



SCIENCE & CREATIVITY: BUILDING A SUSTAINABLE WORLD



Lecturer in Data-Driven Hydrogeological Modelling (M/F)

Institution:	IMT Mines Alès (National School of Mines of Alès)
Main post:	CREER (Centre for Research and Teaching in Environment and Risks)
Administrative location:	Alès (Gard department – Occitanie region)
Contract type:	Permanent contract – Public-sector contract – Full-time
Start date:	November 1, 2026

1. Introduction to our institution, the research and teaching centre 'CREER'

1.1 The Institut Mines-Télécom

The Institut Mines-Télécom (IMT), a 'grand établissement' within the meaning of the Education Code, is a public scientific, cultural and professional institution (EPSCP) under the primary supervision of the ministers responsible for industry and digital affairs. As France's leading group of engineering schools, it brings together 11 public engineering schools spread across the country, which train 13,500 engineers and PhD graduates. IMT employs 4,500 people and has an annual budget of €400M, 40 per cent of which comes from its own resources. IMT comprises two Carnot Institutes and 35 industrial chairs; it produces 2,100 A-rated publications and 60 patents annually, and generates €110M in contract research.

1.2 IMT Mines Alès

The school's mission: "Building on its affiliation with the IMT and its strong regional roots, IMT Mines Alès provides its students with the best opportunities to fulfil their professional potential, enabling them to become responsible contributors to the nation's development whilst preserving the planet's natural resources." The values that drive us: boldness, commitment, collaboration and excellence.

Founded over 180 years ago, IMT Mines Alès currently has 1,400 students (including 250 international students) and 380 staff members. It has two campuses in Alès and also has branches in Montpellier and Pau. Its students include general engineers, specialist engineers (on apprenticeship programmes), PhD students and those studying for master's degrees or specialised master's degrees. It welcomes over 500 trainees on continuing professional development courses.

IMT Mines Alès is a prestigious 'grande école' ranked amongst the best engineering schools both nationally and globally. Our school, founded in 1843, is based in Alès, a city on a human scale and the capital of the Cévennes, where the quality of life is highly valued by its residents. A town in the Gard department (30), 30 km north of Nîmes, Alès lies at the foot of the Cévennes National Park, of which it is – by far – the most



important town , with a population of 42,452 and an urban area of 133,546 inhabitants (the 29th largest urban area in France, 5th in Occitanie).

The school has three research and teaching centres of high scientific and technological calibre, working in the fields of materials and civil engineering (C2MA), the environment and risk management (CREER), and artificial intelligence and industrial and digital engineering (CERIS). These units bring together around 85 permanent academic staff (half of whom hold HDR status), 35 research support staff, and over 100 PhD and post-doctoral students, who produce more than 130 A-level publications and secure €3 million in research contracts each year, a third of which are direct contracts with industry. These research staff contribute to seven research units, including four UMRs. IMT Mines Alès is accredited to award doctoral degrees through four doctoral schools.

