

## Job description - Recruitment 2025

### Associate Research Director (CPJ) of 2nd class of Sustainable Development

UMR ISTerre – CPJ DR DD « DASUrban »

Université Gustave Eiffel

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<b>Job title:</b>	Second Class Research Director in " Seismic Resilience and Urban Monitoring Amid Emerging Challenges with Dark Fiber"
<b>Institution:</b>	Université Gustave Eiffel - <a href="https://www.univ-gustave-eiffel.fr/">https://www.univ-gustave-eiffel.fr/</a>
<b>Discipline(s):</b>	Urban seismology
<b>Spéciality(es):</b>	Seismic imaging, Structural Health Monitoring
<b>Host research structures:</b>	UMR ISTERRE – Institut des Sciences de la Terre
<b>Location:</b>	Université Gustave Eiffel (campus "Grenoble" of Université Grenoble Alpes, 38)
<b>Contact(s):</b>	<b>UMR ISTERRE:</b> Philippe Guéguen, director of ISTERRE Phone: (+33/0)6 87 60 27 19 mail: <a href="mailto:philippe.queguen@univ-grenoble-alpes.fr">philippe.queguen@univ-grenoble-alpes.fr</a>

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#### 1- Background

A major player in European research on cities and territories, transport and civil engineering, Université Gustave Eiffel, created on January, 1<sup>st</sup> 2020 from the merger of Ifsttar (French Institute of Transport, Planning and Network Science and Technologies) and the Université Paris-Est Marne-la-Vallée, is a scientific, cultural and professional public institution (like all French universities), with an experimental status and a national presence, which make it a unique university in France. It aims to be a major player in research on transport and cities. The research labs of Université Gustave Eiffel conduct both upstream and more finalised research and expertise in a wide variety of disciplines (mathematics and computer science, electronics, materials, chemistry, civil engineering, geosciences, biomechanics, social sciences, psychology, economics, management, innovation sciences, communication, ethics, history, arts, literature etc. ) and in fields with a strong societal impact such as transport, infrastructures, natural hazards and cities, aiming to improve the living conditions of our fellow citizens and, more broadly, to promote the sustainable development of our societies.

Gustave Eiffel University holds a unique position within the French academic landscape due to its national status, its multiple campuses spread across the country, its strong thematic focus on the city of tomorrow (I-Site FUTURE label, Scity project), and its missions supporting public policy. The DASUrban project promotes the use and valorization of fiber optic infrastructure in urban areas for the implementation of monitoring and seismic assessment systems of the condition of urban assets (soil, structures, infrastructure).

Decisions aimed at building the safe city of tomorrow must be based on the best possible understanding of the physical processes affecting urban environments, through the use of high-resolution monitoring and imaging tools and methods. The development of smart, resilient cities must adapt to major socio-environmental changes (such as climate change and increasing urban density). Metropolitan areas must develop strategies based on data-driven solutions to make informed decisions regarding urban planning and resource allocation.

It is also essential to define relevant observables for the early detection of critical situations that may require decision-making (e.g., declaration of hazards or damage after extreme events) and the adaptation of public policies (e.g., water resource management). The effectiveness of prevention policies (including monitoring, anticipation, preparedness, and decision-making) also depends on analyzing the physical processes at the origin of critical changes in soils and structures subjected to dynamic (e.g., earthquakes) or climatic forcing.

**Université Gustave Eiffel opens a position of « Chaire de Professeur Junior » starting december 1<sup>st</sup> 2025.** This recruitment is aimed at a researcher with a strong scientific potential and skills for leading a research team, as well as the ability to participate in national, european or international projects. Theses “CPJ” (assistant professorships) constitute a new way of recruitment for research allowing, at its end, and after evaluation of the scientific value and the professional aptitude of the agent by a commission of tenure, access to a full-time job in the civil servant category of “Research Directors of Sustainable Development of second class”.

### **Conditions for recruitment**

The terms of this recruitment are taken pursuant to Decree No. 2021-1710 of December 17, 2021 relating to the junior professor chair contract. This position is offered on a 3-year junior professorship contract, giving rise to tenure in the body of Research Directors (DR2) for Sustainable Development with assignment to the Gustave Eiffel University. At the time of tenure, the Habilitation to Supervise Research will be required. The selection will be made by an international jury with a first selection on file then an audition of the pre-selected candidates.

