13.6.1

Add Earthquake Data to a Map

Now that you know how to access GeoJSON data, parse the data, and add it to a map, Sadhana would like you to map all recorded earthquakes in the past seven days. Once you get the data, you'll add some features to the map to showcase the severity of earthquakes for viewers.

As before, we need to set up a folder structure for our project in a new branch. Create a branch called "Earthquakes_past7days." Copy the folders and files from one of your previous branches and add them to the Earthquakes_past7days folder.

Retake

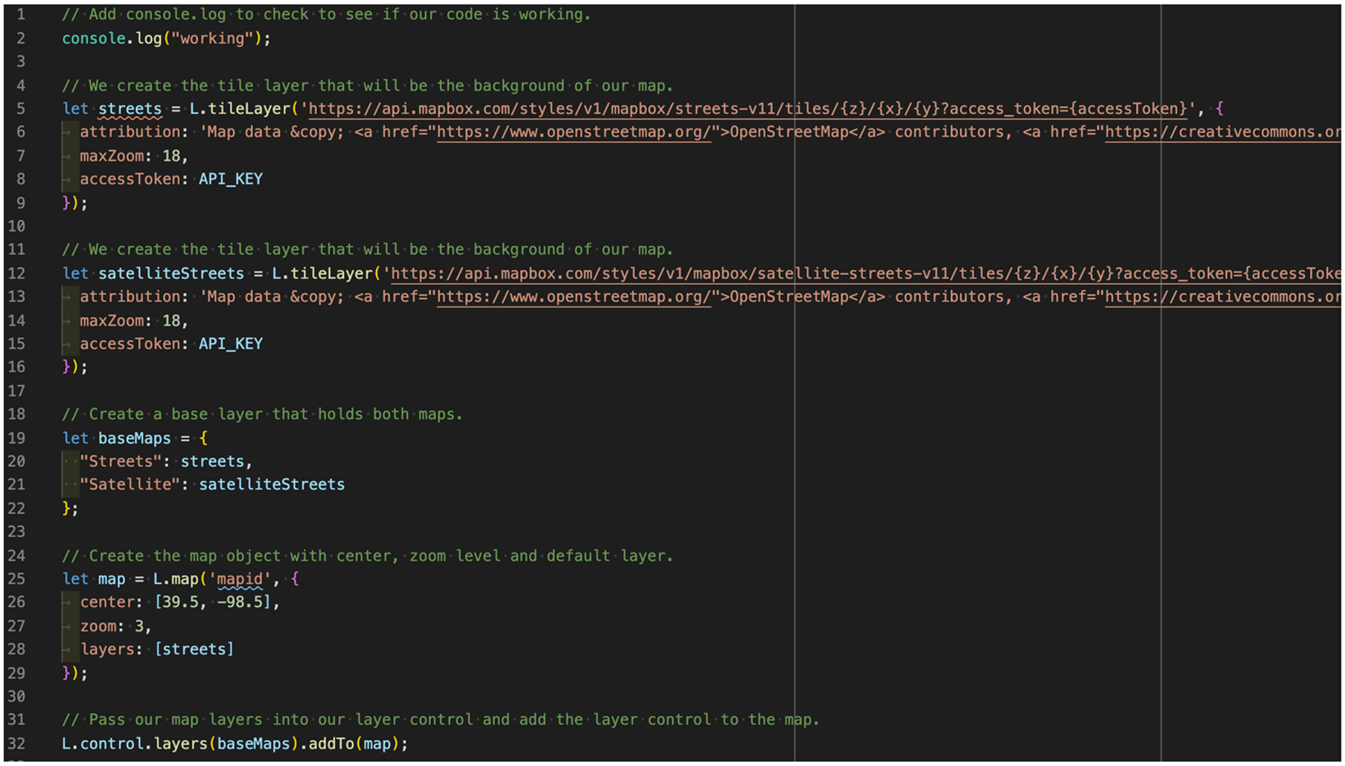
First, Sadhana wants you to rename the `logic.js` file to `logicStep1.js`. This way, each step has its own `logic.js` file that can be used by other interns in the future.

Now we'll edit our `logicStep1.js` file to create a map with all recorded earthquakes from the past seven days.

