# Valentin Jules

PhD in Earth and Environment Science

https://ValentinJules.github.io/

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## Scientific interests

Fluid and granular physics
Porous Media Flow

Quantitative Geomorphology
Coupling fundamental physics and geophysical data

Modelling & Theory
Complex Analysis
Finite elements method

Open Science


**Centre d'Etudes en Météorologie Satellitaire, Météo-France**
58 Avenue de Lorraine
22130 Lannion, France


## Work experience

2022 - Now **Post-doctoral researcher, Centre d'Etudes en Météorologie Satellitaire** Lannion, France
*Radiative transfer modelling to simulate the Pressure Modulated Radiometer and the Stratospheric Sounding Unit (SSU) instruments from the 1970s*
in collaboration with Jean-Marie Lalande and Jérôme Vidot.

2021 - 2022 **Teacher, Physics and Chemistry** Toulouse, France
*Collège Anatole France*

2016 - 2020 **PhD Student, Institut de Physique du Globe** Paris, France
*Response of a deep, unconfined aquifer to rainfall.*
in collaboration with Éric Lajeunesse and Olivier Devauchelle.
I investigated on how the aspect ratio of the aquifer influences the dynamics of th groundater flow, and the resulting hydrograph.

2015 **Internship (3 months), Institut de Génétique et Microbiologie** Orsay, France
in collaboration with Michaël Dubow
During this internship, I studied the genetics of microorganisms present in different soil samples to find the different compositions and to investigate the bacteriological composition necessary for the culture of rice.

2014 **Internship (2 months), Imagerie et Modélisation en Neurobiologie et Cancérologie** Orsay, France
in collaboration with Mathilde Badoual
During this internship, I simulated with a cellular automaton the propagation of tumor cells in order to retrieve experimental results.

## Education

2021 - 2022 **Master of Education**, Physics and Chemistry.
Université Jean Jaures, Toulouse.

2020 - 2021 **Master of Science**, major in fundamental physics.
Université Paul Sabatier, Toulouse.
Préparation à l'agrégation de Physique.

2016 - 2020 **Ph.D. in Geophysics**, by supervised by Éric Lajeunesee and Olivier Devauchelle.
**PhD thesis**: *Response of a deep, unconfined aquifer to rainfall.*
Institut de Physique du Globe de Paris (IPGP), Defended on 2020, May 26$^{th}$.

2014 - 2016 **Master of Science**, major in fundamental fluid dynamics.
Université Paris Saclay.
**Master thesis**: *Flow dynamics in a two-dimensional aquifer.*
supervision: É. Lajeunesse & O. Devauchelle [6 months], Institut de Physique du Globe de Paris (IPGP).
**Research internship**:
Supervision: [2 months], Institut de Génétique et Microbiologie (Orsay, France).

2013 - 2014 **Bachelor of Science**, major in *Fundamental Physics*.
Université Paris Sud.
**Research internship**:
Supervision: Mathilde Badoual [2 months], Imagerie et Modélisation en Neurobiologie et Cancérologie (Orsay, France).

2010 - 2013 Preparatory classes for Grandes Écoles, *Physics-Chemistry*. Lycée Camille Guérin, Poitiers, France

## 2- Technical Skills

- **Theoretical modelling**: complex analysis, porous flow, fluid mechanics, geomorphology.
- **Experimental**: conception and design
- **Data analysis**: time series analysis, image processing, inverse models
- **Programming**: Python (general, data analysis), basics of $C_{++}$, Fortran, HTML
- **Numerical simulations**: cellular automaton models, finite elements method

## 5- Teaching

- △ Statistics Hands-on classes, Freshman and Junior years, Paris University 7, 2017-2020
- △ Electromagnetism tutorials, Junior years, Paris University 7, 2017-2020
- △ Physics Hands-on classes, Sophomore years, Paris University 7, 2017-2020
- △ Private lessons *Mathematics, Physics, Chemistry, Biology & Earth sciences*, Highschool, weekly, more than 10 students from 2013 to 2019

## 9- Language proficiency

French: Native
English: Fluent

## List of publications

**Dr. Valentin Jules**

3. Updated radiative transfer modelling to simulate the Pressure Modulated Radiometer (PMR) instrument from the 1970s
   Jules, V., Lebrat, T., Lalande, J-M., Vidot, J. (2023).
   *in prep*

2. Flow and residence time in a two-dimensional aquifer recharged by rainfall.
   Jules, V., Lajeunesse, É., Devauchelle, O., Guérin, A., Jaupart, C., & Lagrée, P-Y. (2021).
   *Journal of Fluid Mechanics*, 917, A13, e2021GL097636, doi:10.1017/jfm.2021.221

1. Écoulement dans un aquifère non confiné profond alimenté par la pluie.
   Jules, V. (2020)
   *Université Paris Cité*, IPGP

## List of oral communications

**Dr. Valentin Jules**

**10 Oral communications**, among which:
**4 contributed talks**
**2 invited seminars**
**4 posters**

### Contributed Talks

4. Response of a deep, unconfined aquifer to rainfall.
   *2020*, IPGP, Paris

3. Flow dynamics in a two-dimensional aquifer
   *2019*, CDD IPGP, Paris

2. Groundwater dynamics in two-dimensional aquifer
   *2018*, CMWR, Saint Malo

1. Groundwater dynamics in two-dimensional aquifer
   *2018*, APS, Denver

### Invited Seminars

2. Response of a deep, unconfined aquifer to rainfall.
   *2023*, CEMS, Lannion, France

1. Écoulement dans un aquifère non confiné profond alimenté par la pluie.
   *2020*, IPGP, Toulouse, France

### Posters

4. Updated radiative transfer modelling to simulate the Pressure Modulated Radiometer (PMR) instrument from the 1970s.
   *2023*, ITSC, Tromsø

3. Flow dynamics in a two-dimensional aquifer
   *2018*, 4th Cargèse Summer School

2. Flow dynamics in a two-dimensional aquifer.
   *2017*, RNL

1. Groundwater dynamics in two-dimensional aquifer.
   *2017*, CDD, IPGP, Paris