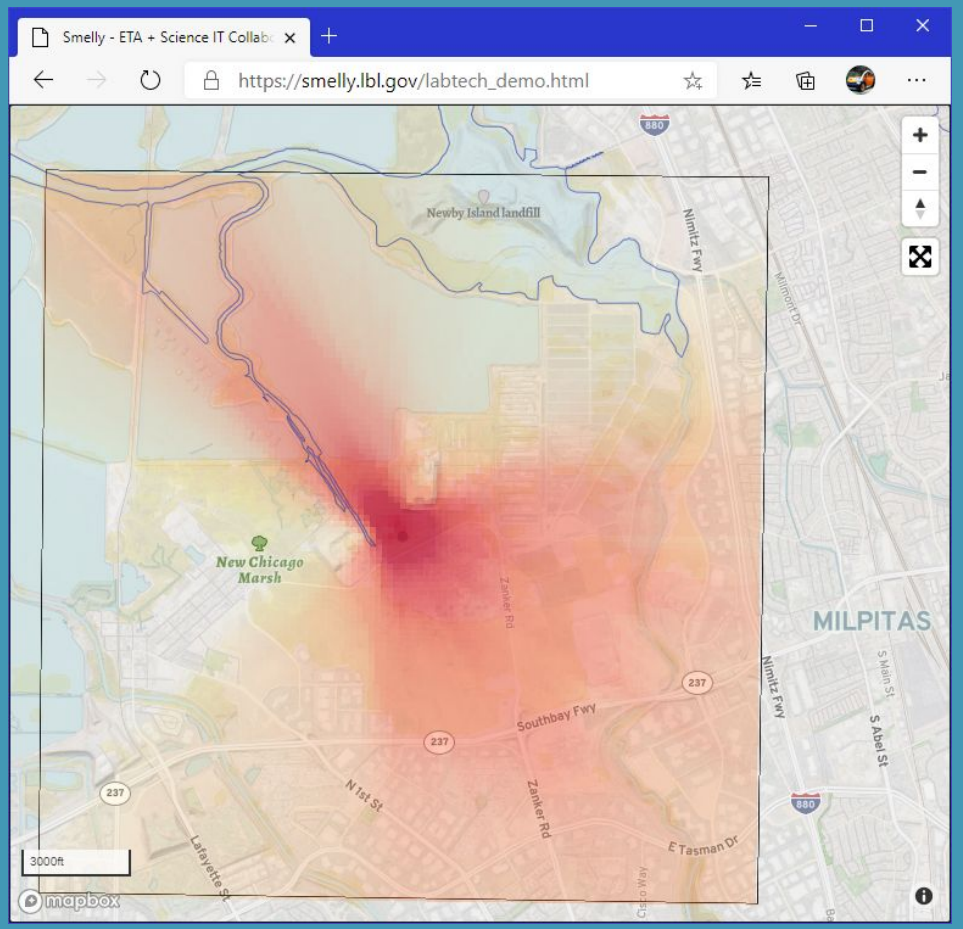
LAB TECH

How to go from Text / CSV to Interactive Web Map With Minimal Programming

	F	G	H	I	J	K	L	M	N	O
1	x	y	lon1	lat1	x1	y1	lon2	lat2	x2	y2
2	408118.3227	4523301.536	-124.1252537	40.82825793	405118.3227	4520301.536	-124.0541083	40.82892998	411118.3227	4520301.536
3	709973.7762	4128164.559	-120.6663357	37.25005539	706973.7762	4125164.559	-120.5987382	37.24870311	712973.7762	4125164.559
4	320643.3567	3910951.393	-119.0055577	35.29814262	317643.3567	3907951.393	-118.939604	35.29921871	323643.3567	3907951.393
5	640160.2969	3615904.715	-115.5376146	32.64524926	637160.2969	3612904.715	-115.4736626	32.64448785	643160.2969	3612904.715
6	444104.4179	3754302.31	-117.6370111	33.90046387	441104.4179	3751302.31	-117.5721185	33.90078234	447104.4179	3751302.31
7	595650.9153	4171656.001	-121.9495589	37.66040243	592650.9153	4168656.001	-121.8815447	37.65977708	598650.9153	4168656.001
8	668831.5349	4278320.816	-121.0953699	38.61091151	665831.5349	4275320.816	-121.0264952	38.60976979	671831.5349	4275320.816
9	580672.1725	4230907.556	-122.1129694	38.19576359	577672.1725	4227907.556	-122.0444568	38.19522595	583672.1725	4227907.556
10	241553.5368	4065771.856	-119.9256048	36.67466712	238553.5368	4062771.856	-119.8585409	36.67629715	244553.5368	4062771.856
11	511956.7612	4270581.254	-122.8972018	38.55662131	508956.7612	4267581.254	-122.8283391	38.55654059	514956.7612	4267581.254
12	444438.5486	3765495.06	-117.6341457	34.00142363	441438.5486	3762495.06	-117.5691763	34.0017414	447438.5486	3762495.06



