



Marie Genevieve Paule Cavitte

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WORK EXPERIENCE

01/10/2021 – CURRENT – Louvain-La-Neuve, Belgium

POSTDOCTORAL RESEARCHER – UNIVERSITÉ CATHOLIQUE DE LOUVAIN-LA-NEUVE

My research focuses on better understanding the spatial representativity of ice cores: how should we compare ice core data which sample an area of few cm^2 to model output which rely on grid sizes on the order of km^2 ? Ice cores are the only observations for the pre-satellite era that can validate model paleo simulations. Improving the reliability of our observations, such as ice cores, is key in improving future model projections as well.

For this research, I analyse ice-penetrating radar data to extract spatial and temporal trends in accumulation, that can be compared to those measured from ice cores. I carry out uncertainty analyses and I collaborate with colleagues from the British Antarctic Survey and the Goddard Space Flight Center, as well as many groups who have collected ice-penetrating radar data over the years. In the course of my postdoc (1 year now), I have presented at several conferences (virtual and in person), published two first author papers. My postdoctoral position is financed by the F.R.S-FNRS.

In addition to my research, I am the chief-editor for the [European Geophysical Union Cryoblog](#) and I am in charge of finding new authors, doing editorial review of their blog articles and publishing them weekly. I am a committee member of the [Association of Polar Early Career Scientists Belgium](#) through which we have organised school visits, a polar photo exhibit (in collaboration with the International Polar Foundation and the Natural Science Museum of Brussels), kids' workshops and have written a few articles for the general public on Belgium-related cryo work happening! I am also a member of the Belgian National Committee on Antarctic Research (BNCAR).

Because we received an extension to the [Mass2Ant](#) project, I partook in the December-January Antarctic field season during which we were able to collect five additional shallow ice cores and radar data to refine our understanding of the small scale variability of the snow accumulation in our region of study. Around the fieldwork, I helped to write press releases for the ULB/UCLouvain news, was interviewed by the national BX1 and RTBF NIOUZZ, wrote a blog article for the Princess Elisabeth Antarctica station website news, and one of my field photos was retained for the Louvain[s] magazine center page.

I also still provide input to the [Beyond EPICA Oldest Ice](#) European project and take part some of the online discussions.

01/06/2019 – 01/09/2021 – Louvain-La-Neuve, Belgium

POSTDOCTORAL FELLOW – UNIVERSITE CATHOLIQUE DE LOUVAIN-LA-NEUVE

For this 2-yr postdoc, I was working as part of the [Mass2Ant](#) international project which aims to understand the processes that control surface mass balance (i.e. snow accumulation) in East Antarctica. My specific focus was linking large and small scales processes: comparing the strength of the link between temperature and surface mass balance between climate models and observation (ice cores)]. For this, I downloaded/processed/analysed data from both general and regional climate models. I worked with a large ice core database, open access, to compare to the model results. On first author publication and two second author publications resulted from this work. As part of the Mass2Ant project, we had yearly workshops with the partners

(Université Libre de Bruxelles, Royal Meteorological Institute of Belgium, University of Colorado at Boulder, Delft University of Technology) and I was able to present at four virtual conferences (due to covid).

At the same time, I was chief editor of the [European Geophysical Union Cryoblog](#), where I managed the editorial review and publishing of weekly articles about the cryosphere. I was a committee member of the [Association of Polar Early Career Scientists Belgium](#) through which we organised school visits, kids' workshops and wrote a few blog posts on interesting new cryo-related Belgian research happening!

I also maintained my involvement in the Beyond EPICA Oldest Ice Horizon2020 European project, by attending their online workshop and providing important data inputs to collaborators within the project.

01/09/2018 – 01/06/2019 – Brussels, Belgium

GIS CONSULTANT (INTERNATIONAL GRADE B) – CAPGEMINI BELGIUM

I was a consultant for CapGemini Belgium and was part of the GIS team.

My main client was a water utilities company in Flanders, for whom:

- I managed and analysed data to relate ESRI ArcGIS Pro to a geo-enabled database using FME data flows
- I activated (and debugged) a new SAP Geo-Enablement Framework for GIS use in a business context
- I built a technical FME data flow to update the business' address book and geolocation services
- I carried out functional analysis of new process (and control flow) for pipeline leak registration between various databases

In addition, I was involved in a number of internal projects:

- I prepared a proof-of-concept for building a new ESRI ArcGIS Pro database for a retail company
- I prepared a proof-of-concept for roadwork management in ESRI ArcGIS Pro for a road works company
- I co-built an open-source GIS service offering with data on a PostGIS database, visualization in QGIS, secure service access on GeoServer and metadata information on GeoNetwork

I was an instructor for the official Capgemini QGIS course: "Introduction to GIS and QGIS".

I volunteered for the WeGoSTEM initiative in Brussels to bring STEM education in classrooms: the activity consists of introducing the pupils to robotics, building the robot and then coding its actions.

I obtained certification for:

- Professional Scrum Master Level 1
- SAP HANA Graph openSAP
- FME & Esri UN Migration

and was trained in Agile methods, Testing Techniques (ISTQB course) and business process modelling and notation (BPMN course).

