

## Postdoc position

One postdoc position (1 year) is available at the Mathematics research institute of Rennes (IRMAR), Université de Rennes. The position is open preferably from 1st of Jan. 2017 (and no later than 1st of March 2017). We seek a Postdoctoral researcher with experience relevant to spatial statistics and environmental sciences.

The Postdoc will be part of an ERANET MED project. The general goal of the project is to develop an Internet-based, multi-parametric electronic platform for optimum design of desalination plants, supplied by Renewable Energy Sources (RES). The project was submitted in collaboration with greek and tunisian partners.

The french team (Rennes, Avignon, Brest), and in particular the postdoc, will develop a multivariate weather generator for times series of wind, waves and solar radiation. The generated data will be used to precisely estimate and/or simulate the spatial distribution of the energy potential of RES over a given area, thus leading to an efficient selection of the location where the desalination facility will be installed.

Stochastic Weather Generators (SWG) are statistical simulators that produce daily time series of Met-Ocean variables with statistical properties identical to those of the observed ones, including space-time dependence, temporal persistence and the dependence structure among the variables (Ailliot et al., 2015). Multivariate SWGs have already been developed by the team members for wind data (Ailliot et al, 2015), precipitation (Allard and Bourotte, 2015) and multivariate data (Flecher et al., 2010).

The postdoc will work on new developments which are needed because of the following points.

1. The variables under study are the wind, the wave fields and the solar radiation. There exists no SWG for this set of variables.
2. Data will be collected in collaboration with Ifremer, they will combine model outputs, in situ observations and satellite data. Multisource data will be used to calibrate the model.
3. In most cases, no historical data will be available exactly at the considered location, and the model will have to be inferred given data in the neighborhood. Traditionally, the SWG are learned from data at the considered location.

Applicants should have a PhD in applied statistics, preferable experience with meteorological data. Applications will be studied according to their arrival. The salary is about 2800 euros/month. Applications are due before 30th of october.

For further information contact Pierre Ailliot ([pierre.ailliot@univ-brest.fr](mailto:pierre.ailliot@univ-brest.fr)), Denis Allard ([allard@avignon.inra.fr](mailto:allard@avignon.inra.fr)) or Valérie Monbet ([valerie.monbet@univ-rennes1.fr](mailto:valerie.monbet@univ-rennes1.fr)). Further information on the Department is linked at <http://www.irmar.univ-rennes1.fr>.

Ailliot, P., Allard, D., Monbet, V., Naveau, P. (2015) Stochastic weather generators : an overview of weather type models. *Journal de la SFdS*, 156 (1)

Ailliot, P., Bessac, J., Monbet, V., Pene, F. (2015) Non-homogeneous hidden Markov-switching models for wind time series. *Journal of Statistical Planning and Inference*, 160, 75-88.

Allard, D., Bourotte, M. (2015) Disaggregating daily precipitations into hourly values with a transformed censored latent Gaussian process. *Stochastic Environmental Research and Risk Assessment*, 29(2), 453-462.

Bourotte M., Allard, D., Porcu, E. (2016) A Flexible Class of Non-separable Cross-Covariance Functions for Multivariate Space-Time Data, *Spatial Statistics*, 10.1016/j.jspasta.2016.02.004. ArXiv 1510.07840

Flecher, C., Naveau, P., Allard, D., Brisson, N. (2010) A Stochastic Daily Weather Generator for Skewed Data, *Water Resource Research*, 46, W07519.