LabTech 2020

BERKELEY LAB

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Acknowledgement

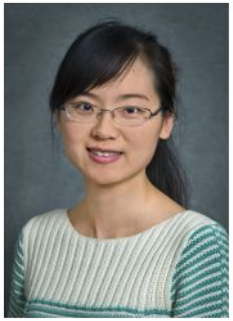
Smelly.lbl.gov was a collaboration between

Energy Technology Area and Scientific Computing

Tom Kirchstetter (PI)

Corinne Scown (Co-PI)

Andrew Satchwell



Ling Jin

Nancy Brown

Sarah Smith

Chelsea Preble

Sarah Nordahl

Mike Sohn

Randy Maddalena

Wei Zhou

Tin Ho

Project Poster:
https://github.com/lbnl-scienceit/smelly/blob/master/figures/odor_poster_v7.4.pdf

Information Technology
BERKELEY LAB

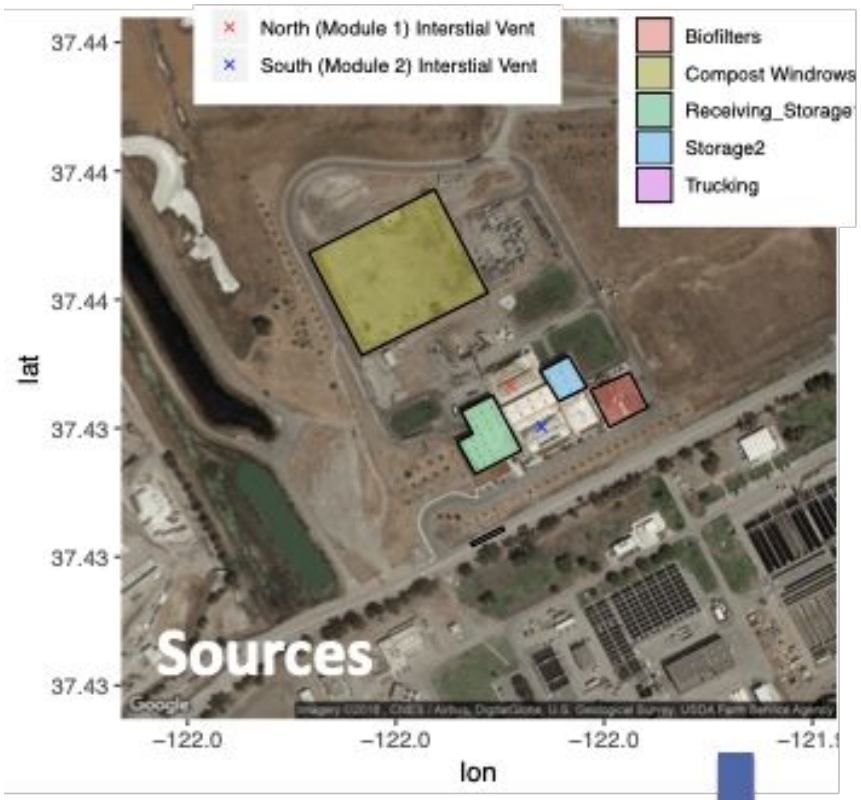
Project Background:
Enabling Anaerobic Digestion Deployment for Municipal Solid Waste-to-Energy

CEC funded study (2015-2019)

ZWEDC is the largest Dry AD facility and faces scale-up barriers:

- Odor results in public adversity
- Siting and air permitting of new facilities
- High capital and operational costs
- Uncertainty in revenue for power output, compost, and other co-products

