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Academic Curriculum Vitae

(January 2025)

Presentation

PhD in geosciences at the Centre alpin de recherche sur les réseaux trophiques des écosystèmes limniques (CARRTEL), my research project consists of studying the long-term dynamics of soil erosion and associated lateral carbon exports by coupling numerical modelling and lake sediment archives. I am particularly interested in spatial modeling, soil erosion and its impacts on the global carbon cycle, as well as understanding paleo-environments to anticipate future changes.

Teaching and research project

The training in research through research that was given to me during the preparation of my doctoral thesis reinforced my project to make a career in teaching and research.

With the knowledge and skills developed over the last three years, I want to extend my thesis work on a larger scale to contribute to the better understanding of the long-term impact of soil erosion on the global carbon cycle, in line with the objectives of the DEEP-C program of the PEPR FairCarboN.

In addition, I also took a certain pleasure in passing on my knowledge to students during lectures, supervising a Master 2 intern, but also when I had the opportunity to popularize my work for the general public. Therefore, becoming a teacher-researcher would allow me to be an actor in the transmission of knowledge and know-how to the younger generation while continuing to actively participate in innovation in my field of research.

However, as a new specialist in long-term environmental change, I also intend to focus my research and teaching projects on the resilience of anthropogenic socio-ecosystems to future climate and environmental changes. Beyond the academic dimension of my professional project, I wish to collaborate as much as possible with the territorial management authorities in order to accelerate the transfer of innovation to application in the territories most vulnerable to natural risks.

Diplomas

- 2024: **PhD in Geosciences**, INRAE, University of Savoie Mont-Blanc (France). Defense on December 20, 2024.
    - *Title* : "Quantification of soil erosion during the Holocene: contributions from the integration of modelling and lake sedimentary archives".
    - *Supervisors* : Jean-Philippe Jenny (INRAE), Georges-Marie Saulnier (CNRS) and Vincent Chanudet (EDF).
    - *Jury* : Chaired by Jérôme Poulenard (University of Savoie Mont-Blanc), and composed of Cédric Legoût (University of Grenoble-Alpes), Emmanuel Chapron (University of Toulouse Jean Jaurès), Olivier Évrard (CEA), Étienne Cossart (University of Lyon Jean Moulin), Jean-Philippe Jenny (INRAE), Georges-Marie Saulnier (CNRS) and Vincent Chanudet (EDF).

- 2021: **Master's degree in Earth and Environmental Sciences**, with honors, University of Rouen-Normandy (France).

- 2018: **Bachelor' s degree in Earth and Environmental Sciences**, with honors, University of Caen and Rouen-Normandy (France).

Courses provided

- 2022 – 2024: **Lecture on "Erosion modelling at different spatial and temporal scales",** 6 hours given at the Master 2 ECOMONT at the University of Savoie Mont-Blanc (France), 20 students.
    - The first hour of the course consists of a state of the art on soil erosion modeling at local, regional and global scales, as well as on long-term, contemporary periods with operational and future examples.
    - The second hour is devoted to a collaborative application between students to set up a relevant modeling approach in order to respond to a chosen scientific or operational problem (definition of the problem and implementation of an adapted modeling approach).

- 2023: **Supervision of the Master 2 internship of Valentine Sollier** (student in geomatics at the University of Grenoble Alpes) entitled "Use of a spatialized model to measure the evolution of soil erosion around French water bodies from 1850 to 2100 ", 6 months.
    - Regular relations with EDF for the obtaining and use of sediment filling data for French artificial water bodies.
    - Definition of the problem and the framework of the internship to best meet the objectives in the time allotted.
    - Setting up regular meetings to monitor the student's progress.
    - Proofreading of the manuscript and preparation of the internship defense.

Communications

Popularization of science

- **Mazure, T**, and Etienne, D (2024). The impact of the Alpines on soil erosion. *Pint of Science Festival*. Grenoble, France, May 15, 2024.

Conferences

- **Mazure, T**, Messager, E, Mazier, F, Saulnier, G-M, Serge, M-A, Chanudet, V, and Jenny, J-P (2024). Quantifying the impacts of landscape opening on alpine soil erosion dynamics during the Holocene. *Q14 Conference 2024*. Rennes, France, February 26 – March 1, 2024.

- **Mazure, T**, Saulnier, G-M, Chanudet V, Bajard, M, Arnaud, F, Sabatier, P and Jenny, J-P (2023). Coupling soil erosion model and lake sediment records reveals the importance of Alpine erosion crisis in total sediment exports during the Holocene. *TERENO-OZCAR Joint Meeting 2023*. Bonn, Germany, September 25 - 28, 2023.

- **Mazure, T**, Saulnier, G-M, Mazier, F, Serge, M-A, Messager, E, Arnaud, F, Jenny, J-P (2022). Quantifying soil erosion during the Holocene by coupling land surface modeling and paleoenvironmental approaches. *IAL-IPA Joint Meeting 2022*. San Carlos de Bariloche, Argentina, November 27 – December 1, 2022.