First, apply the `streets` and `satelliteStreets` map styles used for the GeoJSON polygon mapping. Change the text for the maps on the base layer to read as "Streets" and "Satellite" to look like the following:

```
// Create a base layer that holds both maps.
let baseMaps = {
  "Streets": streets,
  "Satellite": satelliteStreets
};
```

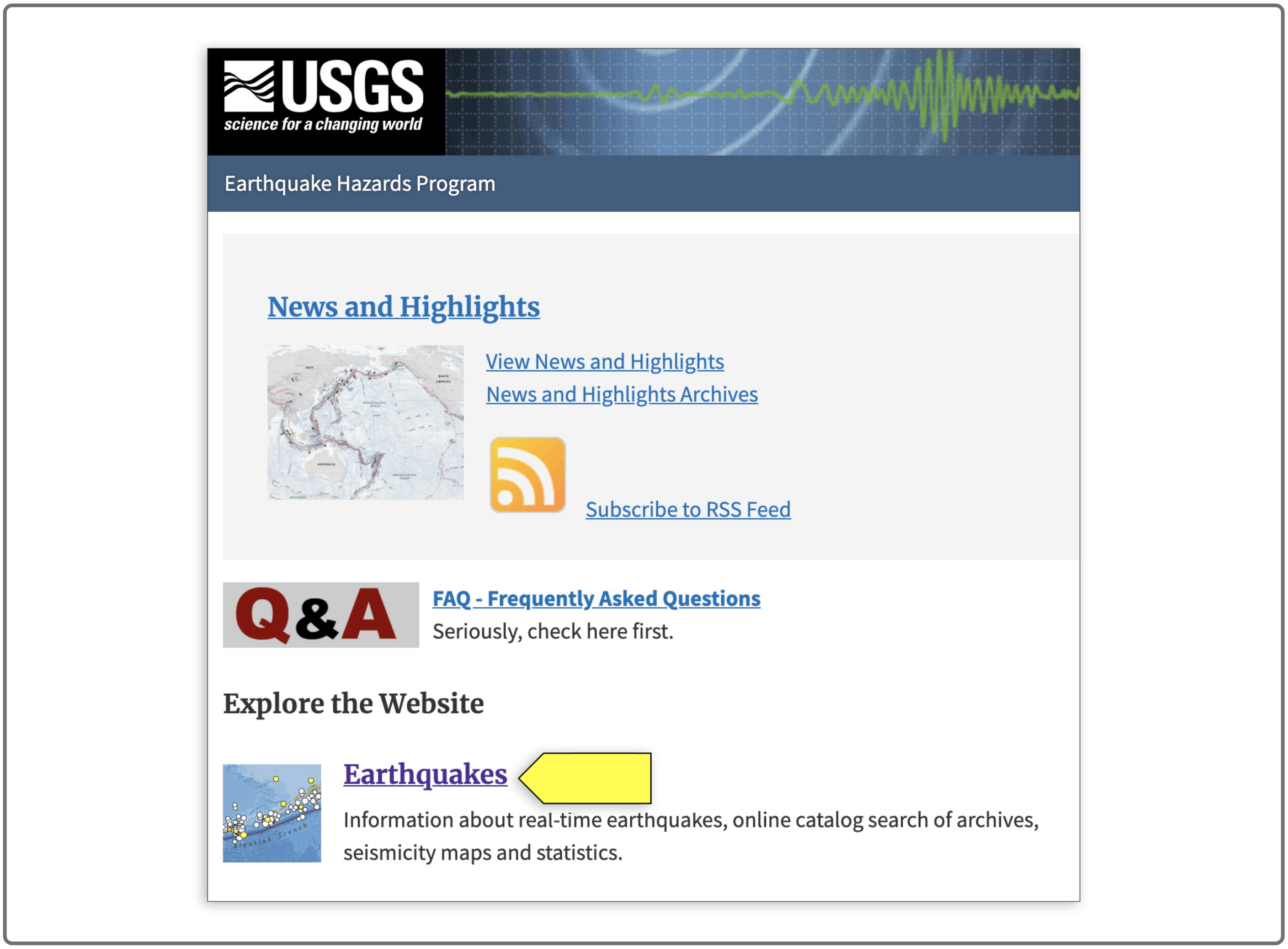
Change the center of our map to the geographic center of the United States using the coordinates `[39.5, -98.5]`, with a zoom level of 3 and default layer `streets`. Our `logicStep1.js` file should look like the following:



```
// Add console.log to check to see if our code is working.
console.log("working");

// We create the tile layer that will be the background of our map.
let streets = L.tileLayer('https://api.mapbox.com/styles/v1/mapbox/streets-v11/tiles/{z}/{x}/{y}?access_token={accessToken}', {
    attribution: 'Map data &copy; <a href="https://www.openstreetmap.org/">OpenStreetMap</a> contributors, <a href="https://creativecommons.or
    maxZoom: 18,
    accessToken: API_KEY
});

// We create the tile layer that will be the background of our map.
let satelliteStreets = L.tileLayer('https://api.mapbox.com/styles/v1/mapbox/satellite-streets-v11/tiles/{z}/{x}/{y}?access_token={accessToke
    attribution: 'Map data &copy; <a href="https://www.openstreetmap.org/">OpenStreetMap</a> contributors, <a href="https://creativecommons.or
    maxZoom: 18,
    accessToken: API_KEY
});

// Create a base layer that holds both maps.
let baseMaps = {
  "Streets": streets,
  "Satellite": satelliteStreets
};

// Create the map object with center, zoom level and default layer.
let map = L.map('mapid', {
    center: [39.5, -98.5],
    zoom: 3,
    layers: [streets]
});

// Pass our map layers into our layer control and add the layer control to the map.
L.control.layers(baseMaps).addTo(map);
```

