SR-GEO-PoC Silent Earthquake Risk Zones and Population Exposure Report

# 1. Executive Summary

This report outlines regions where geophysical 'silent' earthquakes—those without detectable electromagnetic, ionospheric, or gravity-based precursors—pose the highest risk due to dense populations and strike-slip fault behavior. It integrates seismic hazard, SR-GEO-PoC signal suppression probability, and population exposure to prioritize global alert system deployments.

# 2. High-Population, High-Risk Silent Earthquake Zones

## North Anatolian Fault (Turkey)

Population at Risk: 15–20 million

Major Cities: Istanbul, Izmit, Bursa

Fault Type: Strike-slip

Signal Suppression Risk: High

Preparedness Level: Moderate

Primary Concern: Creeping segments may rupture without vertical displacement or EM/TEC precursors.

## Dead Sea Transform (Jordan, Israel, Syria, Palestine)

Population at Risk: 10+ million

Major Cities: Amman, Damascus, Jerusalem

Fault Type: Strike-slip

Signal Suppression Risk: High

Preparedness Level: Low–Moderate

Primary Concern: Quick, shallow ruptures with minimal ionospheric or AGW signals.

## Southern San Andreas Fault (California, USA)

Population at Risk: 22 million

Major Cities: Los Angeles, Riverside, Bakersfield

Fault Type: Strike-slip

Signal Suppression Risk: High

Preparedness Level: High (aging systems)

Primary Concern: Long-predicted rupture zone; vertical uplift minimal; silent rupture possible.

## Central Iran Faults (Semnan, Isfahan)

Population at Risk: 12 million

Major Cities: Semnan, Isfahan, Tehran outskirts

Fault Type: Strike-slip + compressive

Signal Suppression Risk: High

Preparedness Level: Moderate

Primary Concern: Dry, crystalline rock suppresses all surface-coupled signals.

## East African Rift (Strike-Slip Segments)

Population at Risk: 8–12 million

Major Cities: Addis Ababa, Nairobi

Fault Type: Oblique/strike-slip

Signal Suppression Risk: Medium–High

Preparedness Level: Low

Primary Concern: Urbanization growing in structurally unstable terrain.

## Eastern Indonesia (Banda Arc, Sulawesi)

Population at Risk: 5–10 million

Major Cities: Ambon, Seram, Makassar

Fault Type: Strike-slip / subduction hybrid

Signal Suppression Risk: High

Preparedness Level: Low

Primary Concern: Complex tectonic overlap creates unpredictable, under-instrumented events.

# 3. Recommendations for ERP + SSI Deployment

These zones represent the highest strategic value for Earth Resonance Probe (ERP) sensor deployment and SSI-enabled alert logic:  
- Prioritize dense urban corridors on strike-slip faults  
- Integrate SSI signal-suppression profiling to flag risk in the absence of traditional signals  
- Expand coverage with low-cost ELF/AGW/TEC sensors linked to SR-GEO-PoC v2.0 decision engines  
- Use local geological data to tune SSI thresholds for each region  
- Train local response teams to respond to 'Silent Zone Watch' alerts even when no signals are visible

# 4. Conclusion

SR-GEO-PoC’s ability to predict and alert for seismic activity is greatly enhanced by regional signal suppression profiling. By deploying ERP sensors and SSI-informed alert logic in areas where millions live atop silent-prone faults, we can extend early warning protection to regions currently invisible to conventional models.