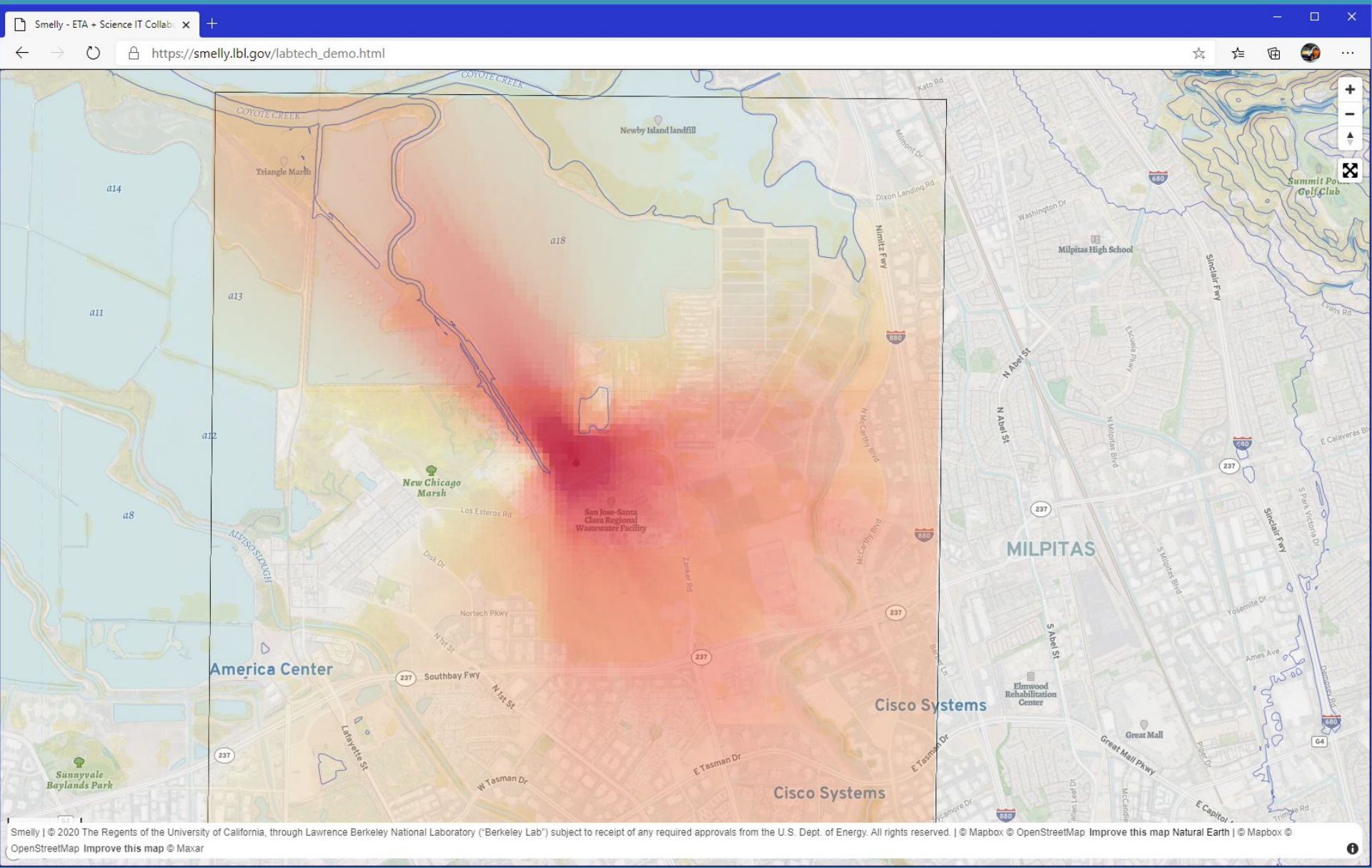
Atmospheric Dispersion Modeling to Simulate Odor Concentrations Downwind of the Facility



AERMOD

- Prevailing winds
- Atmospheric turbulences
- Building downwash
- Terrain and surface data
- Source data
- Receptor data

The goal: interactive web app



Tasks Overview

- What is Mapbox, what can it do
- What kind of data can be put on a map
- How to geocode data
- How to upload data to Mapbox server
- How to create interactive web page
- How to get a web site with lbl.gov hosted by github for free

LBLnet

Mapbox

Create and style clusters

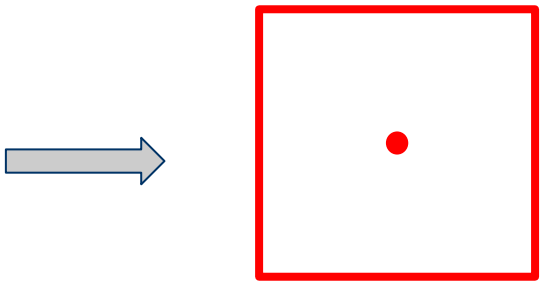
Create a heatmap layer

Style circles with a data-driven property

Add a pattern to a polygon

Data source example

	A	B	C	D	E
1		id	lon	lat	Concentration
2	1	1	-121.9842746	37.46179406	2.254071786
3	2	2	-121.9837093	37.4617892	2.370530068
4	3	3	-121.983144	37.46178433	2.222403045
5	4	4	-121.9825787	37.46177947	2.070827619
6	5	5	-121.9820134	37.4617746	2.086100612



