PhD position

Geomorphic hazards and compound events in Africa

Partners: Royal Museum for Central Africa (RMCA) and Vrije Universiteit Brussel (VUB) – Belgium

Period: 36 months

Landslides triggered by an intense thunderstorm over the deforested hillslopes of Kalehe (DR Congo)

Presentation

The Royal Museum for Central Africa (RMCA) and the Vrije Universiteit Brussel (VUB) seek for a motivated candidate for a new PhD position. The successful candidate will be advised by Dr. Olivier Dewitte and Dr. François Kervyn from RMCA and Prof. Dr. Wim Thiery from VUB. The research will be carried out in close collaboration with Dr. Nicolas d'Oreye (ECGS/MNHN, Luxembourg). Wide opportunities for collaboration exist with research institutions in close proximity.

The research group GeoRisKA of RMCA has its research activities in the fields of geology, geomorphology, natural hazards and risk assessment. Most of its study areas are located in Central

Africa. Remote sensing, GIS, and field work are used to support the research as well as for assisting in thematic mapping. The BCLIMATE group at VUB employs global climate modelling, land surface modelling, field observations and data analysis to study climate change and extreme events (notably extreme precipitation and heatwaves) and has recently started a new research line on compound events.

Project description

Geomorphic hazards such as landslides and flash floods often result from a combination of interacting physical and anthropogenic processes across multiple spatial and temporal scales. The combination of processes (drivers and hazards) leading to a significant impact is referred to as a 'compound event'. This research aims to unravel the climate, earth and landscape signatures in the patterns of geomorphic hazards in tropical climates and assess the timing of the related compound events. The region of interest is the western branch of the East African Rift, a region of various tropical climates prone to geomorphic hazards where environment changes are important.

Key to this research project will be the development of an unprecedented inventory of geomorphic hazards with accurate detection and timing. This will be done by developing a method that combines radar and optical open-access satellite remote sensing adapted for frequently cloud-covered climates. The method will be validated against citizen-based field information. Machine learning methods will be used for both the remote sensing part and the analysis of the patterns of the hazards.

Your responsibilities

- Conduct the foreseen PhD research (method development, analyses,…)
- Actively engage with the other PhD students and researchers at RMCA and VUB
- Contribute to teaching activities (seminars) organized at VUB within the Department of Hydrology and Hydraulic Engineering
- Synthesize results of research in peer-reviewed journals
- (Helping with) supervising MSc theses
- Present results to academic and policy audiences in meetings, forums, workshops and conferences

Your qualifications

- A strong quantitative and computer programming background
- Expertise in the field of remote sensing is a strong advantage
- An MSc degree in Earth System Science, Environmental Science, Geography, Geology, (Geo)physics, Engineering, or a related quantitative discipline
- Excellent communication skills in English – both orally and written
- Being able to work largely autonomously as well as in a team

We offer:

- A competitive 3-year full-time PhD scholarship (net salary of around 1900 EUR/month). This will be a 1.5 year renewable contract. A possibility of a fourth year will be explored.
- Funding for field trips, participation to conferences, etc. is provided
- Additional benefits such as health insurance, free travel to and from work by means of public transport or bicycle allowance, access to university sports facilities, child care opportunities, ….
- The possibility to follow academic, thematic and skills training courses at VUB

- A dynamic and multi-cultural work environment
- Participation in collaborative international research projects

The position is offered for three years **starting 1st April 2020 or slightly later**. The workplace will be in Brussels (RMCA 4 days/week and VUB 1 day/week)

Application instructions

To apply, please send **by email** a one stand-alone PDF file (email subject: "S/PHD Pasteca_geomorphic hazard application") that contains (i) a one page cover letter clarifying your overall motivation for entering a PhD programme (written in English); (ii) your curriculum vitae; (iii) transcripts of your grades from the BSc and MSc degrees; and (iv) the names, telephone numbers, and email addresses of at least two referees to hr-rh@africamuseum.be. The application **deadline is 02nd March 2020 17:00 GMT**. Shortlisted candidates will be interviewed early March. Interviews will take place at RMCA in Tervuren or via Skype.

If you have any questions about the project, please feel free to contact Olivier Dewitte (olivier.dewitte@africamuseum.be).