

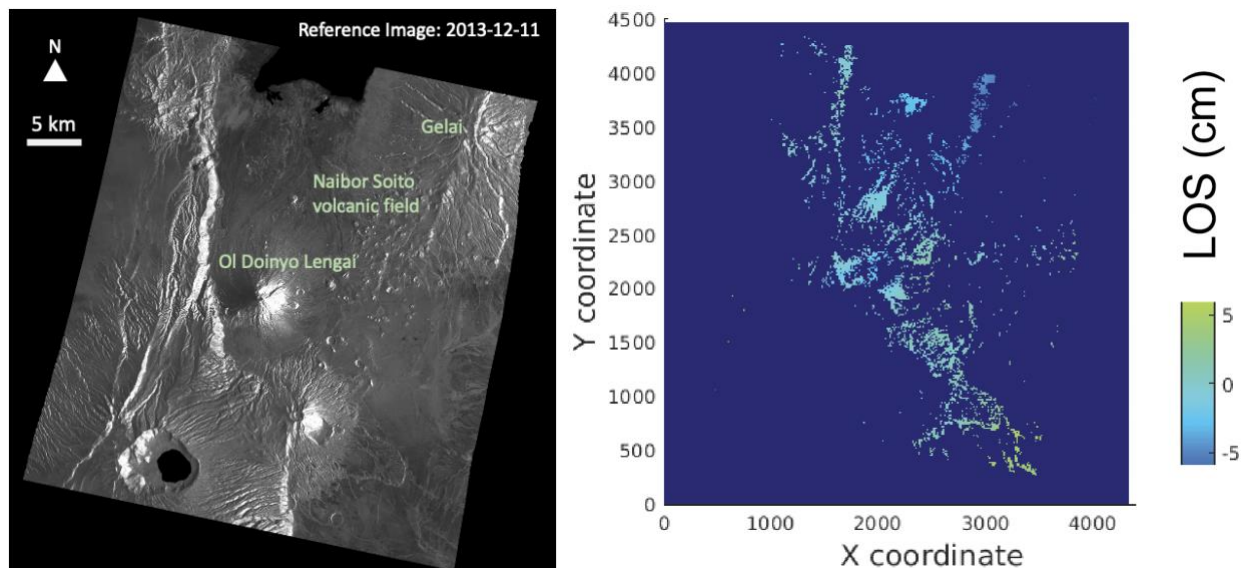
Magmatic Processes in the Naibor Soito distributed field area, Tanzania constrained from satellite geodesy and seismicity

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Active rifts experience volcanic activity and seismicity, however the interplay between the two processes is not clearly understood. An ideal location to study magmatic-tectonic interactions is the Naibor Soito distributed field area in Tanzania. The area is part of the East African Rift System and hosts a field of cones bounded by Gelai Volcano and Ol Doinyo Lengai Volcano, the latter being the only active volcano in the world that exhibits carbonatite eruptions. It has been proposed that these volcanic features are connected by an underground network of magmatic conduits, yet the extent of coverage is unknown. In previous geodesy studies, subsidence was detected in the Naibor Soito volcanic field which was caused by a dike intrusion that preceded the explosive eruption of Ol Doinyo Lengai in 2007. More investigation is needed to further constrain the magmatic processes occurring at the Naibor Soito distributed field area. In this study, we analyze a temporally dense COSMO-SkyMed SAR dataset spanning the period 2013 – 2014 for which a dense seismic catalog of microseismicity is available. The goal is to use geodetic and seismic datasets to constrain published models of magma sources, which has implications for characterizing the structure of the volcanic plumbing system and ultimately, improving forecasts of eruptions and earthquakes at rift systems.



An amplitude image of the research area (left) and ground deformation along the line of sight (right).