Convert point to area/polygon

	A	B	C	D	E	F	G	H	I	J	K
1		id	lon1	lat1	Concentration	lon2	lat2	lon3	lat3	lon4	lat4
2	1	1	-121.9845573	37.46179649	2.254071786	-121.983992	37.46179163	-121.9839981	37.46134101	-121.9845634	37.46134587
3	2	2	-121.983992	37.46179163	2.370530068	-121.9834267	37.46178677	-121.9834328	37.46133615	-121.9839981	37.46134101
4	3	3	-121.9834267	37.46178677	2.222403045	-121.9828614	37.4617819	-121.9828675	37.46133129	-121.9834328	37.46133615
5	4	4	-121.9828614	37.4617819	2.070827619	-121.9822961	37.46177703	-121.9823022	37.46132642	-121.9828675	37.46133129
6	5	5	-121.9822961	37.46177703	2.086100612	-121.9817308	37.46177216	-121.9817369	37.46132155	-121.9823022	37.46132642

Example .geojson

```
{ "type": "FeatureCollection", "features": [
   { "type":       "Feature",
     "properties":
          {"conc": 0.18577},
     "geometry": { "type": "Polygon", "coordinates": [ [
            [ -121.985, 37.407 ],
            [ -121.984, 37.407 ],
            [ -121.984, 37.406 ],
            [ -121.985, 37.406 ],
            [ -121.985, 37.407 ],
     ] ] }
   } ,
   { "type":       "Feature",
     "properties":
          {"conc": 0.16983},
     "geometry": { "type": "Polygon", "coordinates": [ [
            [ -121.983, 37.407 ],
            [ -121.983, 37.407 ],
            [ -121.983, 37.406 ],
            [ -121.983, 37.406 ],
            [ -121.983, 37.407 ],
     ] ] }
   }
] }
```


