Manon Dalaison

22 boulevard de Charonne, Paris 75020 FRANCE
manon.dalaison@gmail.com | +336 69 74 65 79

EDUCATION

ÉCOLE NORMALE SUPÉRIEURE (ENS)

PhD in Geophysics
Grad. Dec 2021 | Paris
"Illumination fault slip with InSAR: strain release along the Chaman plate boundary"

ENS & INSTITUT DE PHYSIQUE DU GLOBE DE PARIS (IPGP)

Master in Geosciences
Grad. July 2018 | Paris
Combined with the ENS Diploma
Mean grade: 17 / 20

AUSTRALIAN NATIONAL UNIVERSITY (ANU)

Honours in Earth Science
Grad. Dec 2016 | Canberra
Research project in Geodynamic
Final grade: 91 / 100

Bachelor of Science
Grad. Dec 2015 | Canberra
Earth Science Major
Earth Physics Specialisation
Mathematics Minor

SKILLS

InSAR and GPS processing • Inverse problem • Bayesian inference • Python • Unix • Generic Mapping Tools • Bash • LaTeX

LANGUAGES

French	*native proficiency*
English	*bilingual proficiency*
Spanish	*intermediate*
German	*elementary*

COURSEWORK

Structural Geology & Field mapping
Sedimentology & Magmatism
Fluid & Solid Mechanics
Ordinary & Partial Diff. equations
Machine learning

RESEARCH INTERESTS

My main interest is continuous monitoring of surface deformation with Interferometric Synthetic Aperture Radar (InSAR), while addressing associated technical challenges and error quantification. The resulting time series at high spatial resolution contain a wealth of information at scales from 100 m to 100 km that I like to explore. Specifically, I am interested in observing the life-cycle of active faults in space and time from earthquakes to transient slip and continuous creep. During my thesis, I focused on the fault system between India and Eurasia in Afghanistan and Pakistan. I am also interested in seasonal signals related to aquifer depletion and recharge or permafrost freezing and thawing. The search for subtle, subcentimetric deformation in InSAR is among my favorite activity.

EXPERIENCE

Postdoctoral Researcher at ENS | Jan - Oct 2022
Working with Pr Romain Jolivet, Pr Laetitia Le Pourhiet, Dr Kristel Chanard and Dr Béatrice Pinel-Puysségur.

Teacher for F93 physics of natural disasters project | 2019 - 2020
Build and analysis of analogical models to communicate about earthquakes and tsunamis to high-school students.

GPS Campaign in the southern East African Rift System | Jul 2017
Measure and processing of campaign GPS points in the Natron Basin (Tanzania) under the supervision of Pr Eric Calais.

Research Intern at ANU Research School of Earth Sciences | Jan - Sep 2016
2-D and 3-D numerical modelling of the evolution of the oceanic lithosphere and of how a mantle plume interacts with it. Supervised by Dr Rhodri Davies.

Geological mapping courses | Jul 2015, Mar 2019
In Mount Isa, Queensland (Australia) and Cevennes (France)

Maths and Physics Tutor | 2014 – 2018

Archaeological excavations | Jul 2009, Aug 2011, Jul 2012
In Bibracte, a Gallic oppidum, and in the Altenberg silver mines (France).

ASSOCIATIONS & VOLUNTEERING

– Co-founder and president of *Horizon* (2020-2022) : cultural weekends for high-school students.
– Active member of *ASLIVE* (2018-2020) : weekends and holiday camps for adults with disabilities.
– Vice president of the *Earth and Marine Sciences Society* of ANU (2015)

AWARDS & PATENTS

2020	inventor on European Patent No. 20157709.5 "Method for processing InSAR images to extract ground deformation signals"
2016	A.L. Hales Honours Year Scholarship (7,000 AU$)
2015	GSA Mike Rickard Third Year Prize, best results in 3rd year Earth Sciences
2015	A. Seelaf Memorial Prize in Geology, best results in 3rd year fieldwork
2014	W.B. Clarke Prize in Earth Sciences, best results in 2nd year Earth Sciences

SCIENTIFIC COMMUNICATION

PUBLICATIONS

[1] **A snapshot of the long term evolution of a distributed tectonic plate boundary** M. Dalaison, R. Jolivet, L. Le Pourhiet; in review at *Science Advances*, 2022.