Add the USGS URL for earthquake data by following these steps:

1. From the **[USGS home page](https://earthquake.usgs.gov/)** (https://earthquake.usgs.gov/) click the **[Earthquakes](https://www.usgs.gov/natural-hazards/earthquake-hazards/earthquakes)** (https://www.usgs.gov/natural-hazards/earthquake-hazards/earthquakes) link:



Earthquake Hazards Program

News and Highlights

View News and Highlights

News and Highlights Archives

Subscribe to RSS Feed

FAQ - Frequently Asked Questions

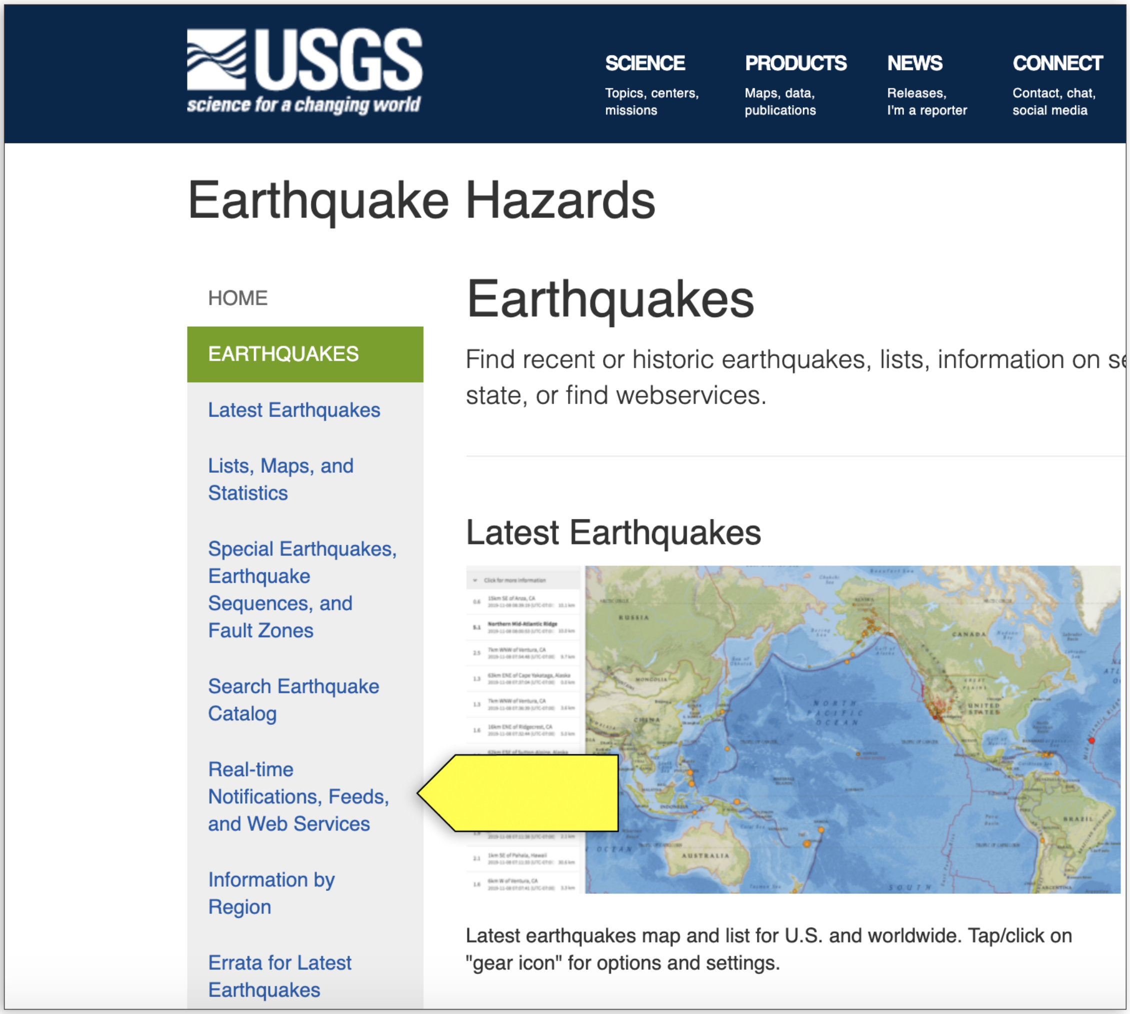
Seriously, check here first.

