The Royal Museum for Central Africa and the Vrije Universiteit Brussel have the honor to invite you to the public defense of the PhD thesis of

Violet Kanyiginya

to obtain the degree of Doctor of Sciences

Title of the PhD thesis:

Inventory and characterization of natural hazards in under-reported regions: a multi-method citizen-based approach from the changing landscape of the Kigezi highlands, Uganda

Supervisors:

Dr. Olivier Dewitte (RMCA)

Prof. dr. Matthieu Kervyn (VUB)

Dr. Ronald Twongyirwe (MUST, UG)

The defense will take place on

Monday, September 1, 2025 at 4 p.m.

In Auditorium (Building A, Welcome Pavilion, Royal Museum for Central Africa, Tervuren)

Leuvensesteenweg 13, 3080 Tervuren

To attend the defense online, click here:

Please confirm to violet.kanyiginya@vub.be if you plan to attend in person

Members of the jury

Prof. dr. Benoît Smets (VUB, chair)
Prof. dr. Frank Canters (VUB, secretary)
Dr. Karolien van Puyvelde (VUB)
Dr. Lies Jacobs (Universiteit van Amsterdam, NL)
Prof. Yazidhi Bamutaze (Makerere University, UG)

Violet Kanyiginya is a geoscientist with 15+ years of experience in research, university teaching, and community development across Uganda and the region. Violet obtained her master's degree in Integrated Water Resources Management (IWRM) from the University of Dar es Salaam, Tanzania in 2009. She specialized in water and land interactions at the University of Botswana. Violet holds a Bachelor's degree in Agricultural Land Use and Management, obtained from Makerere University, Kampala, Uganda in 2006. Driven by her passion for advancing her research career, Violet was awarded a scholarship by the Directorate of Development Cooperation of Belgium in 2019 to pursue her PhD at the Vrije Universiteit Brussel (VUB) in collaboration with the Royal Museum for Central Africa (RMCA) and Mbarara University (MUST), Uganda. Throughout her career, Violet has made contributions to her field, with nine scientific publications in international peer-reviewed journals and 15 abstracts/papers presented at international scientific conferences. Her research excellence has been recognized internationally, including a feature in the American scientific magazine AGU-EoS, a leading publication in geosciences.

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Abstract of the PhD research

Natural hazards and their associated impacts are a global problem. A large part of this is due to human population growth, which pushes people to live in more hazardous terrain. Furthermore, the human-induced transformation of the landscape alters the patterns of natural hazards in frequency and magnitude, conditions that are expected to be exacerbated by the changing climate. Yet, understanding natural hazards is still challenging in many environments. This PhD aims at inventorying and characterizing natural hazards in the changing landscape of the Kigezi highlands, southwestern Uganda. More specifically, the PhD contributes to: i) inventorying of natural hazards and analyzing their spatio-temporal distribution and interactions; ii) analyzing multi-decadal landscape dynamics in the context of natural hazard frequency; and iii) investigating the natural and anthropogenic drivers of recent flash floods in representative small watersheds. A mixed-methods approach based on analysis of satellite images and historical aerial photographs, exploration of literature and archives, qualitative interviews, and field surveys is applied. Central to this study is the citizen-based approach involving a network of geo-observers, elderly citizens, and river watchers. In the first objective, we compile an inventory comprising over 4000 natural hazard occurrences with frequent natural and anthropogenic interactions. Landslides and flash floods are the two most frequent hazards. The findings from the second objective indicate that natural hazards have a historical presence in the region, with increasing impacts being linked to high population exposure and probably exacerbated by changes in land use/ cover over 80 years. In the third objective, we show that land use/cover plays a role in controlling the occurrence of flash floods/bankfull events. The localised rainfall, typical of tropical climates is also highlighted. In addition to providing a more comprehensive characterization of natural hazards and human-induced landscape changes, essential in guiding decision-making in land management, my PhD research highlights the added value of citizen-based approaches in understanding these processes, particularly in data-scarce regions and can support more responsive and context-specific disaster risk reduction strategies.