● **EDUCATION AND TRAINING**

01/09/2011 – 01/06/2017 – United States

DOCTOR OF PHILOSOPHY IN GEOLOGICAL SCIENCES – University of Texas (UT) at Austin, Institute for Geophysics (USA)

For my PhD, I interpreted and analysed radar data which I used to feed several 1D models to understand the stability of ice flow catchments in Antarctica. As part of the Beyond EPICA Oldest Ice European project, I helped select and characterize the site of the future 1.5 million-year-old ice core in East Antarctica. As part of that endeavour, I had a short-term stay at the Institut des Géosciences de l'Environnement (IGE) to learn and contribute to the development of the "IsoInv" inverse dating model with Frédéric Parrenin.

I wrote two first author papers and was co-author on eight more.

In addition to my PhD, I followed nine courses given in the University of Texas at Austin: six in the geological sciences department (Glaciology; Numerical methods for geophysics; Numerical geophysics; Geophysical glaciology; Data processing; Inverse methods; Computational methods for geophysics) and three external (Scientific computing; Finite element modelling; Inverse theory).

I was very involved my group and department day-to-day life:

- I was the institute's weekly seminar convener
- I created and managed my research group's radar database, after attending a 3-day internship at Halliburton headquarters to master their software packages
- I trained high school and undergraduate students in interpreting radar data, we even sponsored a group to present at an international scientific conference
- I co-founded Ice Core Young Scientists (ICYS), a network for early career scientists working in ice core sciences
- As part of ICYS, we organized the first international scientific workshop with invited lecturers and panel discussions
- I was a teaching assistant for two semesters, teaching "Introduction to Geology" and "Climate: Past, Present, Future" to first year non-scientific students

During that time, I was quite active in scientific outreach:

- I was an author and editor for the EGU Cryoblog
- I co-presented a poster at the American Geophysical Union General Assembly on art-meets-science

- I was an expert and guest teacher for NSF's EarthLabs, which is a professional development course for science teachers
- I was a supervisor for the invitational and regional Science Olympiads for the Dynamic Planet event

Address United States | **Thesis** Flow Re-Organization of the East Antarctic Ice Sheet Across Glacial Cycles

01/10/2010 – 01/10/2011 – Cambridge, United Kingdom
MASTER OF SCIENCE – University of Cambridge

During my Master's, I specialized in the fields of geophysics and climate sciences, through taking the following courses: Continental tectonics and mountains; Atmospheric chemistry and global change; The Earth system and climate change.

I chose to undertake my thesis abroad, in the US, at the Institute for Geophysics at the University of Texas at Austin, as I was really interested in applying my geophysics knowledge to climate research questions.

I was given the opportunity to attend the American Geophysical Union General Assembly.

I was a committee member of the Cambridge Sedgwick Geology Club where we organized guest seminars and team building events for our department.

I helped organize and animate science days at the Cambridge Geology Museum for schools.

Address Cambridge, United Kingdom | **Field of study** Earth Sciences |

Thesis Using Radio-Echo Sounding as a tool for correlating ice core ages between Dome C and Vostok, East Antarctica

01/10/2007 – 01/06/2010 – Cambridge, United Kingdom
BACHELOR OF ARTS IN EARTH SCIENCES – University of Cambridge

My first year was a very general "Natural Sciences" course, covering Geology, Maths, Physics and Biology of Cells.

My second year consisted in courses in Geology and Mineral sciences

In my third year, I focused on Geophysics and Climate Sciences, taking courses in : Geophysics; Petrology and geochemistry; Basin Dynamics; Metamorphic and Igneous Processes; Climate: forcings and feedbacks on Earth's Climate System.

For my geological mapping project in the third year, I obtained funding to study the Chilean Atacama Desert, over a 15km² area in the Limón Verde Cordillera. This 40-day expedition was in collaboration with Prof. Guillermo Chong, at the Catholic University of the North at Antofagasta, Chile and the El Tesoro mine geologists and engineers.

In my personal time, I was in the University athletics track team and was captain of the Homerton College badminton team.

Address Cambridge, United Kingdom | **Field of study** Earth Sciences

● LANGUAGE SKILLS

Mother tongue(s): **FRENCH** | **ENGLISH**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
SPANISH	B2	B2	B1	B2	B1
DUTCH	A2	A2	A2	A2	A2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● DIGITAL SKILLS

My Digital Skills

Microsoft Office | Microsoft Word | Microsoft Excel | Zoom | Power Point | Google Docs | Skype | Microsoft Powerpoint | Outlook | Instagram | Facebook | Google Drive | Social Media | LinkedIn | Organizational and planning skills | ETL basic (FME Desktop) | SAP Software | ESRI ArcGIS Desktop | ESRI Shapefile | Esri ArcGIS, QGIS | MATLAB Coding | Python | paraview | Inkscape illustrator | Teams | Slack | Latex | Linux | MAC-OSX | Windows | Gmail | Twitter | WhatsApp | Internet user | Bash coding language