



**Offer #2023-06323**

## **Post-Doctoral Research Visit F/M Multiscale flood simulations using artificial neural networks**

**Contract type :** Fixed-term contract

**Level of qualifications required :** PhD or equivalent

**Fonction :** Post-Doctoral Research Visit

### **About the research centre or Inria department**

The Inria centre at Université Côte d'Azur includes 37 research teams and 8 support services. The centre's staff (about 500 people) is made up of scientists of different nationalities, engineers, technicians and administrative staff. The teams are mainly located on the university campuses of Sophia Antipolis and Nice as well as Montpellier, in close collaboration with research and higher education laboratories and establishments (Université Côte d'Azur, CNRS, INRAE, INSERM ...), but also with the regional economic players.

With a presence in the fields of computational neuroscience and biology, data science and modeling, software engineering and certification, as well as collaborative robotics, the Inria Centre at Université Côte d'Azur is a major player in terms of scientific excellence through its results and collaborations at both European and international levels.

### **Context**

#### **About the center**

The Inria centre at Université Côte d'Azur was established in 1983 in Sophia Antipolis. It has developed along with Université Côte d'Azur on the Sophia Antipolis and Nice sites. It also has a branch in Montpellier, where it is developing alongside Montpellier University.

#### **Context**

Every year Inria International Relations Department has a few postdoctoral positions **in order to support Inria international collaborations**.

This year, postdoctoral positions within the frame of **Inria London, Inria Brasil and Inria Chile** programs and to strengthen partnerships with **Simula (Norway), University of Waterloo (Canada) and KAIST and ETRI (South Korea)** are eligible.

The postdoc contract will have a duration of **12 to 24 months**. The default start date is November 1st, 2023 and not later than January, 1st 2024. The postdoctoral fellow will be recruited by one of the [Inria Centers](#) in France but it is recommended that the time is shared between France and the partner's country (please note that the postdoctoral fellow has to start his/her contract being in France and that the visits have to respect Inria rules for missions).

#### **Wage conditions**

2746€ gross/month ("salaire brut")

#### **Instruction to apply**

Please contact [Gwladys Toulemonde](#) and/or [Antoine Rousseau](#)

**Deadline for application June, 18, 2023.**

### **Assignment**

Candidates for postdoctoral positions are recruited after the end of their Ph.D. or after a first post-doctoral period: for the candidates who obtained their PhD in the Northern hemisphere, the date of the Ph.D. defense shall be later than 1 September 2021; in the Southern hemisphere, later than 1 April 2021.

In order to encourage mobility, the postdoctoral position must take place in a scientific environment that is truly different from the one of the Ph.D. (and, if applicable, from the position held since the Ph.D.); particular attention is thus paid to French or international candidates who obtained their doctorate abroad.

### Collaboration :

The recruited person will be in connection with researchers from the team LEMON together with colleagues from Inria Chile, who are experts in neural networks.

## Main activities

### Main Activities

- propose innovative solutions to adapt neural networks techniques (including PINNs methods) to multiscale flood simulations
- animate a regular internal workshop to share the works' progress with partners
- participate to the PINNs network at Inria
- contribute to the SW2D platform
- write reports and articles

### Position full technical description

See [PDF file on the LEMON web](#)

## Skills

The ideal profile for this post-doc is someone with a thesis in applied mathematics specialized in numerical analysis/computational science with very good code skills, especially in Python, and experience in machine learning (ML). However, this position is also open to a Ph.D. in applied mathematics with expertise in numerical analysis/computational science and very good coding skills, especially in Python, and an interest in statistical methods. Experience in ML is indeed a plus but not essential. Doctors in mathematics specialized in ML can also apply, but it is required to have obtained a master's degree in which knowledge in PDE and numerical analysis has been acquired.

**Languages :** french (spoken), english (technical), spanish (optional)

## Benefits package

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Contribution to mutual insurance (subject to conditions)

## Remuneration

Gross Salary: 2746 € per month

## General Information

- **Theme/Domain :** Optimization, machine learning and statistical methods  
Scientific computing (BAP E)
- **Town/city :** Montpellier
- **Inria Center :** [Centre Inria d'Université Côte d'Azur](#)
- **Starting date :** 2023-10-01
- **Duration of contract :** 2 years
- **Deadline to apply :** 2023-07-17

## Contacts

- **Inria Team :** [LEMON](#)
- **Recruiter :**  
Rousseau Antoine / [antoine.rousseau@inria.fr](mailto:antoine.rousseau@inria.fr)

## About Inria

Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

## The keys to success

**Eligibility criteria:**

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In order to encourage mobility, the postdoctoral position must take place in a scientific environment that is truly different from that of the Ph.D. (and, if applicable, from the job held since the Ph.D.); particular attention is thus paid to French or international candidates who obtained their doctorate abroad.

**Application process:**

Applications for the Inria International Relations Department post-docs must be submitted to [Gwladys Toulemonde](#) and/or [Antoine Rousseau](#) **before June, 18 2023** with all of the following documents:

- Detailed CV with a description of the PhD and a complete list of publications with the two most significant ones highlighted
- Motivation letter from the candidate
- 2 letters of recommendations

**Warning :** you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

## Instruction to apply

**Defence Security :**

This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

**Recruitment Policy :**

As part of its diversity policy, all Inria positions are accessible to people with disabilities.