ljin@lbl.gov | tin@lbl.gov | LabTech 2020

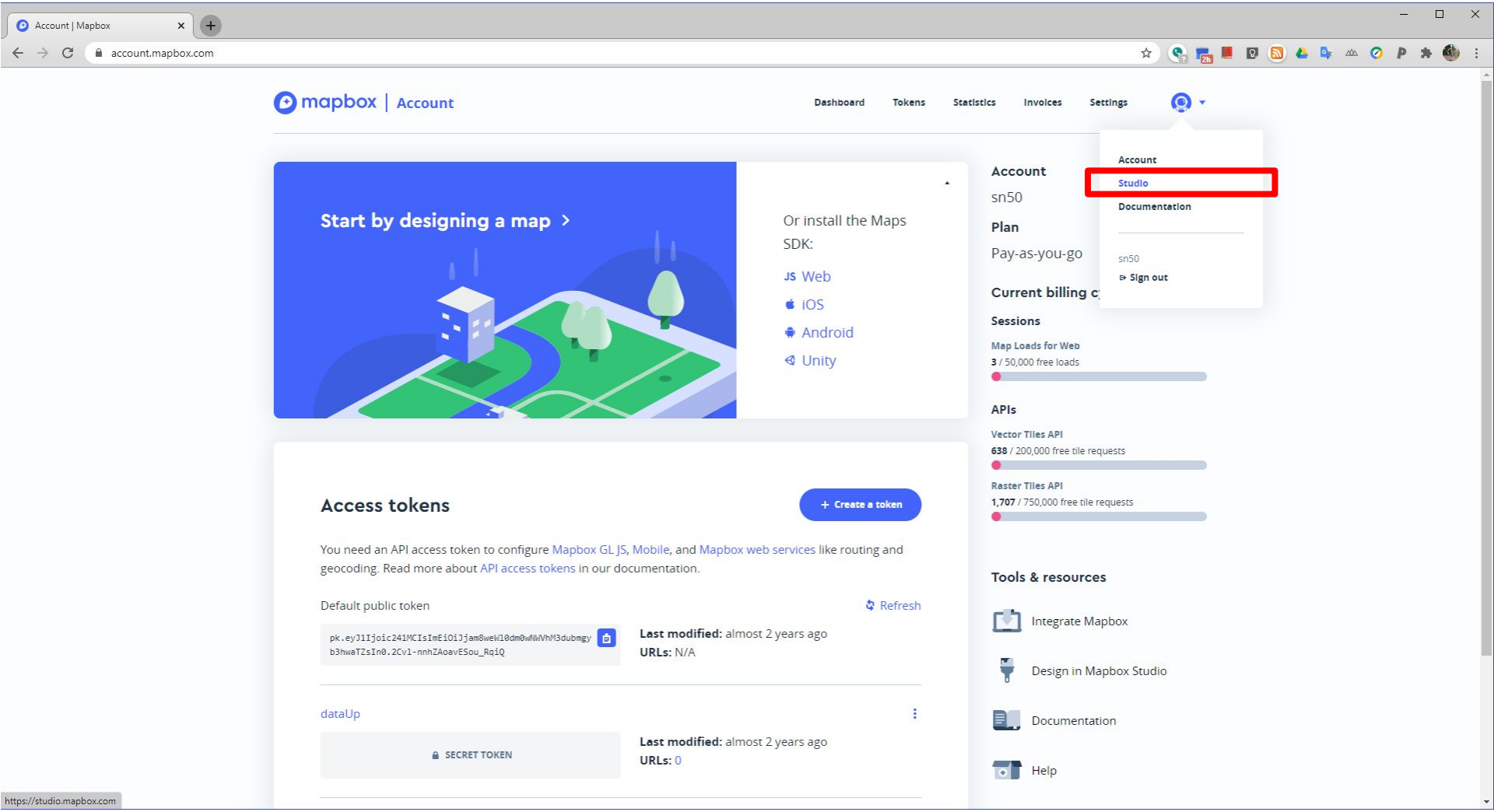
Convert csv to geojson

cat concentration.csv | ./csv2gson.py > conc.geojson

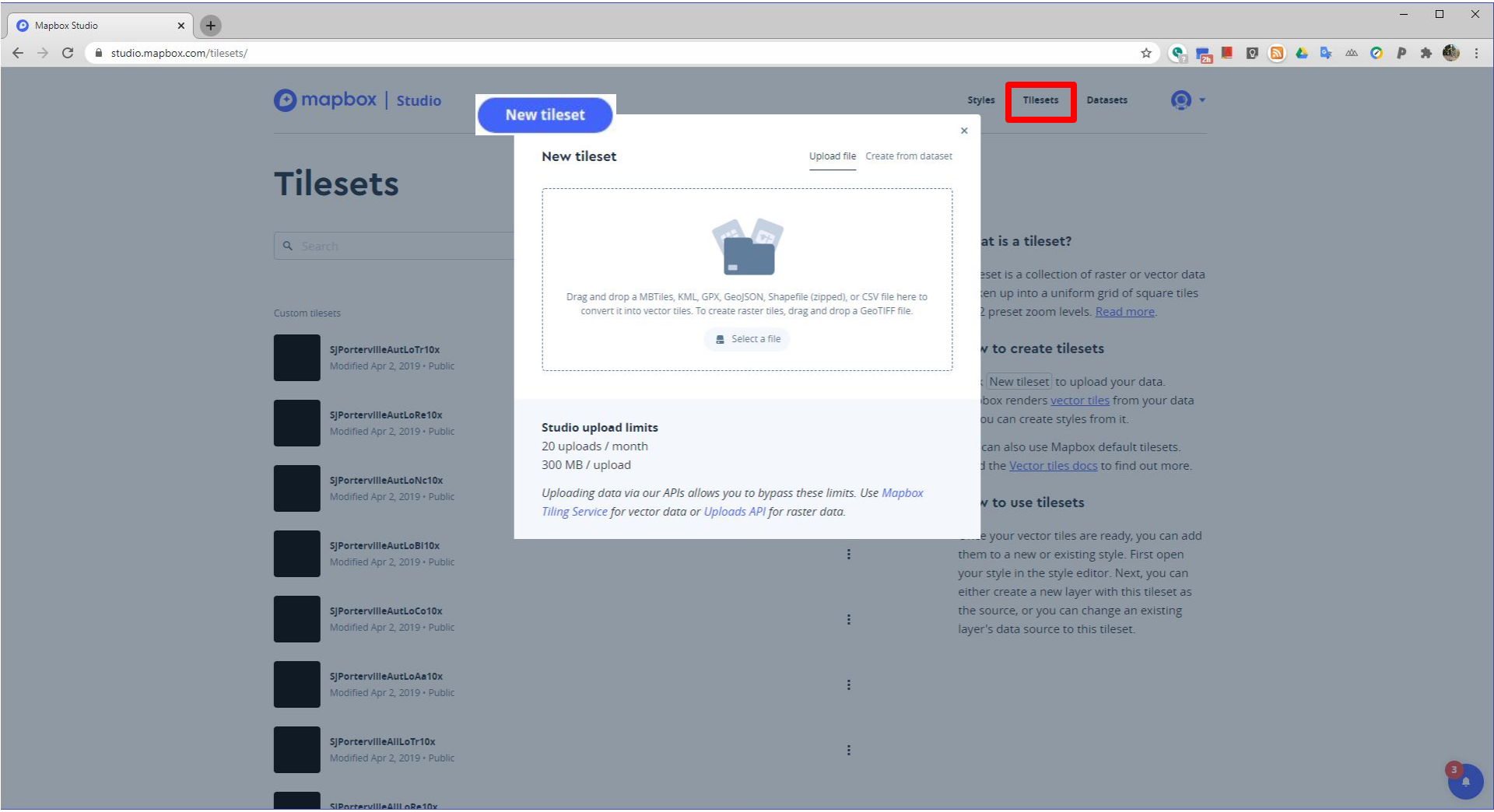
Get script from:

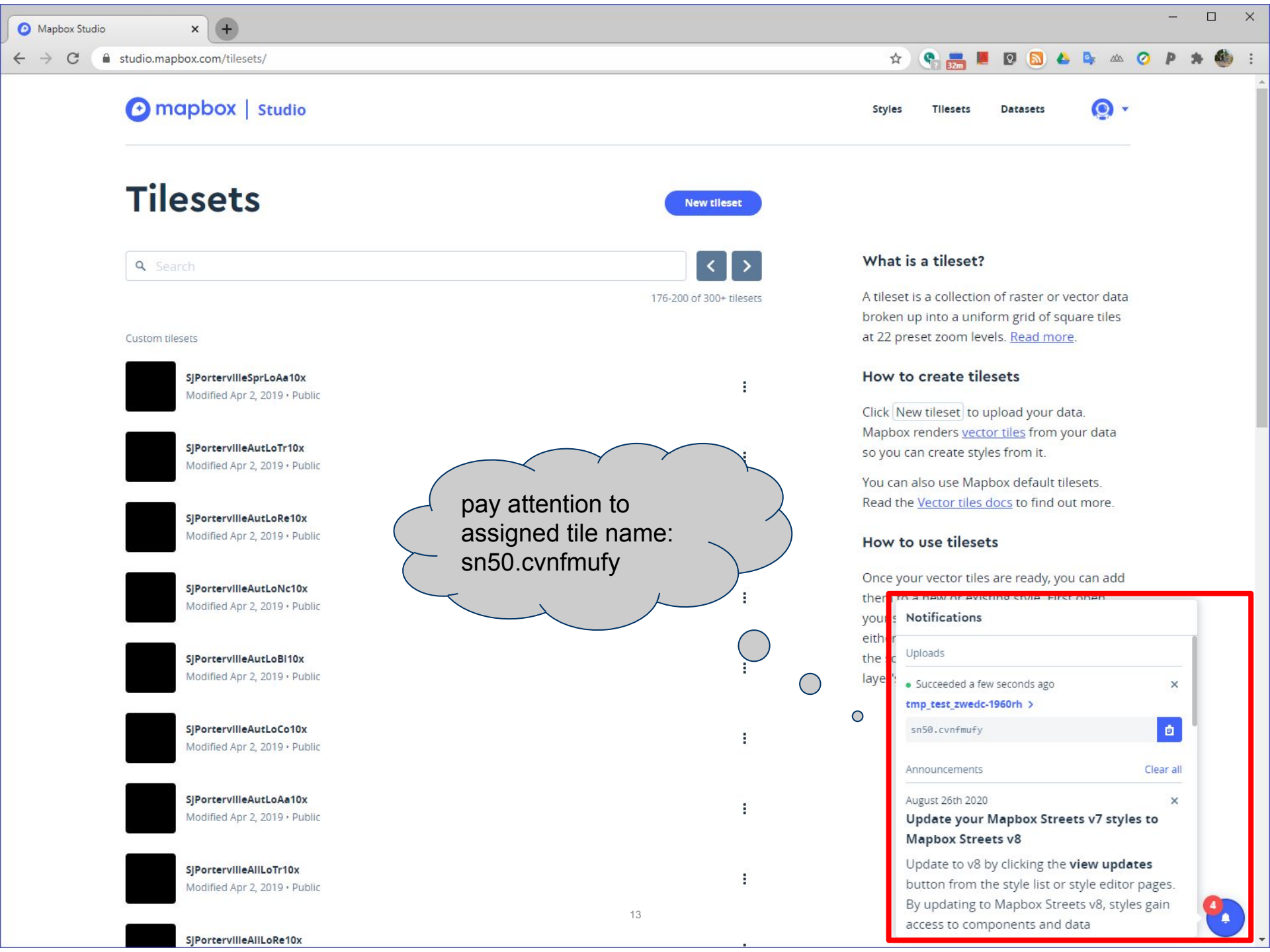
https://github.com/lbnl-scienceit/smelly/blob/master/csv2gson.py

