

# User Guide: Handling Search Failures in SeisQuery

When using SeisQuery to query earthquake catalogs from multiple providers (ISC, EMSC, IRIS), a “Search Failed” message may occasionally occur. This typically reflects excessive query complexity or insufficiently constrained search parameters. The following guidelines outline recommended practices for configuring searches, troubleshooting failures, and ensuring reliable results.

## 1. Resetting Search Properties

A common cause of search failure is the use of overly broad parameter ranges. To mitigate this issue, users should reduce the temporal and magnitude coverage of their queries:

- Limit the time span by reducing the number of years in the query window. Instead of several decades, test shorter ranges first.
- For magnitude queries, avoid requesting the full range (e.g., 0–9) in a single search. Instead, split the request into sub-ranges such as 0.0–4.5 and 4.6–9.0, which decreases the load on provider databases and improves stability.

## 2. Advanced Options Settings

Additional control is available under the **Advanced Options** menu, where spatial margins can be fine-tuned to ensure robust query execution:

- For **Circular** or **Directional** searches, enter a margin value of 1.1 in the *Save Margin* field. This prevents edge clipping near the search boundary.
- For **Polygonal** searches, larger values (up to 1.5) are recommended, as these must cover the polygon diagonals. A margin ensures that events near the boundaries are not inadvertently excluded.

## 3. Defining Interval Months

In highly seismically active regions, large queries may exceed provider response limits. To avoid this, users should divide the query into shorter temporal intervals:

- For areas with very high activity (e.g., >10,000 events per year), specify short intervals of 3–4 months per search.
- For regions of moderate or low activity, longer intervals (6–12 months) are sufficient and more efficient.

This strategy reduces the probability of request timeouts and yields more accurate, provider-complete responses.

## 4. Creating and Using Unsymmetrical Polygons

In complex tectonic regions, custom polygons may be required to capture seismicity along irregular fault geometries. Users can define **unsymmetrical polygons** externally and import them into SeisQuery:

- Coordinates should be prepared in two-column CSV format (latitude, longitude).
- A default polygon distributed with the software may be used as a reference template for preparing user-defined polygons.
- Polygon definition tools such as Google Earth Pro facilitate accurate boundary delineation.

## 5. Preparing a Polygon in Google Earth Pro

To construct a polygon for import into SeisQuery:

1. Launch Google Earth Pro and navigate to the study area of interest.
2. From the toolbar, select **Add** → **Polygon**.
3. Click on the map to define the polygon vertices; adjust as needed to follow geological or tectonic boundaries.
4. Assign a descriptive name and select **OK** to save.
5. In the **Places** panel, right-click the polygon and choose **Save Place As**, exporting it as a KML or KMZ file.
6. Extract the coordinates from the file and prepare them as a two-column CSV file for direct use in SeisQuery.

By systematically constraining query ranges, applying appropriate spatial margins, and segmenting highly active regions into smaller time windows, SeisQuery users can prevent most search failures. For polygon-based queries, externally prepared unsymmetrical polygons (via tools such as Google Earth Pro) provide a flexible means of tailoring search domains to complex tectonic settings. These practices collectively enhance query efficiency, reduce provider overload, and ensure reproducibility of results.