Explore the Website

Earthquakes

Information about real-time earthquakes, online catalog search of archives, seismicity maps and statistics.

2. Next, click the **Real-time Notifications, Feeds, and Web Services** **(https://earthquake.usgs.gov/earthquakes/feed/)** link:


USGS
science for a changing world
SCIENCE
Topics, centers, missions
PRODUCTS
Maps, data, publications
NEWS
Releases, I'm a reporter
CONNECT
Contact, chat, social media
HOME
EARTHQUAKES
Latest Earthquakes
Lists, Maps, and Statistics
Special Earthquakes, Earthquake Sequences, and Fault Zones
Search Earthquake Catalog
Real-time Notifications, Feeds, and Web Services
Information by Region
Errata for Latest Earthquakes

Earthquake Hazards

Earthquakes

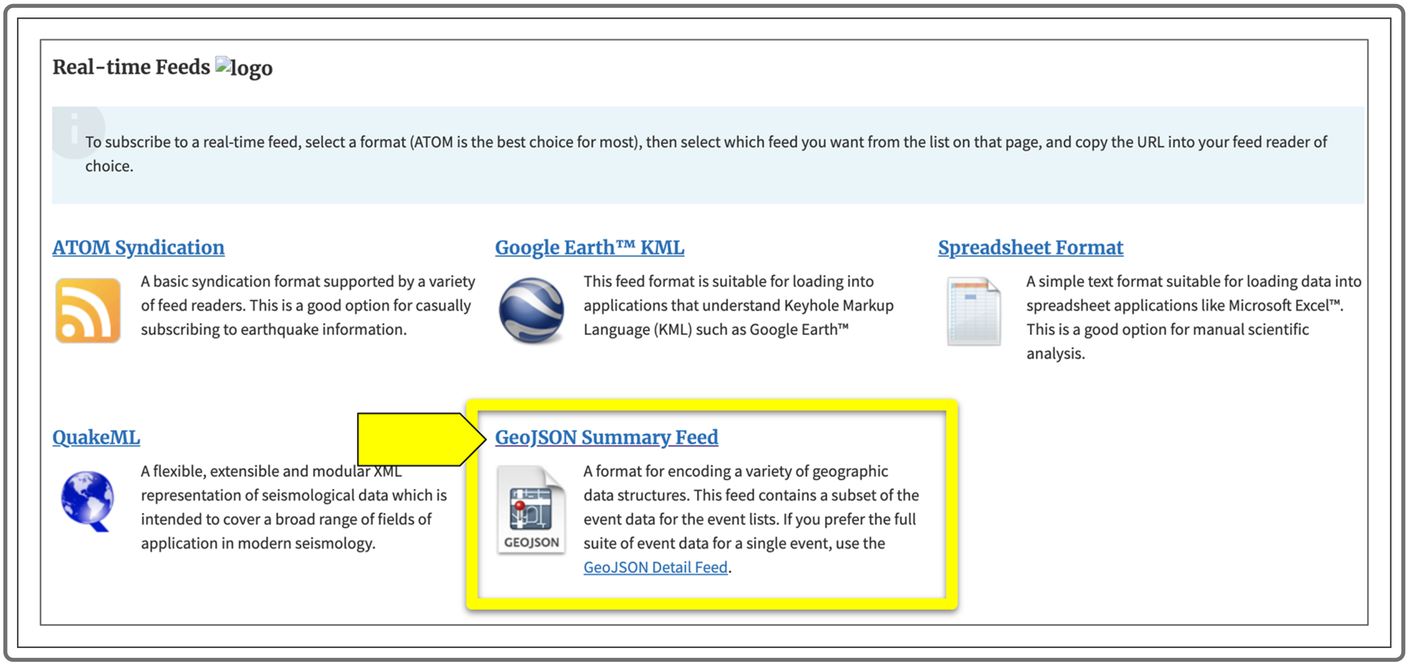
Find recent or historic earthquakes, lists, information on se state, or find webservices.

Latest Earthquakes

Latest earthquakes map and list for U.S. and worldwide. Tap/click on "gear icon" for options and settings.

