

Environmental hazards associated with mining activities in the tropics

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ABSTRACT. — Mining activities disturb the landscape directly at the mining sites and cause off-site environmental changes, sometimes kilometres away (road, settlements, deforestation, agricultural shifts) (Macháček, 2019; Depicker *et al.*, 2021; Geenen *et al.*, 2021; Verweijen *et al.*, 2022). Mining is also associated with health issues and geo-hydrological hazards (pollution, landslides) (Mwitwa *et al.*, 2012; Banza Lubaba Nkulu *et al.*, 2018; Nkuba *et al.*, 2019), which overall deepen the vulnerability of the population (Depicker *et al.*, 2021; Otamonga & Poté, 2020).

Using advanced Earth observation techniques, a multidisciplinary consortium led by the RMCA and including the CSL, ITC and the IOB has developed the EDITOR project (Environmental hazards associated with mining activities in the tropics) in close collaboration with local institutions.

EDITOR aims to address the issue of environmental changes related to increased mining activities driven by global demand for metals, notably in the context of global climate change commitments and implementation of 'green' technologies, and mining-related social impacts, such as rapid demographic increase and land use changes, which so far remain either understudied or possibly underestimated in the targeted region, eastern DR Congo.

EDITOR builds on the use of remote sensing (hyperspectral, radar, and optical satellite imagery), as well as relevant archives. The remote sensing approach is motivated by the spatial extent of the study area and the lack of field data.

The societal scope in that densely populated region challenges EDITOR to better characterise the specific vulnerability linked to the mining induced environmental changes (MIEC), and will therefore benefit from the expertise and methods of the social sciences.

Assessing MIEC is of vital importance if we are to integrate sustainability into development strategies, ecosystem management, and land and underground use planning, particularly in developing countries where changes are occurring rapidly and have devastating consequences for both humans and nature.

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