



financed by
IDEX Université Grenoble Alpes



Trajectories
Univ. Grenoble Alpes

Postdoctoral fellowship at IGE High resolution simulation of the Alpine Climate between 1850 and 2050

Location: IGE, Grenoble, France: <http://www.ige-grenoble.fr/?lang=en>

Project references: Trajectories (<https://trajectories.univ-grenoble-alpes.fr/>)

Researcher profile: Postdoc, recognized researcher (PhD holder not yet fully independent) or established researcher (researcher who have developed a level of independence)

Title: High resolution simulation of the Alpine Climate between 1850 and 2050

Description:

The aim of the proposed postdoctoral work of 1 year (renewable one year) is to investigate the Alpine Climate variability, in particular in future projections until 2050. The applicant will perform (i) a dynamical downscaling of the Alpine climate between 1850 and 2050 using the regional climate model (RCM) MAR (<http://mar.cnrs.fr/>; Brasseur et al., 2001; Ménégoz et al., 2013; Wyard et al., 2016; Belleflamme et al., 2017) at an horizontal resolution of 7 km; (ii) an adjustment of the climate data generated with the RCM in order to mitigate simulations biases.

Under the Trajectories initiative (<https://trajectories.univ-grenoble-alpes.fr/>), a MAR simulation forced by centennial reanalysis data (ERA20C) is currently prepared. The applicant will extend these simulations in historical simulations and future projections using as boundary conditions global climate outputs under different greenhouses gases scenarios. The climate data will be adjusted with the ADAMONT method (Verfaillie et al., 2017), that has already been applied to produce local projections of meteorological and snow conditions based on EUROCORDEX projections (Verfaillie et al., 2018). The applicant will contribute to the management of the climate data produced with these different approaches and closely interact with scientific partners of the Trajectories project in various fields, for which dedicated added-value products must be prepared and processed (tourism, ecosystems, glaciers, etc.) in a collaborative and trans-disciplinary manner. The applicant will be involved in the writing of scientific articles devoted to the variability of the atmosphere and the surface conditions, and more generally to the understanding of current and future socio-environmental changes in the Alps.

The work will be carried out at IGE Grenoble (IGE, 54 rue Molière, BP 96, F-38402 St-Martin d'Hères CEDEX, <http://www.ige-grenoble.fr/>) in close collaboration with the Snow Research Center, also on campus (<https://www.umr-cnrm.fr/spip.php?rubrique85>) The work will be carried out under the guidance of Martin Ménégoz at IGE and Samuel Morin at CEN.

Type of contract: temporary, one year, renewable one year. Salary depending on experience.

Job status: Full Time; hours per week: 35; **starting the 15th of October 2018.**

Required languages: English, French



financed by
IDEX Université Grenoble Alpes



Trajectories
Univ. Grenoble Alpes

Eligibility Criteria:

Applicants:

- must hold a PhD degree in climate/environmental science or equivalent (or be about to earn one) or have a university degree equivalent to a European PhD (8-year duration).
- must have programming skill (Bash, Fortran, python, R) and ideally experience in using climate models.

Selection procedure:

Applicants have to send their CV and a cover letter (either in English or in French) to Martin Ménégoz (martin.menegoz@univ-grenoble-alpes.fr). Letters of recommendation are welcome.

Application deadline: **3 September 2018 at midnight (CET)**

Applications will be evaluated through a two-step process:

1. 1st round of selection: the applications will be evaluated by a review board between the 3 and the 5 September 2018.
2. 2nd round of selection: shortlisted candidates will be invited for an interview session in Grenoble between the 15 and the 30 September 2018.

Institution: Univ. Grenoble Alpes, University of Innovation

One of the major research-intensive French universities, Univ. Grenoble Alpes enjoys an international reputation in many scientific fields, as confirmed by international rankings. It benefits from the implementation of major European instruments (ESRF, ILL, EMBL, IRAM, EMFL*) and is associated with the CNRS (<http://www.cnrs.fr/index.html>). The dynamic ecosystem, grounded on a close interaction between research, education and companies, has earned Grenoble to be ranked as the 5th most innovative city in the world. Surrounded by mountains, the campus benefits from a natural environment and a high quality of life and work environment. With 7000 foreign students and the annual visit of more than 8000 researchers from all over the world, Univ. Grenoble Alps is an internationally engaged university. A personalized Welcome Center for international students, PhDs and researchers facilitates your arrival and installation. In 2016, Univ. Grenoble Alpes was labeled "Initiative of Excellence". This label aims at the emergence of around ten French world class research universities. By joining Univ. Grenoble Alpes, you have the opportunity to conduct world-class research, and to contribute to the social and economic challenges of the 21st century ("sustainable planet and society", "health, well-being and technology", "understanding and supporting innovation: culture, technology, organizations" "Digital technology").

**ESRF (European Synchrotron Radiation Facility), ILL (Institut Laue-Langevin), IRAM (International Institute for Radio Astronomy), EMBL (European Molecular Biology Laboratory), EMFL (European Magnetic Field Laboratory)*



financed by
IDEX Université Grenoble Alpes



Trajectories
Univ. Grenoble Alpes

Key figures of Univ. Grenoble Alpes:

- + 50,000 students including 7,000 international students
- 3,700 PhD students, 45% international
- 5,500 faculty members
- 180 different nationalities
- 1st city in France where it feels good to study and 5th city where it feels good to work
- ISSO: International Students & Scholars Office affiliated to EURAXESS

References:

Belleflamme, A., Wyard, C., Doutreloup, S., Fettweis, X. and Erpicum, M., 2017. Évolution de l'enneigement moyen dans les Alpes au cours du 20e siècle à l'aide du modèle atmosphérique régional MAR. In Actes du XXXème colloque de l'Association Internationale de Climatologie-Climat, ville et environnement.

Brasseur O., Gallée H., J.-D. Creutin, T. Lebel and P. Marbaix, 2001. High resolution simulation of precipitation over the Alps with the perspective of coupling to hydrological models. *Advance in Global Change Research*, 10 (M. Beniston, Ed.), pp.75-100.

Ménégoz, M., Gallée, H., and Jacobi, H. W., 2013: Precipitation and snow cover in the Himalaya: from reanalysis to regional climate simulations, *Hydrol. Earth Syst. Sci.*, 17, 3921-3936, doi:10.5194/hess-17-3921-2013.

Verfaillie, D., M. Lafaysse, M. Déqué, N. Eckert, Y. Lejeune, and S. Morin, 2018 : Multi-component ensembles of future meteorological and natural snow conditions for 1500 m altitude in the Chartreuse mountain range, Northern French Alps, *The Cryosphere*, 12, 1249-1271, doi : 10.5194/tc-12-1249-2018.

Verfaillie, D., M. Déqué, S. Morin, and M. Lafaysse, 2017 : The method ADAMONT v1.0 for statistical adjustment of climate projections applicable to energy balance land surface models, *Geoscientific Model Development*, 10, 4257-4283. doi : 10.5194/gmd-10-4257-2017.

Wyard, C., Scholzen, C., Fettweis, X., Van Campenhout, J., François, L., 2016. Decrease in climatic conditions favouring floods in the south-east of Belgium over 1959-2010 using the regional climate model MAR. *nt. J. Climatol.* doi:10.1002/joc.4879