3. Scroll down until you see "GeoJSON Summary Feed".

4. Click the **GeoJSON Summary Feed** (https://earthquake.usgs.gov/earthquakes/feed/v1.0/geojson.php) link:



Real-time Feeds logo

To subscribe to a real-time feed, select a format (ATOM is the best choice for most), then select which feed you want from the list on that page, and copy the URL into your feed reader of choice.

ATOM Syndication

A basic syndication format supported by a variety of feed readers. This is a good option for casually subscribing to earthquake information.

Google Earth™ KML

This feed format is suitable for loading into applications that understand Keyhole Markup Language (KML) such as Google Earth™

Spreadsheet Format

A simple text format suitable for loading data into spreadsheet applications like Microsoft Excel™. This is a good option for manual scientific analysis.

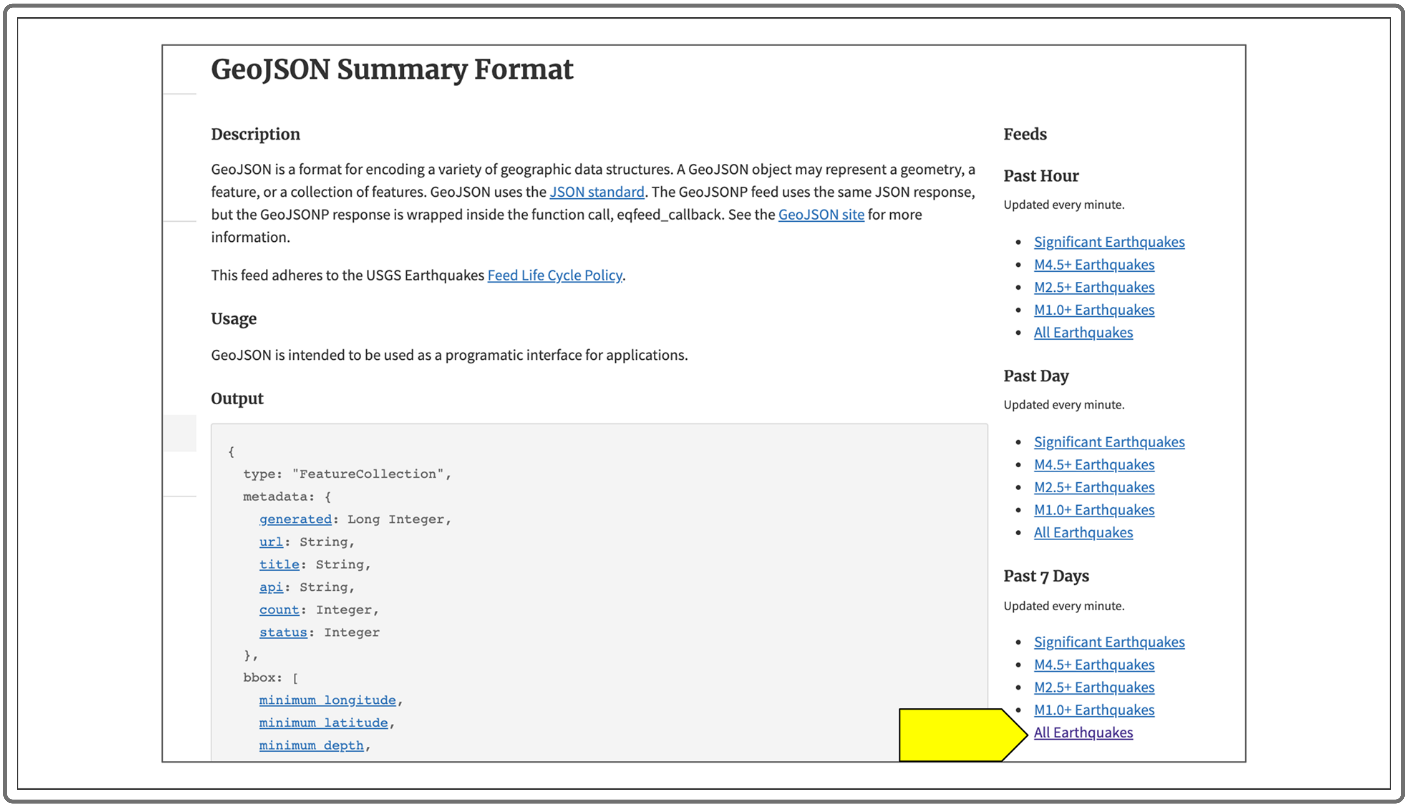
QuakeML

A flexible, extensible and modular XML representation of seismological data which is intended to cover a broad range of fields of application in modern seismology.

GeoJSON Summary Feed

A format for encoding a variety of geographic data structures. This feed contains a subset of the event data for the event lists. If you prefer the full suite of event data for a single event, use the GeoJSON Detail Feed.