This position is accompanied by a very favorable research environment and includes a teaching requirement within the Gustave Eiffel University or a partner institution (64 hours equivalent tutorials per year) as well as ANR funding for scientific environment (200 k€ over 3 years).

### **Conditions for application**

- No condition of age or nationality is imposed to apply;
- Can apply: holders of a doctorate or equivalent diploma or candidates with scientific titles and work deemed equivalent;
- The Université Gustave Eiffel recruits on the basis of skills and puts all its talents to work. It encourages candidates with disabilities to apply for teaching and research posts;
- Professors are required to reside where they carry out their duties (Art. 5 of decree no. 84-431 of 6 June 1984). The position offered for recruitment is a full-time position, exclusive of any other professional activity.

### **Position open for application**

The position is open in the general field of **Urban Seismology** for recruitment within the ISTerre Laboratory (Institute of Earth Sciences – ISTerre, UMR UGA, CNRS, USMB, IRD, UGE) located on the Université Grenoble Alpes campus (38). It is part of the laboratory's research axis on *Hazards, Risk, and Consequences* and continues the work initiated under the URBASIS project (MSCA-ITN H2020), which focuses on the assessment, prediction, and reduction of seismic risk in urban areas.

This **Junior Professor Chair (DR DD)** will strengthen a major research focus both for the institution as a whole and for the Institute of Earth Sciences (ISTerre) in particular, as it directly contributes to the laboratory's scientific project—specifically its cross-cutting theme *Hazards, Risk, and Consequences*—as well as to Université Gustave Eiffel's missions supporting public policies related to natural risk safety.

**Given the expectations associated with this position, it is essential to get in touch with ISTerre** in order to develop a scientific project aligned with both the institute's activities and the overarching goals of its research program.

## **2- Job Content**

### **Scientific background of the host laboratory within the scope of this CPJ:**

The **Institute of Earth Sciences (ISTerre)** is a joint research unit (UGA / CNRS / USMB / IRD / Université Gustave Eiffel) located on the campus of Université Grenoble Alpes. It is a member of the Grenoble Observatory of Earth Sciences (OSUG), of the research hub "Particle Physics, Astrophysics, Geosciences,

Environment and Ecology" (PAGE), and is affiliated with the Department of Physics, Engineering, Earth, Environment, and Mechanics (PhITEM) at Université Grenoble Alpes (UGA). Organized into 10 research teams, the scientific objective of the unit is to study the Earth from both a physical and chemical perspective, with a particular emphasis on the interactions between natural observations, experimentation, and the modeling of complex geophysical processes. ISTerre is also responsible for Earth observation missions, hosts and maintains national networks of geophysical instruments, and houses the national center for geophysical and geodetic data.

**Recruiting a Director of Research in seismic risk in urban areas is a priority for the Institute**, especially through the exploitation of innovative data derived from telecommunication fiber optic networks. The Junior Professorship (CPJ) is part of ISTerre's long-standing tradition of international collaboration. Since 2018, ISTerre has led seven ERC projects and one ITN project in fields such as seismology, soil and structural monitoring, geophysical imaging, and urban seismology, reinforcing its position both in Europe and globally.

This scientific project, led by one of the unit's components, strengthens UGE's position on themes related to sustainable and resilient cities by:

1. Covering geophysical aspects of the environment, seismic risk, and monitoring of urban components (soils, structures, and infrastructure),
2. Relying on innovative concepts for wavefield analysis and physical imaging of the urban environment (use of ambient seismic noise, metamaterial concepts applied to cities, dense sensor networks, environmental geophysics, temporal monitoring, etc.),
3. Ultimately aiming to envision the smart and resilient city of the future.

Moreover, one of ISTerre's core objectives is to characterize and understand natural hazard processes and their impact on society (*Hazard, Risk, and Consequences* is a cross-cutting thematic axis of the lab). Urban seismic risk is a key pillar of the lab's scientific focus. As the coordinator of the permanent national accelerometric network (RAP-Epos) dedicated to seismic risk, the French representative in the European infrastructure EPOS-EFEHR focused on seismic risk in Europe, and a contributor to the roadmap of the French Ministry for Ecological Transition (DGPR), this recruitment will strengthen ISTerre's scientific initiatives by proposing unique experimental solutions in urban environments.