- **Mazure, T**, Rodet, J, Lecoq, N, and Viard, J-P (2018). Geometric distribution caracterisation of Liesegang's phenomena in chalk (Normandy, France). *22nd Scientific Speleology Days*. Han-sur-Lesse, Belgium, 17 – 18 November 2018.

Posters

- **Mazure, T**, Saulnier, G-M, Mazier, F, Serge, M-A, Messager, E, Arnaud, F, and Jenny, J-P (2022). Quantifying soil erosion during the Holocene by coupling land surface modeling and paleoenvironmental approaches. *4th Continental Surface Modelling Days*. Grenoble, France, October 6 - 7, 2022.

Press articles

- Charef, Z, and **Mazure, T** (2023). Ce que l'érosion des sols en montagne peut nous apprendre sur le climat. *Alpine Mag*.

Research Experiences

- 2021 – 2024: **PhD in Geosciences**, INRAE, University of Savoie Mont-Blanc (France). Directed by Jean-Philippe Jenny (INRAE), Georges-Marie Saulnier (CNRS) and Vincent Chanudet (EDF).
    - Quantification of soil erosion during the Holocene: contributions from the integration of modelling and lake sedimentary archives.

- Development of methodologies to quantify in tonnages the Holocene dynamics of soil erosion associated with land use in the North-West Alps.
- Use of lake sedimentary archive data and RUSLE modelling within 6 pilot sites and the Lake Bourget watershed.
- Publication in an international journal, papers in international congresses, supervision of a Master 2 student, involvement in the doctoral school council.

- 2021: **R&D engineering internship**, EDF DTG, Saint-Martin-le-Vinoux (France). Supervised by Cécile Martinet (EDF) and Matthieu LE LAY, 7 months.
  - Improvement of a suspended solid transport model for the prediction of solid flows on the EDF HYDRO network.
  - Development and implementation of a RUSLE-SDR spatialized modeling methodology on four pilot sites of the EDF HYDRO network.

- 2019: **R&D engineering internship,** Le Havre Seine Métropole, Le Havre (France). Supervised by Stéphane Chédeville (LHSM) and Nicolas Lecoq (CNRS), 5 months.
  - Study of soil sealing phenomena and prediction of rainy runoff episodes in the territory of Le Havre (France).
  - Processing and analysis of data from the LHSM measurement networks (hydraulic structures and meteorological stations) to estimate the evolution of soil sealing as a function of climatic and anthropogenic constraints.
  - Rainfall/runoff modelling at the scale of the structures: forecasting and anticipation of major rainfall events likely to generate significant runoff.

- 2018: **Research technician internship**, Normandy Centre for Karst Studies (CNEK), Rouen (France). Supervised by Joël Rodet (CNEK) and Nicolas Lecoq (CNRS), 3 months.
  - Characterization of the geometric distribution of Liesegang phenomena in chalky context in Normandy (France).
  - Study of chalk karstogenesis (hydrogeology, geology, geochemistry), scientific caving (photographic sampling) and modelling of Liesegang phenomena (ImageJ).
  - Paper at an international conference.

Publications

Scientific articles

- Jenny, J-P, Millet, L, Lauerwald, R, Colas, F, Masclaux, H, Prairie, Y, Regnier, P, A Ali, A, Arnaud, F, Carvalhais, N, Chanudet, C, Chapron, E, Durand, P, Domaizon, I, Dambrine, E, Dellinger, M, Etienne, D, Gaillardet, J, Galop, D, Gateuille, D, Giguet-Covex, C, Itier-Desgué, O, Jezequel, D, Lyautey, E, Marquer, L, Mazier, F, **Mazure, T**, Messager, E, Poulenard, J, Rius, D, Sabatier, P, Saulnier, G-M, Simonneau, A, Soares, L, Tran-Khac, V, Verneaux, V, and Ciais, P (2024).DEEP-C Consortium: Carbon sink or methane source–local to global scale assessment of lentic waters' role in the climate system.*Research Ideas and Outcome*, 10: e136661.

- **Mazure, T**, Saulnier, G-M, Giguet-Covex, C, Sabatier, P, Bajard, M, Chanudet, V, Arnaud, F, and Jenny, J-P (2024). Half of the soil erosion in the Alps during the Holocene is

explained by transient erosion crises as a consequence of rapid human land clearing. *The Holocene*, 34(9), 1290-1303.

- Desgué-Itier, O, Melo Vieira Soares, L, Anneville, O, Bouffard, D, Chanudet, V, Danis, P-A, Domaizon, I, Guillard, J, **Mazure, T**, Sharaf, N, Soulignac, F, Tran-Khac, V, Vinçon-Leite, B, and Jenny, J-P (2023). Past and future climate change effects on thermal regime and oxygen solubility of four peri-alpine lakes. *Hydrol. Earth Syst. Sci.*, 27, 837–859.

Collective investment

- 2021 – 2024: **Participation to interdisciplinary seminars** of the CARRTEL and EDYTEM laboratories of the University of Savoie Mont-Blanc (France) and EAWAG (Switzerland).

- 2021 – 2022: **PhD student representative on the board of the Science, Engineering, Environment (SIE) doctoral school** of the University of Savoie Mont-Blanc (France).