5. On the right-hand side, click the All Earthquakes link under the "Past 7 Days" heading:



GeoJSON Summary Format

Description

GeoJSON is a format for encoding a variety of geographic data structures. A GeoJSON object may represent a geometry, a feature, or a collection of features. GeoJSON uses the JSON standard. The GeoJSONP feed uses the same JSON response, but the GeoJSONP response is wrapped inside the function call, eqfeed_callback. See the GeoJSON site for more information.

This feed adheres to the USGS Earthquakes Feed Life Cycle Policy.

Usage

GeoJSON is intended to be used as a programatic interface for applications.

Output

```
{
  type: "FeatureCollection",
  metadata: {
    generated: Long Integer,
    url: String,
    title: String,
    api: String,
    count: Integer,
    status: Integer
  },
  bbox: [
    minimum longitude,
    minimum latitude,
    minimum depth,
```

Feeds

Past Hour

Updated every minute.

- Significant Earthquakes
- M4.5+ Earthquakes
- M2.5+ Earthquakes
- M1.0+ Earthquakes
- All Earthquakes

Past Day

Updated every minute.

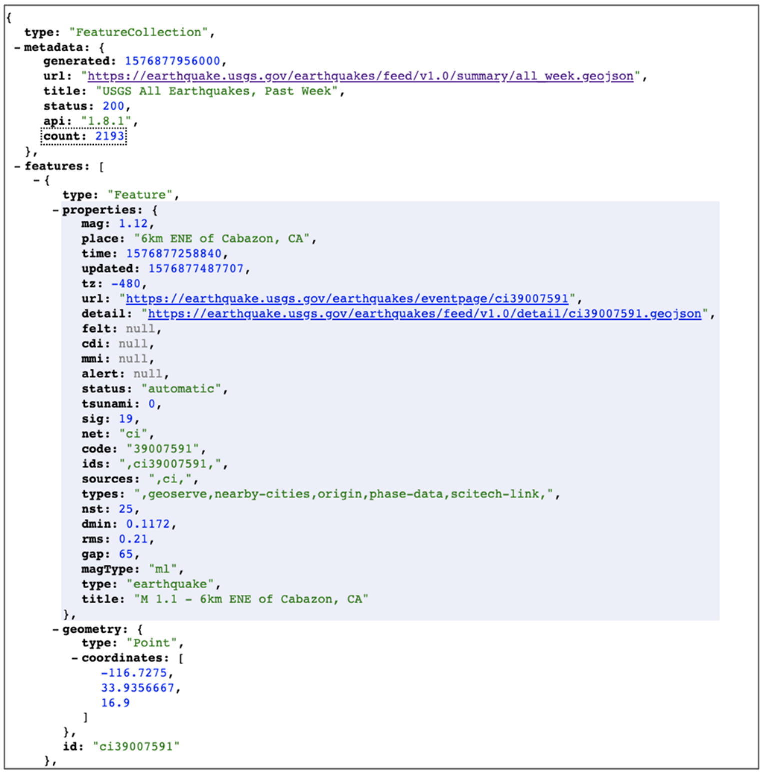
- Significant Earthquakes
- M4.5+ Earthquakes
- M2.5+ Earthquakes
- M1.0+ Earthquakes
- All Earthquakes

Past 7 Days

Updated every minute.

- Significant Earthquakes
- M4.5+ Earthquakes
- M2.5+ Earthquakes
- M1.0+ Earthquakes
- All Earthquakes