[2] **The interplay between seismic and aseismic slip along the Chaman fault illuminated by InSAR** M. Dalaison, R. Jolivet, E. M. van Rijsingen, S. Michel; *Journal of Geophysical Research - Solid Earth* , 2021.

[3] **Autonomous Extraction of Millimeter-scale Deformation in InSAR Time Series Using Deep Learning** B. Rouet-Leduc, R. Jolivet, M. Dalaison, P. A. Johnson, C. Hulbert; *Nature Communication* , 2021.

[4] **A Kalman Filter Time Series Analysis method for InSAR** M. Dalaison, R. Jolivet; *Journal of Geophysical Research - Solid Earth* , 2020.

PRESS ARTICLE

- **Ce que le séisme en Afghanistan nous apprend de la tectonique des plaques dans la région** M. Dalaison; *The Conversation*, 4 July 2022.

SEMINARS & CONFERENCE TALKS

- **Mapping the distribution of strain along multiple strike-slip faults in the Chaman fault system from InSAR** M. Dalaison, R. Jolivet, L. Le Pourhiet; *EGU General Assembly* 2022, Vienna (Austria)
- **Distribution du glissement asismique et partitionnement de la déformation le long de la zone de faille de Chaman (Afghanistan-Pakistan) par InSAR** M. Dalaison, R. Jolivet, E. van Rijsingenn, S. Michel; *27ème Réunion des Sciences de la Terre* 2021, Lyon (France)
- **A deep Learning approach for detecting transient deformation in InSAR** B. Rouet-Leduc, R. Jolivet, M. Dalaison, P. A. Johnson, C. Hulbert; *27ème Réunion des Sciences de la Terre* 2021, Lyon (France)
- **Mapping fault slip along the Chaman plate boundary from space** M. Dalaison, R. Jolivet; 2021 Seminars in ISTerre Grenoble, LGL-TPE Lyon and ITES Strasbourg (France).

CONFERENCE POSTERS

- 2022
  Estimating multilooking biases during InSAR time series analysis M. Dalaison, R. Jolivet, B. Pinel-Puysségur; *MDIS*.
- 2021
  The Kalman filter time series analysis for InSAR (KFTS): application on volcanic and tectonic deformation M. Dalaison, R. Jolivet *Fringe*, Online. **Slow slip events along the North Anatolian Fault** R. Jolivet, B. Rouet-Leduc, J. Jara, M. Dalaison, C. Hulbert, S. Michel, P. A. Johnson, Z. Çakir, S. Ergintav, A. Özdemir, U. Dogan *EGU General Assembly Conference*, Online. **Deep Learning for Autonomous Extraction of Millimeter-scale Deformation in InSAR Time Series** Rouet-Leduc, B., Jolivet, R., Dalaison, M., Johnson, P. A., Hulbert, C. *EGU General Assembly Conference*, Online. **From moderate earthquakes to continuous aseismic slip, a variety of ways to release strain along the Chaman fault (Pakistan, Afghanistan)** M. Dalaison, R. Jolivet, E. van Rijsingenn *EGU General Assembly Conference*, Online.
- 2020
  The Distribution of Aseismic Slip and Partitioning of Deformation on Multiple Parallel Strike-slip Faults in the Chaman Fault System from InSAR Dalaison, M., Jolivet, R., Le Pourhiet, L., van Rijsingenn, E., Michel, S. *AGU Fall meeting*, Online
- 2019
  Continuous Monitoring of Seismic and Aseismic Slip along the Chaman Fault System from InSAR M. Dalaison, R. Jolivet, A. Benoit; *AGU Fall meeting*, San Francisco (USA)

- 2018
  A Kalman filter approach of InSAR time series analysis M. Dalaison, R. Jolivet, A. Benoit; *AGU Fall meeting*, Washington (USA)

- 2017
  Present-day Opening of the Natron Rift: Tectonic and Magmatic Processes at Work M. Dalaison, E. Saria, E. Calais, C. Doubre, F. Masson; *AGU Fall meeting*, New Orleans (USA)

- 2016
  Small-scale Convection under Oceanic Lithosphere M. Dalaison and R. Davies; *ASEG-PESA-AIG 25th Geophysical Conference*, Adelaide (Australia)