Grenoble INP - UGA is a renowned public institution of higher education and research, and a major player in the Grenoble ecosystem. It is the engineering and management institute of Grenoble Alpes University, and plays a leading role in the scientific and industrial community.

Researcher in Applied statistics

<table>
<thead>
<tr>
<th>Ad job reference</th>
<th>2023-RESEARCHAPPSTAT-IGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research field</td>
<td>Applied statistics, hydrometeorology</td>
</tr>
<tr>
<td>Host laboratory</td>
<td>IGE (UMR 5001 Grenoble INP – UGA, UGA and CNRS) / Website: <a href="https://www.ige-grenoble.fr/">https://www.ige-grenoble.fr/</a></td>
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<tr>
<td>Requested profile</td>
<td>First stage researcher (R1)</td>
</tr>
<tr>
<td>Location</td>
<td>Grenoble, France</td>
</tr>
<tr>
<td>Date of recruitment / contract term</td>
<td>01/02/2024 (6 months)</td>
</tr>
<tr>
<td>Contacts</td>
<td><a href="mailto:Juliette.blanchet@univ-grenoble-alpes.fr">Juliette.blanchet@univ-grenoble-alpes.fr</a>, <a href="mailto:anne-catherine.favre@univ-grenoble-alpes.fr">anne-catherine.favre@univ-grenoble-alpes.fr</a></td>
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Grenoble INP - UGA is an equal opportunity employer committed to sustainability. Grenoble INP-UGA celebrates diversity and equity and is committed to creating an inclusive environment for all employees. All qualified applications will be considered without discrimination of any kind.
The recruited person will work as part of the IGE's HMCIS team, reporting both to Juliette BLANCHET and Anne-Catherine FAVRE.

**Job description:**

In the Alpine region, precipitation is one of the most important climate variables. It is valuable for water supply and energy production through dams. It plays a crucial role in droughts and floods. Quantifying past and future precipitation changes due to climate change is important but still very difficult, particularly for the extremes whose observations are by nature seldom and highly variable.

Trend in extremes are usually estimated based on either annual maxima series or exceedances above a large threshold following Extreme Value Theory (EVT). However this is an inefficient use of data since these methods account for a very minute fraction of the whole data. Another major drawback is the inability to model the bulk of the distribution. Modeling the whole range of precipitation has applications in water resources management for urban water supplies, hydropower, flood forecasts, and irrigation systems.

Within the framework of modeling the whole range of precipitation, the Extended Generalized Pareto distribution (EGPD, Naveau et al 2016) appears particularly interesting because it allows modeling the full range of non-zero precipitation while being compliant to Extreme Value Theory (EVT) in both the lower and upper tails, unlike other common distributions such as the Gamma. The EGPD has been used to model precipitation in different regions, however always in a stationary framework.

The objective of this research project will be to propose a non-stationary version of the EGPD by allowing its parameters to be parametric functions of time or to introduce explanatory variables, and to evaluate its capacity in modeling trends in both the bulk of the distribution and the extremes. This framework will be applied to rain gauge data in Switzerland (about 500 stations with variable length varying from 20 years to a maximum of about 150 years).

Reference:


**Specific requirements or conditions**

Proficiency in both English and French is required. In addition, international experience will be a decisive asset. Proficiency in the R language is required, expertise in Extreme Value Theory (EVT) will be an asset.

PhD needed.

**Specifics of the position**

The research may be led on the campus of Saint-Martin-d'Hères, though according to our existing partnerships, long-term international stays are expected.

**Position assigned to a restricted area: NO**

(Device for the protection of the scientific and technical potential of the nation, conditioning the appointment of the researcher to the authorization of the Defense Security Officer).

**How to apply**

Applications (CV + cover letter) must be sent to:

juliette.blanchet@univ-grenoble-alpes.fr and anne-catherine.favre@univ-grenoble-alpes.fr
Application deadline: 01/10/2023