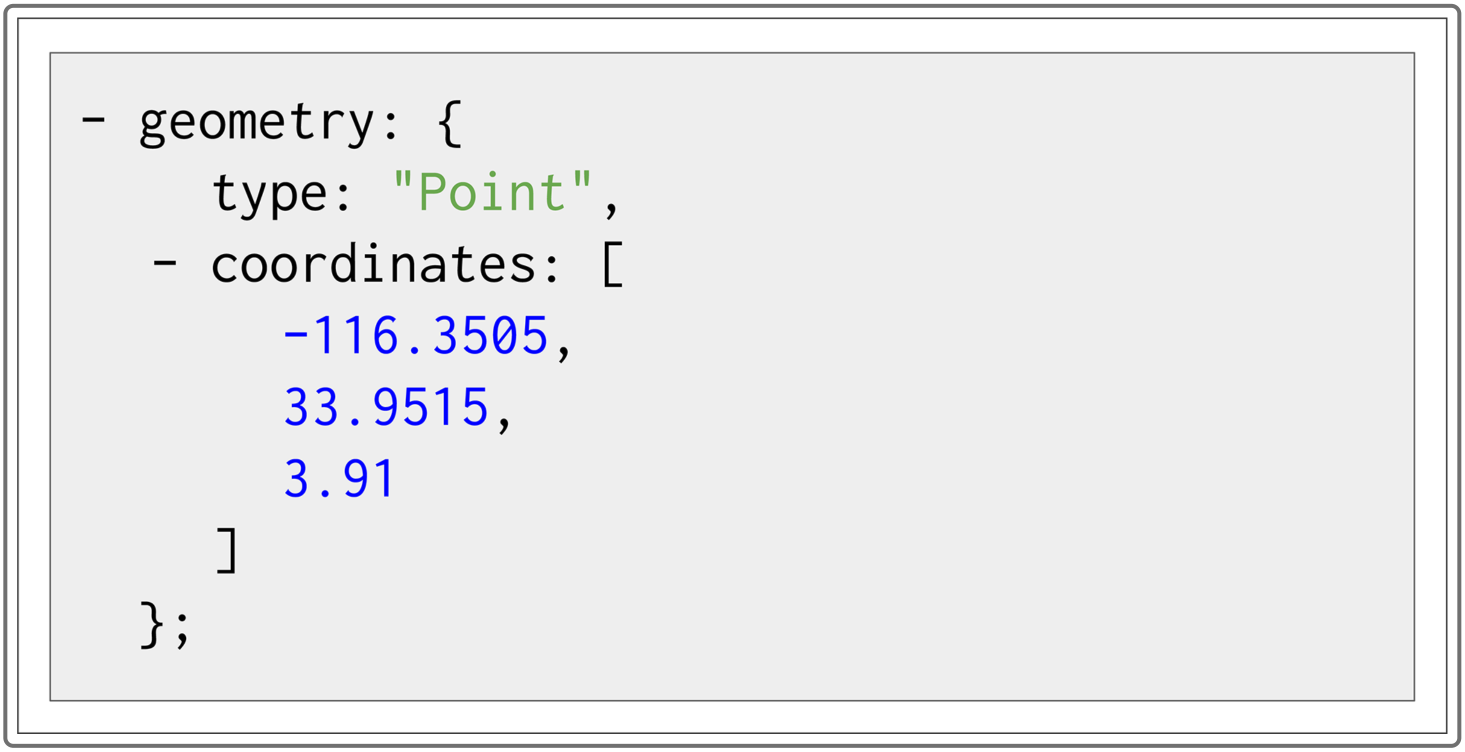
Nice work! The GeoJSON data will launch in your browser:



```
{
  type: "FeatureCollection",
- metadata: {
    generated: 1576877956000,
    url: "https://earthquake.usgs.gov/earthquakes/feed/v1.0/summary/all_week.geojson",
    title: "USGS All Earthquakes, Past Week",
    status: 200,
    api: "1.8.1",
    count: 2193
  },
- features: [
  - {
      type: "Feature",
    - properties: {
        mag: 1.12,
        place: "6km ENE of Cabazon, CA",
        time: 1576877258840,
        updated: 1576877487707,
        tz: -480,
        url: "https://earthquake.usgs.gov/earthquakes/eventpage/ci39007591",
        detail: "https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/ci39007591.geojson",
        felt: null,
        cdi: null,
        mmi: null,
        alert: null,
        status: "automatic",
        tsunami: 0,
        sig: 19,
        net: "ci",
        code: "39007591",
        ids: ",ci39007591,",
        sources: ",ci,",
        types: ",geoserve,nearby-cities,origin,phase-data,scitech-link,",
        nst: 25,
        dmin: 0.1172,
        rms: 0.21,
        gap: 65,
        magType: "ml",
        type: "earthquake",
        title: "M 1.1 - 6km ENE of Cabazon, CA"
      },
    - geometry: {
        type: "Point",
      - coordinates: [
          -116.7275,
          33.9356667,
          16.9
        ]
      },
      id: "ci39007591"
    },
```

↻ Retake

If we look closer at the geometry object, we'll see an additional data point in the coordinates object, 3.91, which is the depth of the earthquake in kilometers:



```
- geometry: {
      type: "Point",
    - coordinates: [
          -116.3505,
          33.9515,
          3.91
      ]
  };
```