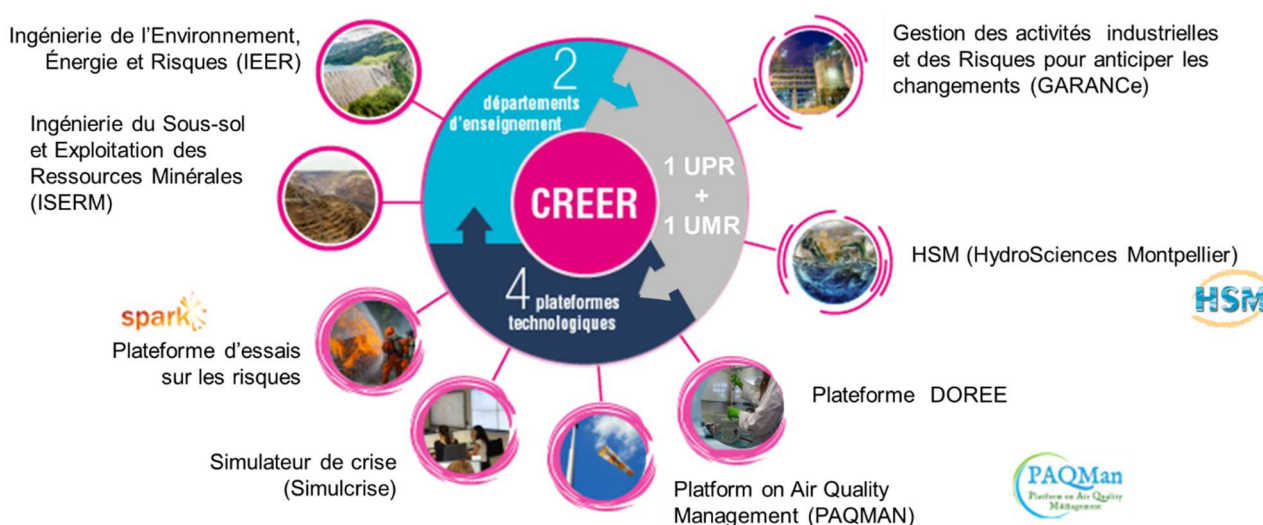
It has 12 technology platforms and 1,600 partner companies. Creativity is a key feature that underpins all its activities. The school was the first to set up an incubator in 1984 (200 companies established to date, 1,000 jobs created). The school offers rich and varied career paths: academic staff have opportunities for professional mobility across the various IMT schools and may also, if they wish, take on responsibilities within the school's functional departments (academic affairs, research, international relations, economic development, etc.) for part of their working hours.

At IMT Mines Alès, every individual plays a key role in our approach to Sustainable Development and Social Responsibility (DDRS). We are committed to promoting environmentally friendly practices, fostering diversity and inclusion, and ensuring ethical conduct in all our activities. We encourage all our staff to adopt a responsible approach in their day-to-day work and to put forward innovative ideas that strengthen our positive impact on society and the environment.

1.3 Centre for Research and Teaching in Environment and Risks (CREER)

CREER is one of the three teaching and research centres at IMT Mines Alès. Structured around distinct scientific areas, it is organised into two research units: the UPR GARANCe (Management of Industrial Activities and Risks to Anticipate Future Changes) and the UMR HSM (HydroSciences Montpellier); two teaching departments: Environment, Energy and Risks (EER) and Subsurface Engineering and Mineral Resource Exploitation (ISERM); as well as four technology platforms dedicated to research, teaching and supporting businesses.

This structure aims to ensure the coherent management of the Institute's three core areas of activity: teaching, research and innovation.



CREER staff whose research is integrated into HSM work on integrated water management, drawing on a wide range of skills that capitalise on research expertise in measurement and sensor de , industrial ecology, hydro(geo)logical and statistical modelling (machine learning).



The variety of these disciplines enables the school to tackle major water-related challenges that require a range of skills (monitoring, deployment of sensor networks, modelling, management, etc.), allowing the school's staff to participate in multidisciplinary projects and engage with various networks and communities, thereby expanding its influence. HSM's team comprises 7 research lecturers, including 3 HDR-qualified researchers, 3 technical staff and engineers, 5 postdoctoral researchers and 9 PhD students. This size enables a vibrant scientific environment and a significant regional, national and international presence, particularly through joint supervision of PhD students. The research carried out by the academic researchers associated with HSM takes place within five of the six teams at the HSM UMR. This UMR is heavily involved in research projects and observatories, some of which are based in the Global South (e.g. Tunisia and Côte d'Ivoire), as well as in the observation networks of the IR OZCAR (the MEDYCYSS observatory, affiliated with the OSU OREME and the SNO KARST) and the workshop zones (ZABR). The successful candidate will contribute in particular to *the* research activities carried out within the HYTAKE team: *Hydrogeology and Transfers in Karstic and Heterogeneous Aquifers*.

2. Job description

2.1 Teaching duties

Lecturers and researchers at the Institut Mines-Télécom are responsible for developing teaching programmes, coordinating teaching teams and leading initiatives in educational innovation. The successful candidate will therefore be required to participate, in line with their areas of expertise, in the school's teaching activities, which include:

- ▶ Initial training for generalist engineers;
- ▶ Initial training for specialist engineers via apprenticeship;
- ▶ Specialised programmes (Master's degrees, specialised Master's degrees, professional qualifications);
- ▶ Continuing professional development;
- ▶ Doctoral programmes.

