
Impacts of geodynamical processes on the socio-ecosystem of North Tanzania

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Résumé

In North Tanzania, magmatic processes interact with tectonic to give rise to recurrent seismicity and volcanic eruptions, leading to sparse and heterogeneous hazards. North Tanzania is also experiencing a growing economy and an extremely rapid population expansion. The presence of protected areas, natural parks and an active volcano (Oldoinio Lengai) drives a lot of tourism and increases the stakes in the region. The purpose of this work is first to estimate the seismic and volcanic hazards in the area. It implies understanding the interaction between deep and surficial processes. For this purpose, we combine geophysical imaging (seismology, gravimetry) with petrophysical analysis of rocks and lavas. It helps us to reach different scales in space and time and to obtain constraints for crust and mantle

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structure. Second, we intend to map the structural vulnerabilities to conduct a diagnosis of the geological risk. We assess a priori and human vulnerability by questioning the populations' volcanic and seismic risk perception. The people in North Tanzania are differently exposed to natural hazards. The proximity to volcanic edifices or seismic crises experience can strongly influence a population's naive knowledge. We thus aim to understand the dynamics between the naïve knowledge that people can get from their experience and culture and the scientific knowledge obtained from education. Finally, we will use formal modelling approaches to model the ecosystem dynamics in light of our results. With these models, we identify the components and processes favouring a resilient system behaviour or a more dangerous one.

Mots-Clés: geodynamics, natural hazard, modelling, North Tanzania, natural hazards, education