COMET Event Response

Area of Interest: Fentale Volcano, Ethiopia
Date Covered: 12th September 2024-8th October 2024
Data Used: InSAR images collected by the European Sentinel-1 satellite and processed using the COMET LICSAR system; USGS Earthquake Catalogue.
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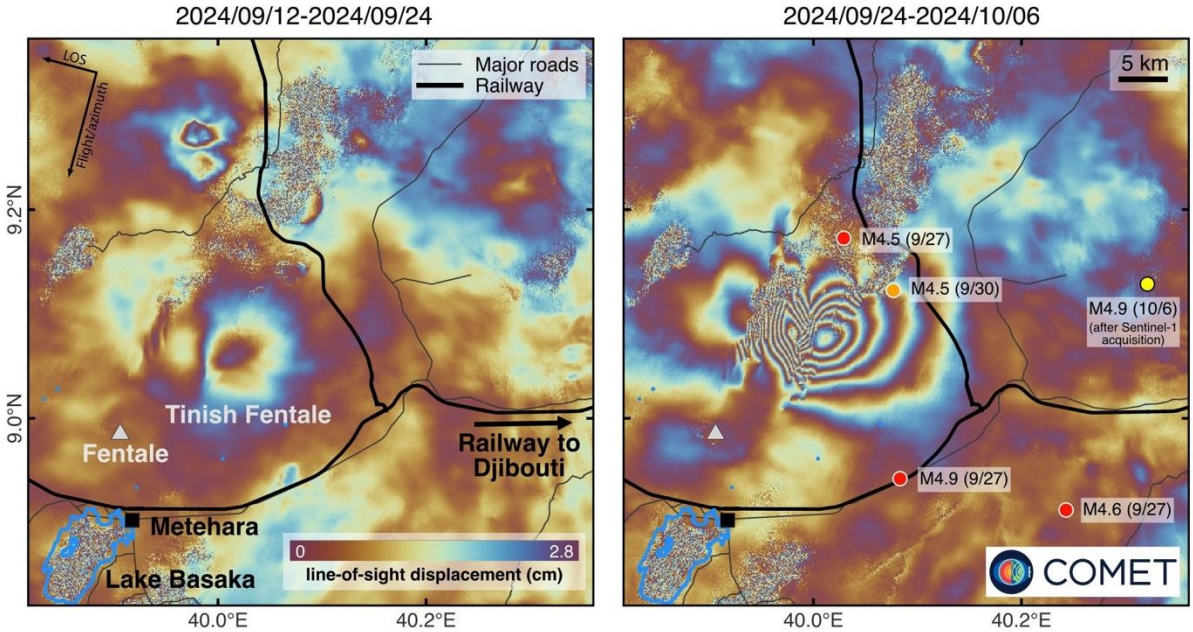
Recent Activity:

The Sentinel-1 InSAR image shows that a dyke intrusion occurred between 24th September and 6th October located about 13.6 km NE of Fentale in the area known as Tinish Fentale (centre 9.084N; 39.980E). The intrusion was about 15 km long and caused about 17 cm of deformation. It is probably associated with three M4-5 earthquakes that occurred on 27th September (USGS Catalogue). There is some evidence of surface faulting, but no sign of any eruption. The image from 12-24th September suggests that the dyke intrusion started before September 24th, causing up to 3 cm of deformation but without any globally detected earthquakes.



Background Info:

The area has experienced previous seismic swarms, including a dyke intrusion in 2015, that caused about 5 cm of deformation and an earthquake swarm with magnitudes up to 4.3 (Temtime et al, 2020; Ayele et al, 2024).

Forward Look:

There was another M4.9 earthquake on 6th October, which was just after the satellite image was acquired. We will report again when there is another satellite overpass.

References

Ayele, A., Luckett, R., Baptie, B., & Whaler, K. (2024). The 2015 earthquake swarm in the Fentale volcanic complex (FVC): A geohazard risk for Ethiopia's commercial route to the Djibouti port. *Journal of African Earth Sciences*, *213*, 105236.

Temtime, T., Biggs, J., Lewi, E., & Ayele, A. (2020). Evidence for active rhyolitic dike intrusion in the northern Main Ethiopian Rift from the 2015 Fentale seismic swarm. *Geochemistry, Geophysics, Geosystems*, *21*(6), e2019GC008550.