With regard to teaching, the successful candidate will, depending on their skills, join the teaching team responsible for fluid mechanics (80 hours) within the first-year 'Energy' teaching module, delivered in the form of a cross-cutting project. In addition to these courses, they will also contribute, depending on their areas of expertise, to other fluid mechanics courses, the elective module on WATER (24 hours), the course on geostatistics, and the teaching and tutorials in hydrogeology (24 hours) within the ISERM department, as well as to courses in the Energy Engineering department, Environment and Risks, the functioning of hydrosystems (14 hours) and meteorological risks and crises (6 hours). She may also contribute to teaching delivered as part of the University of Montpellier's Master's in Water Sciences.

The successful candidate must demonstrate an aptitude for teamwork and for innovative teaching methods. The total teaching load (lectures, tutorials, practical sessions, project supervision and work placements, etc.) will amount to a minimum of 150 hours, with a gradual increase in workload over the first three years.

With regard to supervisory activities, the successful candidate will be required to participate, as part of the core curriculum, in the planning and supervision of fieldwork assignments within the framework of the action-based learning approach developed by the school, as well as in the tutoring of students, whether full-time or in paid employment (apprentices).

2.2 Research activities

Today, the work carried out by staff at IMT Mines Alès within HSM focuses on studying the impact of climate and human activities on the water cycle. In particular, it covers the observation, modelling and forecasting stages required for the effective management of water resources. The work carried out focuses both on the observation of extreme events (rainfall, Cévennes floods, low water levels in mountain rivers) and on their physical, conceptual or statistical modelling.



This latter aspect is particularly well developed through machine learning methods, a field in which the team has recognised expertise. These methods are applied across various study sites and projects, including:

- The Cévennes Rivers Workshop site, co-organised by HSM-IMT Mines Alès with Mines St Etienne and UMR ESPACE, and the OHM-CV project led by the IGE Unit in Grenoble,
- The Mont Lozère Observatory, co-run with UMR ESPACE and the IPGP, with the participation of the University of Illinois.
- The SNO Karst and, in particular, the MEDYCYSS observatory, led by the HYTAKE team,
- The Hydr.IA research chair, in collaboration with the company SYNAPSE Informatique, focusing on the prediction of floods and low water levels using Artificial Intelligence,

The team also participates in the work of the HSM unit's cross-disciplinary '*Interdisciplinary Modelling*' workshop.

Hydrogeological phenomena and associated structures (catchments, aquifers) raise several major questions relating to:

- (1) Their observation, due to the heterogeneity of driving forces and structures;
- (2) The non-stationarity of the environments in the face of local and global changes;
- (3) Their modelling and forecasting in order to guide their management in a forward-looking manner.

The observation and modelling of extreme events are long-standing research themes pursued by staff at IMT Mines Alès, notably through statistical approaches based on neural networks. The societal challenges associated with this research are considerable and relate to droughts as well as episodes of extreme rainfall and flooding. Even when conducted with national and international partners, this research is almost always carried out in close collaboration with local stakeholders, sometimes in the form of participatory research, in order to maximise its societal impact.

The successful candidate will join the DREAM (Data-driven Research on Environmental AI Modelling) research project, which addresses these issues, as well as the cross-cutting workshop mentioned above. The keywords associated with this work are: changes of scale, uncertainties, non-stationarity, methods for observing distributed and time-varying phenomena, extreme events, flash floods, low water levels, karst, and climate change.

These research activities form part of a sustainable development approach aligned with the United Nations Sustainable Development Goals (SDGs), in particular SDG 6 on the sustainable management of water resources and SDG 12 on responsible consumption and production patterns.

In this context, IMT Mines Alès is a partner of the UNESCO Centre dedicated to water, ICIREWARD ('International Centre for Interdisciplinary Research on Water Systems Dynamics'). With nearly 400 scientists from 15 research laboratories and 150 PhD students, ICIREWARD, based at the University of Montpellier, constitutes the largest organised community in France in the field of water sciences.

