entire globe. Such information would go a long way in improving understanding of the role of the spatio-temporal variability of these different components within the global water cycle. This study focuses on using a recently developed data assimilation methodology which consists in assimilating current or future satellite-based discharge product in order to improve estimates of river storage and discharge. The method has been tested for the Amazon basin, and the goal in this study is to extend the methods to several other large scale contrasting (climate, geomorphology) basins, with a possible eventual application at the global scale. Several candidate basins are the Mississippi, the Congo, and the Niger. We also wish to study a Southeastern Asian and a high latitude (Arctic) basin. An important aspect of this work is to investigate the construction of background estimate ensembles (the associated covariance matrix. The CTRIP river routing and storage model within the Externalized surface (SURFEX) platform will be used for this study. CNRM develops SURFEX, which is an operational modelling platform able to simulate the terrestrial water and carbon fluxes. SURFEX is coupled to a number of atmospheric and hydrological models. The experiments using SURFEX will be performed using the high-performance computing resources at Météo-France.

The gross monthly salary will vary from about 2070 € to 2200 € depending on qualifications. A PhD in mathematics, geophysics, engineering or a related field is required.

Application should be done by email by sending a resume, a cover letter, and the names, telephone and email address of two referees to:

aaron.a.boone@gmail.com

The closing date for applications is 13 April, **2018**.

The candidates should have knowledge of data assimilation methods, and hydrological or hydrodyanmic modeling. They should be familiar with programming data analysis in the FORTRAN programming language, with the Linux environment.

Funding source: TOSCA (CNES) as a part of the SWOT project.