### Research profile

In recent years, the use of seismic noise recorded by dense networks has become widespread. Studies have demonstrated the exceptional potential of this approach for high-resolution imaging and temporal monitoring of the subsurface and structures. Achieving such resolution has only been possible thanks to parallel advances in data processing methods and the development of storage and computing infrastructures, in which the laboratory has been actively involved. With resolution as the objective, the measurement of small deformations caused by urban vibrations along optical fibers can now be used as input data to address emerging issues related to associated seismic risk. The urban applications developed within the CPJ project offer incredible prospects in terms of the spatiotemporal resolution of the condition of urban elements (subsurface and structures) and of complex wavefields that explain the variability of damage in the event of earthquakes. However, many scientific questions remain to be explored—particularly, the adaptation of imaging and monitoring methods to this specific type of data (unidirectional, deformation-based, and high-volume), and the optimal exploitation of deformation data (as opposed to velocity or acceleration) for the interpretation of the observed processes.

With this research project, the candidate will strive to develop academic recognition at the highest international level and scientific independence, enabling him/her to secure tenure at Université Gustave Eiffel within the Applied Biomechanics Laboratory, in the second-class Sustainable Development Research Director (DR2) corps, at the end of the three-year period.

It will be expected at the end of the three years that he or she has defended an "HDR" (habilitation to advise a PhD thesis) and obtained some initial funding for his or her research, or is in the process of doing so.

At the end of three years, the candidate must demonstrate their ability to meet the traditional expectations for a Director of Research at Gustave Eiffel University.

In addition to their research production activities, Research Directors are also expected to diversify into all or some of the following activities:

- Teaching and research training (teaching, supervision of trainees, doctoral and post-doctoral students, PhD evaluation committees, participation in juries and bodies or committees related to teaching),

- Scientific outreach and influence (membership of learned societies, editorial boards, scientific committees of institutes, conferences, recruiting committees),
- Research administration and facilitation activities (team facilitation or team/laboratory scientific direction, project coordination, staff and research fellows' management, management of test facilities),
- Valorisation and transfer activities (building and monitoring of research and industrial contracts, consultancy and advisory activities, transfer of research results to the socio-economic world, contribution to public policy development, contribution to normalization, dissemination of scientific culture),
- International activities (participation in European projects, ongoing international collaborations, contributions to the international visibility of the university).

### Teaching profile

The ISTerre laboratory is located at the heart of the Université Grenoble Alpes campus and actively contributes to scientific dissemination through teaching. A research Master's in Geophysics and a Master's in Simulation and Imaging in Mechanics are notably associated with ISTerre. This favorable environment encourages laboratory researchers to recruit students for internships or young graduates for PhD positions. More specifically, the recruited candidate will, as far as possible, lead the ISTerre/UGA application for the creation of an excellence Master's program, which the laboratory aims to develop. Summer schools also provide a valuable opportunity to disseminate the knowledge generated by the project. The recruited candidate will coordinate the summer school cycle focused on seismic risk in urban areas, *URBASIS*.

### **3- Campaign timetable**

- Publication of the call for applications: 15 july 2025
- Closing of the call for applications: 2 september 2025
- Hearings of successful candidates by the audition committee: week of 22 to 26, 2025
- Start date: 1 December 2025

Application procedures and conditions:

Applications must include the following documents:

- Photo ID
- Proof of possession of a doctorate, as provided for in article L.612-7 of the Education Code, or of a diploma whose equivalence is to be assessed by the university's Commission des carrières des enseignants-chercheurs (careers committee for teacher-researchers)
- CPJ application form

Administrative documents and the examination report written in whole or in part in a foreign language must be accompanied by a translation into French, the conformity of which the applicant will certify on his or her honour. Failure to do so will result in the application being deemed inadmissible. Translation of the analytical presentation as well as the works, books, articles and achievements is optional.

It is recommended that you contact the Philippe GUEGUEN research component ([philippe.gueguen@univ-eiffel.fr](mailto:philippe.gueguen@univ-eiffel.fr))

All documents must be sent digitally by september 2, 2025 at the latest to the following address: [drh-cpj@univ-eiffel.fr](mailto:drh-cpj@univ-eiffel.fr)

Any application incomplete by the above deadline will be deemed inadmissible.