2.3 Technology transfer and commercialisation activities

The successful candidate will also be involved in developing and capitalising on the industrial contacts that IMT Mines Alès has with the economic ecosystem (industry, local authorities, operators, engineering consultancies). They will be responsible for identifying and setting up research and innovation contracts with industrial, institutional and academic partners. In this capacity, they will liaise with the contractual partner, oversee the scientific objectives defined in the project, lead a project team and monitor its progress, as well as manage related communications. Within this framework, they may be involved at regional level within the Aqua-Valley Competitiveness Cluster (Occitanie/Pyrénées-Méditerranée and Sud regions, Provence-Alpes-Côte d'Azur) or at national level within the France Water Team (the water sector's competitiveness cluster) to develop collaborative 'Research/Business' projects in the field of coordinated water resource management or the reuse of water from all sources.

Finally, the successful candidate will be required to carry out, within their field of scientific and technical expertise, initiatives designed to support businesses or the school's business incubator, with a view to fostering the creation of spin-offs and the development of technology-based enterprises.



3. Required profile and general assessment criteria

Your manager and the team will support you in developing your skills, while making the most of your experience and talents:

3.1 Required skills, knowledge and experience

Technical skills

- ▶ Teaching experience in the Centre's research fields and topics, and more specifically in the areas relevant to the post
- ▶ Ability to work as part of a teaching team and to develop teaching approaches tailored to specific needs.
- ▶ Ability to deliver teaching whilst ensuring pedagogical alignment (skills, learning objectives and methods, assessment)
- ▶ Knowledge of and proficiency in written and oral communication in English
- ▶ Experience in modelling complex hydro(geo)logical natural phenomena
- ▶ Expertise in machine learning methods and data-driven modelling
- ▶ Significant research experience in the Centre's research fields and topics, particularly in hydrogeology and associated instrumentation.
- ▶ Experience in karst, hydrology, meteorology or climate change
- ▶ Modelling of complex environmental phenomena through observation, analysis of sensor data, and the integration of physical models and machine learning
- ▶ Proven experience of contributing to research projects resulting in scientific output (publications, conferences, etc.)
- ▶ One (or more) international experience(s) would be an advantage
- ▶ Ability to establish scientific collaborations on experimental research projects
- ▶ Ability to commercialise research and transfer technology or knowledge to industrial partners

Behavioural and interpersonal skills

- ▶ Dynamism
- ▶ Independence
- ▶ Commitment
- ▶ Teamwork
- ▶ Organisational skills
- ▶ Rigour and a systematic approach
- ▶ Initiative
- ▶ Adaptability
- ▶ Intellectual curiosity
- ▶ Creativity and innovation

3.2 Criteria for assessing applications

The pre-selection committee will assess applications on the basis of the following selection criteria:

Required qualification: PhD in one of the fields related to environmental modelling, data-driven modelling of natural systems, hydrogeology, hydrology, etc.

Selection criteria for teaching duties:

- ▶ Level of teaching provided
- ▶ Emphasis placed on pedagogical innovation
- ▶ Contribution to and reputation within the academic community



Key selection criteria for research activities

- ▶ National and international recognition of research outcomes
- ▶ Responsibilities held within the field of expertise
- ▶ Relationships with the academic and industrial sectors

The exercise of responsibilities, organisational activities and participation in consultative and decision-making bodies are also taken into account in the criteria under consideration.

4. Application



Administrative requirements for applications

The post falls within the discipline of “Data-Driven Modelling” and focuses on data-driven hydrogeological aspects.

The post offered by IMT Mines Alès is a full-time, permanent contract under public law, governed by the management framework of the Institut Mines-Télécom, in the role of Senior Lecturer, category C, category II.

- ▶ **Estimated salary range (excluding the annual variable bonus):** €43,000 – €76,000 gross per year, depending on qualifications and experience (reduced payroll costs in the public sector).



How to apply?

The application package (available for download at this link:

<https://partage.imt.fr/index.php/s/DT9ZZPFPNpHm5HD>) must be accompanied by a resume, a cover letter, any letters of recommendation, as well as a copy of your ID card, your diplomas, and any certificates of training or internships. It must be sent exclusively to:

<https://institutminestelecom.recruitee.com/o/maitre-de-conferences-en-modelisation-hydrogeologique-guidee-par-les-donnees-hf-cdi-imt-mines-ales>

The recruitment team will carefully review your application.



