

## Aseismic strike slip associated with the 2007 dike intrusion episode in Tanzania

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In July 2007, an earthquake swarm initiated Northern Tanzania near Lake Natron and lasted for about two months. Mt. Oldoinyo Lengai, which located near the seismicity, began to erupt effusively before about a month later, and increased eruption intensity on September when the swarm almost ceased. The explosive eruption continued until April 2008.

Calais et al. (2008), Baer et al. (2008), and Biggs et al. (2009) have already reported the deformation associated with the swarm using InSAR. However, they mainly used ENVISAT/ASAR(C-band) images and only used images acquired from descending pass. We use both ascending and descending passes of ALOS/PALSAR (L-band) images. In addition to InSAR data, we also employ the offset-tracking technique to detect the signals along the azimuth direction. Using InSAR and offset-tracking, we could obtain the full 3D displacement field associated with the swarm.

The inferred full 3D displacement indicates that the graben-like-subsiding zone was horizontally moving by ~48cm toward SSW. To our knowledge, the horizontal movement at the subsidence zone has never been identified. To explain the displacement, we performed the fault source modeling. The fault slip distribution indicates that the ratio of strike slip component is about 20% of total moment release. Aseismic strike-slip creep motion might have also been responsible for the horizontal motion area and the swarm activity. We also confirmed that the stress changes due to the dike intrusion were consistent with the inferred fault slip distributions.

Keywords: InSAR, dike intrusion, aseismic slip, East African Rift valley, relay ramp