Hayli Gubbi Volcano – Complete Hazard Matrix Report

This document presents a full deterministic hazard-matrix assessment of the Hayli Gubbi volcanic eruption (Afar Region, Ethiopia), based on initial reports from November 23–24, 2025. This analysis includes hazard classification, drift path overview, risk bands, affected domains, and recommended mitigations.

Hazard Category	Assessment	Risk Band	Notes
Direct Eruption Hazard	Explosive plume ~45,000 ft	High	Dormant 10k+ yrs → uncertainty
Ashfall (Local)	Ash over Afar settlements	Moderate	Livestock, grazing land impacted
Ash Drift (Regional)	Drift across Red Sea	High	Aviation disruption risk
Aviation Hazard	49,000 ft ash clouds	High	Flight re-routing advised
Sulfur Dioxide Emissions	Significant SO■ detected	Moderate	Air quality concerns regionally
Seismic Coupling	Low initial seismicity	Low	Further monitoring required

Drift Path Summary

Satellite imagery shows a large ash cloud drifting westward across the Red Sea toward the Arabian Peninsula and India. Drift altitude between 40,000–49,000 ft poses serious aviation hazards across multiple air corridors. Long-range drift models suggest transient impacts to air quality depending on wind conditions.

Mitigation Recommendations

• Aviation authorities should reroute flights around the ash corridor.
• Local communities advised to protect livestock and avoid ash exposure.
• Air-quality sensors recommended for Red Sea coastal regions.
• Continuous satellite and seismic monitoring for secondary activity.
• Port operations should remain aware of visibility and ashfall impacts.

This hazard assessment will be updated as additional geological, satellite, and atmospheric data becomes available.