

Specifications of the EMSC Flinn-Engdahl lookup Service

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I. Aim of the document

The aim of this document is to describe the specifications of the Flinn-Engdahl lookup service developed by the EMSC. This includes the interactive access through the Seismic Portal website and the web service integrated into the EPOS Thematic Core Service.

This service provides the Flinn-Engdahl region name for a given geographic location.

The Seismic Portal

The Seismic Portal has been developed within the NERIES FP7 project. This web site is operational and is a single point of access to explore and download earthquake information. It's available at www.seismicportal.eu.

II. Description Flinn-Engdahl Regions

Flinn-Engdahl regions are a division of the Earth into seismic zones. A complete description could be found here:

- <http://www.isc.ac.uk/standards/FERegions/>
- https://earthquake.usgs.gov/data/flinn_engdahl.php
- https://en.wikipedia.org/wiki/Flinn%E2%80%93Engdahl_regions

III. Interactive access and web service

This service is available via a GUI for interactive lookup at Flinn-Engdahl region and is available via a web service.

1. Interactive Flinn-Engdahl lookup on the Seismic Portal

The access of the GUI is at <https://www.seismicportal.eu/ferregions.html>. The interactive lookup is possible using the map in the background. The user has to click on the map at the location where he wants to know the region name. Once clicked, the region name and its contour are then displayed on the map.

2. web service

This service is a part of the EPOS platform. It aims to give the Flinn-Engdahl region at geographic location via a web service that is integrated into the Seismic Portal.

The base url is https://www.seismicportal.eu/fe_regions_ws/query? And the url parameters are described in the Table 1.

Table 1: Description of parameters used in the web service

parameter	abbreviation	min	max	type	Units
geographic constraints					
latitude	lat			float	degrees
longitude	lon			float	degrees
output control					
format		json, xml, geojson		string	

3. Flinn-Engdahl region names

This service provides different version of the region name using different character length

- name_s for 32 character length
- name_m for 40 character length
- name_l for 64 character length
- name_h for 64 character length with administrative information

Description of output formats

- xml format: name_s, name_m, name_l, name_h are given in a xml format. For instance:
 - https://www.seismicportal.eu/fe_regions_ws/query?format=xml&lat=47.46&lon=7.29
 - `<?xml version="1.0"?><result><name_s>SWITZERLAND</name_s><name_m>SWITZERLAND</name_m><name_l>Switzerland</name_l><name_h>EUROPE;SWITZERLAND</name_h></result>`
- json format: name_s, name_m, name_l, name_h are keywords of the dictionary object
 - https://www.seismicportal.eu/fe_regions_ws/query?format=json&lat=47.46&lon=7.29
 - `{"name_s": "SWITZERLAND", "name_m": "SWITZERLAND", "name_l": "Switzerland", "name_h": "EUROPE;SWITZERLAND"}`
- geojson format: the “properties” value is the same as the json output and the geographical information of the geojson represents the spatial extend of the region.
 - https://www.seismicportal.eu/fe_regions_ws/query?format=geojson&lat=47.46&lon=7.29
 - `{"type": "Feature", "properties": {"name_s": "SWITZERLAND", "name_m": "SWITZERLAND", "name_l": "Switzerland", "name_h": "EUROPE;SWITZERLAND"}, "geometry": {"type": "Polygon", "coordinates": [[[8.99999991555228, 47.999999717565], [8.00000003250312, 47.999999717565], [6.999999973434, 47.999999717565], [6.999999973434, 47.00000003250312], [5.99999991436488, 47.00000003250312], [5.99999991436488, 45.9999999514666], [6.999999973434, 45.9999999514666], [8.00000003250312, 45.9999999514666], [8.99999991555228, 45.9999999514666], [9.9999999746214, 45.9999999514666], [8.99999991555228, 47.999999717565]]]]]}`

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