

USGS 30-Day Seismic Baseline

Contextual Reference for TCDS Hunter TRL-9

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Purpose of This Document

This document provides a formal, auditable description of the **USGS 30-day seismic dataset** used by the **TCDS Hunter System** exclusively as a *statistical baseline* for Zoom-Out analysis.

The dataset is **not modified, reinterpreted, or redistributed as primary data**. It is consumed as a reference layer to compute deviations (Z-score) and coherence metrics.

Data Source

- Provider: United States Geological Survey (USGS)
- Product: Earthquake Catalog – Past 30 Days
- Endpoint:

https://earthquake.usgs.gov/earthquakes/feed/v1.0/summary/2.5_month.geojson

- Retrieval Mode: Automated (read-only)

Role Within TCDS Architecture

Within the TCDS paradigm, this dataset plays a **passive, ϕ -driven role**:

- It defines the **historical expectation** (μ) of regional seismicity.
- It enables computation of:

$$Z = \frac{N_{\text{current}} - \mu}{\sigma}$$

- It does **not** trigger alerts by itself.

Active detection is performed exclusively by:

- Entropy collapse (ΔH)
- Locking Index (LI)
- Causal Time (t_C)
- E-Veto validation

Separation of Responsibility

- USGS data: **Observational, external, authoritative**
- TCDS Hunter output: **Derived, causal, internal**

This separation guarantees:

- No claim of ownership over USGS data
- No alteration of original records
- Full legal and scientific compliance

Reproducibility and Traceability

Each ingestion includes:

- Retrieval timestamp (UTC)
- SHA-256 hash of the raw GeoJSON file
- Configuration hash of the Hunter/Crawler run

These elements ensure deterministic replay and forensic auditability.

Licensing Note

USGS datasets are used under their public data policy. This document and all TCDS-derived analyses are licensed independently and do not impose restrictions on the original USGS material.

Conclusion

The USGS 30-day dataset functions strictly as a **contextual baseline**. All predictive, causal, and operational claims originate solely from the TCDS Hunter system.