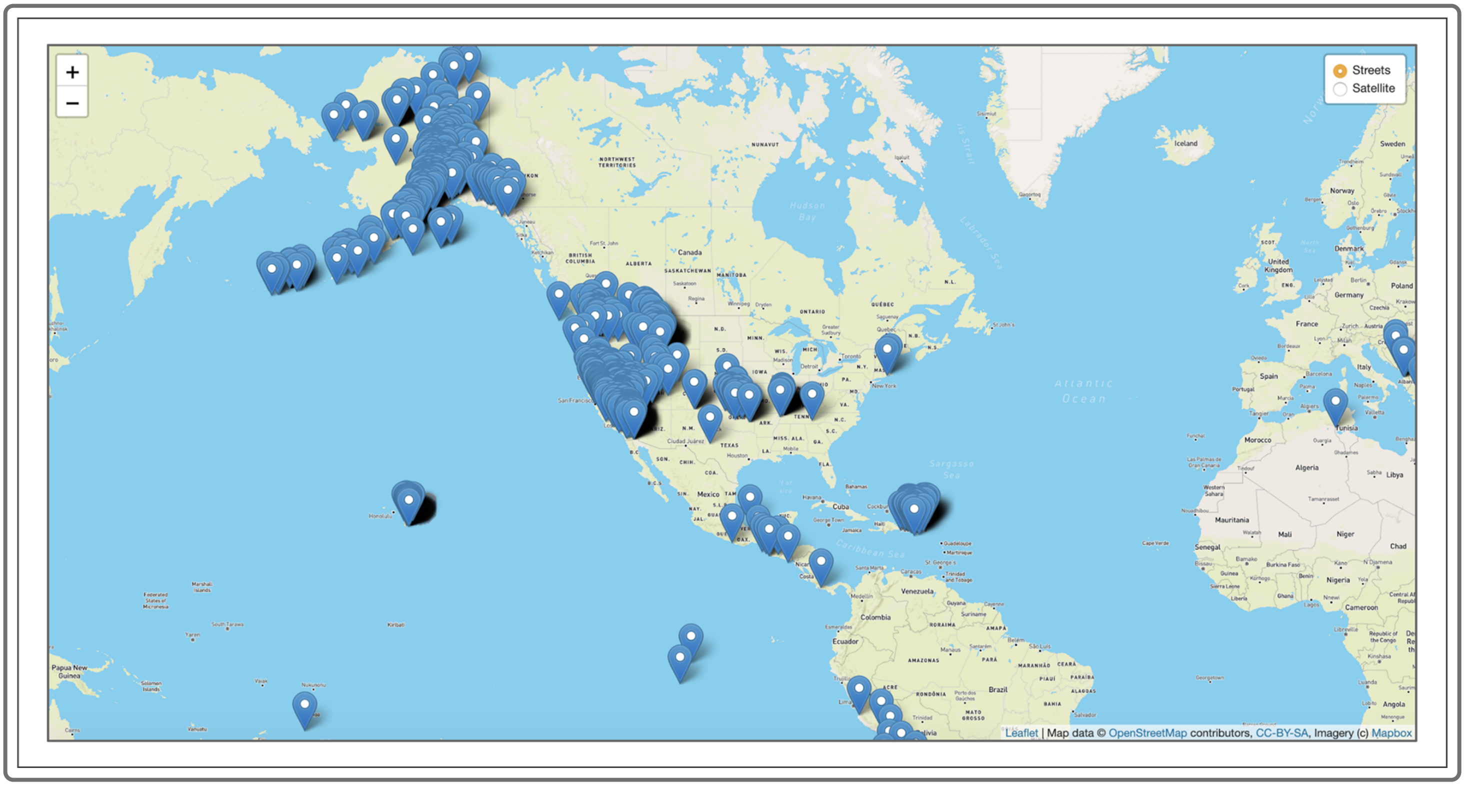
NOTE

For more information on earthquake depth and other terms, see the **Event Terms (https://earthquake.usgs.gov/data/comcat/data-eventterms.php)** .

Copy the URL for the earthquake JSON data recorded for the past seven days, and add it in place of the previous URL in the `d3.json()` method. It should look like the following:

```
// Retrieve the earthquake GeoJSON data.
d3.json("https://earthquake.usgs.gov/earthquakes/feed/v1.0/summary/all_week.geojson").then(function(data) {
  // Creating a GeoJSON layer with the retrieved data.
  L.geoJSON(data).addTo(map);
});
```

After saving the `logicStep1.js` file and opening the `index.html` file in your browser, the map should look like the following. Make sure you are referring to the correct `logic` file in your `index.html` file:


+
−
Streets
Satellite
Canada
Mexico
Atlantic Ocean
Iceland
Brazil
Algeria
Leaflet | Map data © OpenStreetMap contributors, CC-BY-SA, Imagery (c) Mapbox

Great job adding the earthquake data to our maps!

ADD/COMMIT/PUSH

Add, commit, and push your changes to your Earthquakes_past7days branch.

Let's make this data visually interesting by changing the marker to a circle with a radius representing the earthquake's magnitude, and then we'll style each earthquake data point.