Recruitment timetable

Closing date for applications: August 31, 2026

Indicative date of the pre-selection panel (without the candidates being present): **First half of September**
Eligible candidates will be notified as soon as possible after this date.

Indicative date of the recruitment panel (interviews with eligible candidates): **Second half of September**
The admissions panel's ranking will be published immediately after the panel's meeting.

Desired start date: November 1, 2026



Contact details

► Regarding teaching and research matters:

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► On administrative matters:

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Onboarding

A Smooth Onboarding Process for a Successful Start

From the moment you arrive, you'll benefit from an onboarding period designed to help you get acquainted with your responsibilities and your work environment. You'll be welcomed by your HR contact, who will guide you through all the steps necessary for a smooth transition into your new role.



Appendix to the job description for the recruitment of teaching staff and research-teaching staff at IMT Mines Alès

As part of their teaching and research remit, lecturer-researchers at our institution are required to carry out a range of teaching activities whilst contributing to scientific research in their discipline.

The teaching load is spread over the academic year according to the institution's needs.

This distribution may vary depending on the specific tasks assigned, ongoing research projects, and changes in the institution's educational and scientific requirements.

1. Teaching:

The teaching load is structured around the following elements:

- **Lecture hours (CM):** These hours correspond to sessions in a lecture theatre or classroom, where the lecturer/teacher imparts theoretical knowledge to a group of students.
 - Indicative figure: **100 to 150 hours of lectures per year**, depending on the requirements of the programme and the subject.
 - Subjects concerned:
 - Fluid Mechanics
 - Water elective module,
 - Geostatistics and Hydrogeology from the ISERM and I2ER departments,
 - Functioning of Hydrosystems
 - Weather-related risks and crises
- **Tutorials (TD):** More personalised supervised activities, in which students apply the theoretical concepts covered in lectures through practical exercises, case studies or projects.
 - Approximate duration: **50 to 100 hours of tutorials per year**, depending on the students' level and the specific requirements of the programme.
 - Subjects covered:
 - Fluid mechanics
 - Water elective module,
 - Geostatistics and Hydrogeology from the ISERM and I2ER departments,
 - Functioning of Hydrosystems
 - Weather-related risks and crises
- **Practical sessions (PS):** These sessions enable students to carry out experiments, simulations or laboratory activities under the direct supervision of a lecturer-researcher or lecturer.



- Indicative duration: **40 to 80 hours of practical work per year**, depending on available resources (laboratories, equipment) and the number of students to be supervised.
- Subjects covered:
 - Research and Development Projects
 - 'Water field trip

2. Supplementary teaching activities:

In addition to direct teaching, the lecturer-researcher/lecturer is also involved in several other educational activities, which contribute to the training and supervision of students. These activities include:

- **Supervision of projects and dissertations:** Supporting students in the completion of their final-year projects or dissertations, which may include progress meetings, marking and oral examinations.
 - Approximate time commitment: **30 to 50 hours per year**.
- **Supervision of work placements:** Supervising students' work placements in companies or laboratories, ensuring regular assessment and monitoring.
 - Approximate time commitment: **30 to 40 hours per year**, depending on the number of students involved and the specific requirements of the programme.
- **Academic meetings:** Attending departmental meetings, academic committees or examination boards to manage degree programmes and course content.
 - Approximate time commitment: **10 to 20 hours per year**.

3. Research and doctoral supervision – for teaching and research posts only:

As a lecturer-researcher, research activities are also a key aspect of the role. The time devoted to research, as well as to supervising PhD students, is included in the total workload, but is often prioritised as part of the institution's scientific commitment.

PhD supervision: Supervising PhD students and contributing to their training, supporting their thesis work and helping them prepare for their thesis defences.

- Indicative figure: **30 to 50 hours per year** for doctoral supervision.

This breakdown may vary depending on the specific tasks assigned, ongoing research projects, and changes in the institution's teaching and research needs.

4. Flexibility and adaptability:

The teaching load may be adjusted in line with research projects, specific tasks and changes to the organisation of teaching programmes. The hours may be adapted in line with teaching requirements, available resources and the priorities of IMT Mines Alès