Fixed term research position to work on understanding the risk of extreme river floods using the UNSEEN approach.

The Institute of Atmospheric Sciences and Climate of the National Research Council of Italy (CNR-ISAC) is looking for a motivated and talented research scientist to work on a 12-month position (*ricercatore a tempo determinato*) on developing new strategies to evaluate the impact of climate change on the risks associated with extreme river floods with very long return periods (https://www.urp.cnr.it/node/9625). The research activity is part of the Italian-funded TRANSLATE project (climaTe Risk informAtion from eNSembLe weAther and climaTe prEdictions), which involves a collaboration between CNR and researchers from the department of Physics at the University of Bologna.

Understanding the present-day and future risks arising from floods associated with high return periods (>100 years), is hindered by the difficulties in properly sampling and quantifying such extreme events in the observational records. Recent research has shown that substantial benefits may be gained by inflating the observational data with high resolution ensemble weather and climate forecasts data. The forecasts are intended as a pseudo-reality, a world that may have been, featuring plausible, yet unseen, extreme weather events. Thousands of such simulated years are available via the Copernicus service provided by EFAS (European Flood Awareness System), and will be analysed in the project to identify the driving compound processes and regional impacts of extreme floods following the so-called UNSEEN (UNprecedented Simulated Extreme Ensemble) approach. The project will focus on selected case studies, with the ambition of developing tools that may be adopted to increase awareness on the changing flood risk in any part of Europe.

The selection will take place in early Autumn, with start expected by 1st November 2024. Candidates who have been resident outside Italy in the past two years will benefit from a complete break from income-tax under Italian policies to favor the mobility of research scientists.

- **Required Degree**: STEM disciplines; a PhD or at least 3-year research experience
- **Desired skills:**
  - Background in physics, meteorology, hydrology or climate science.
  - Experience in the analysis of weather and climate ensemble forecasts to study the statistics and dynamics of weather extremes (UNSEEN methodology).
  - Experience in the study of river discharge datasets, e.g. EFAS Copernicus.
  - Experience in the analysis of climate model output.
  - Knowledge on the processes driving hydrological extremes
  - Experience in extreme value theory, including compound extremes, and its applications in the climate change context.
  - Strong programming skills for data analysis, preferably in Python 3
- **Salary:** ~ 37k€ / year (up to 2500€/month under tax break)
- **Deadline:** 22 July 2024
- **Starting date:** by 1st November 2024.
- **Location:** CNR-ISAC, Bologna, Italy

If you are interested in joining our team, or would like more information, please contact Dr. Giuseppe Zappa (g.zappa@isac.cnr.it).

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