Mapbox Studio

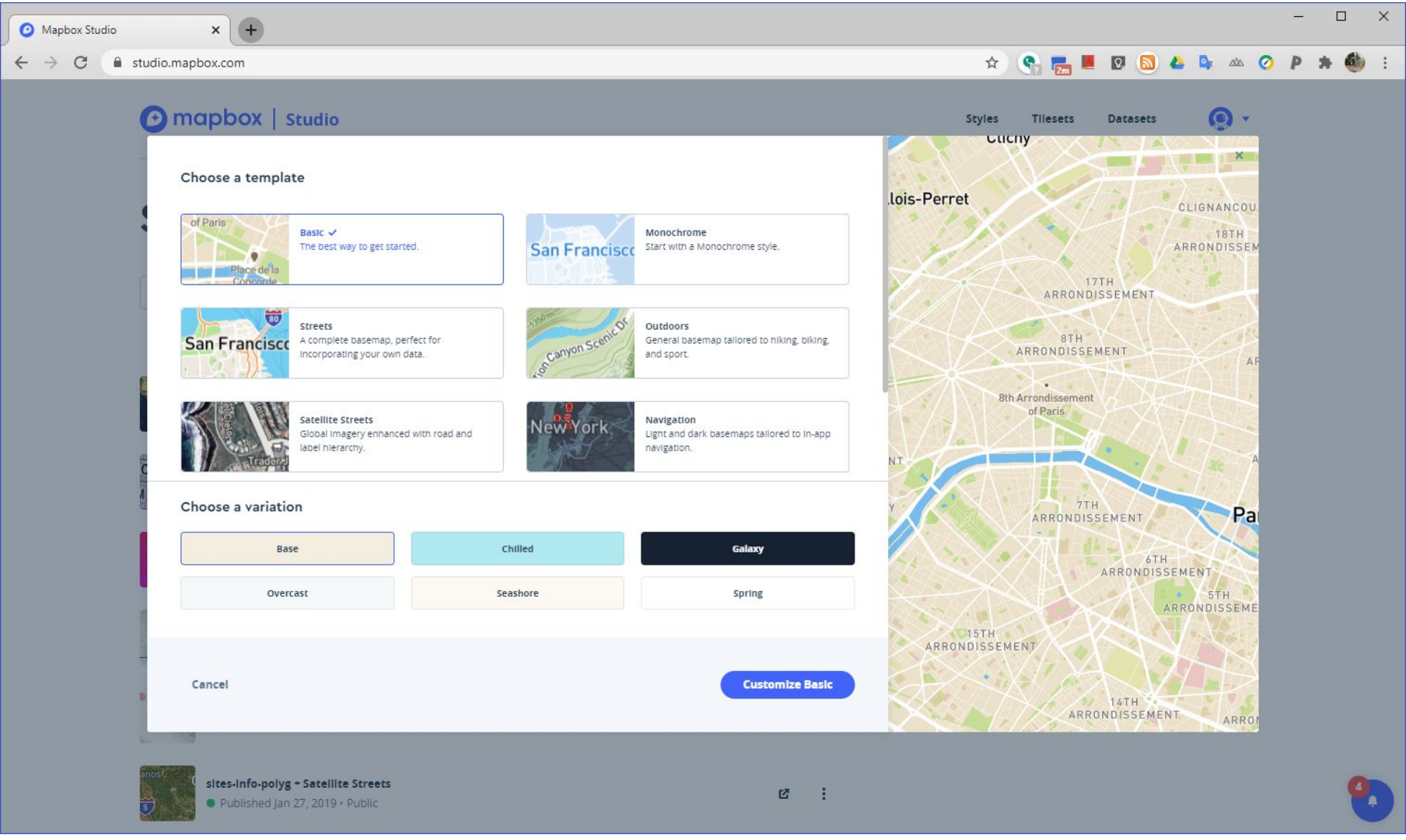


Upload New Tileset

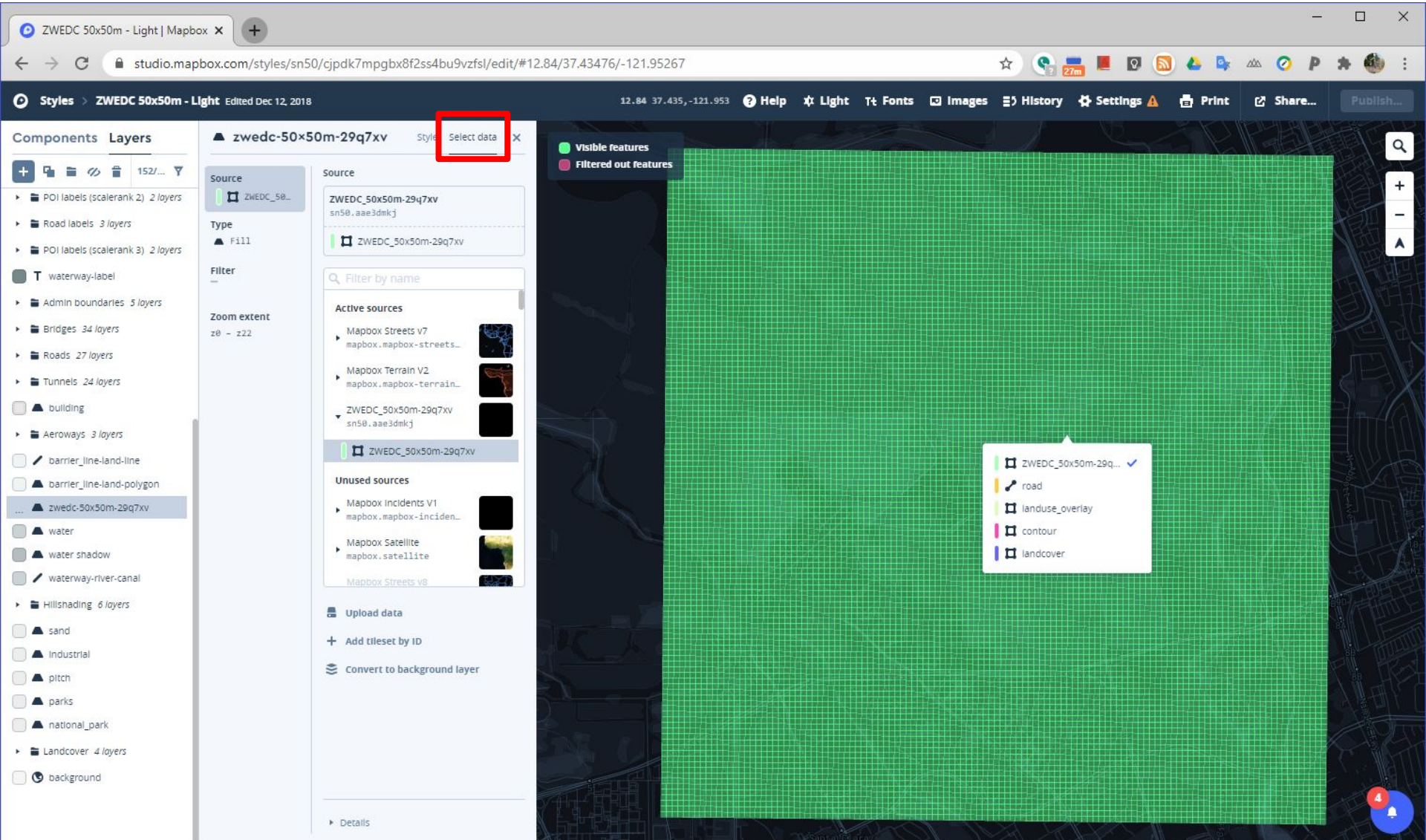



Mapbox Studio
studio.mapbox.com/tilesets/
mapbox | Studio
Styles
Tilesets
Datasets
Tilesets
New tileset
Search
176-200 of 300+ tilesets
Custom tilesets
SJPortervilleSprLoAa10x
Modified Apr 2, 2019 • Public
SJPortervilleAutLoTr10x
Modified Apr 2, 2019 • Public
SJPortervilleAutLoRe10x
Modified Apr 2, 2019 • Public
SJPortervilleAutLoNc10x
Modified Apr 2, 2019 • Public
SJPortervilleAutLoBl10x
Modified Apr 2, 2019 • Public
SJPortervilleAutLoCo10x
Modified Apr 2, 2019 • Public
SJPortervilleAutLoAa10x
Modified Apr 2, 2019 • Public
SJPortervilleAllLoTr10x
Modified Apr 2, 2019 • Public
SJPortervilleAllLoRe10x
pay attention to assigned tile name: sn50.cvnfmufy
What is a tileset?
A tileset is a collection of raster or vector data broken up into a uniform grid of square tiles at 22 preset zoom levels. Read more.
How to create tilesets
Click New tileset to upload your data. Mapbox renders vector tiles from your data so you can create styles from it.
You can also use Mapbox default tilesets. Read the Vector tiles docs to find out more.
How to use tilesets
Once your vector tiles are ready, you can add
Notifications
Uploads
Succeeded a few seconds ago
tmp_test_zwedc-1960rh
sn50.cvnfmufy
Announcements
Clear all
August 26th 2020
Update your Mapbox Streets v7 styles to Mapbox Streets v8
Update to v8 by clicking the view updates button from the style list or style editor pages. By updating to Mapbox Streets v8, styles gain access to components and data
4
13

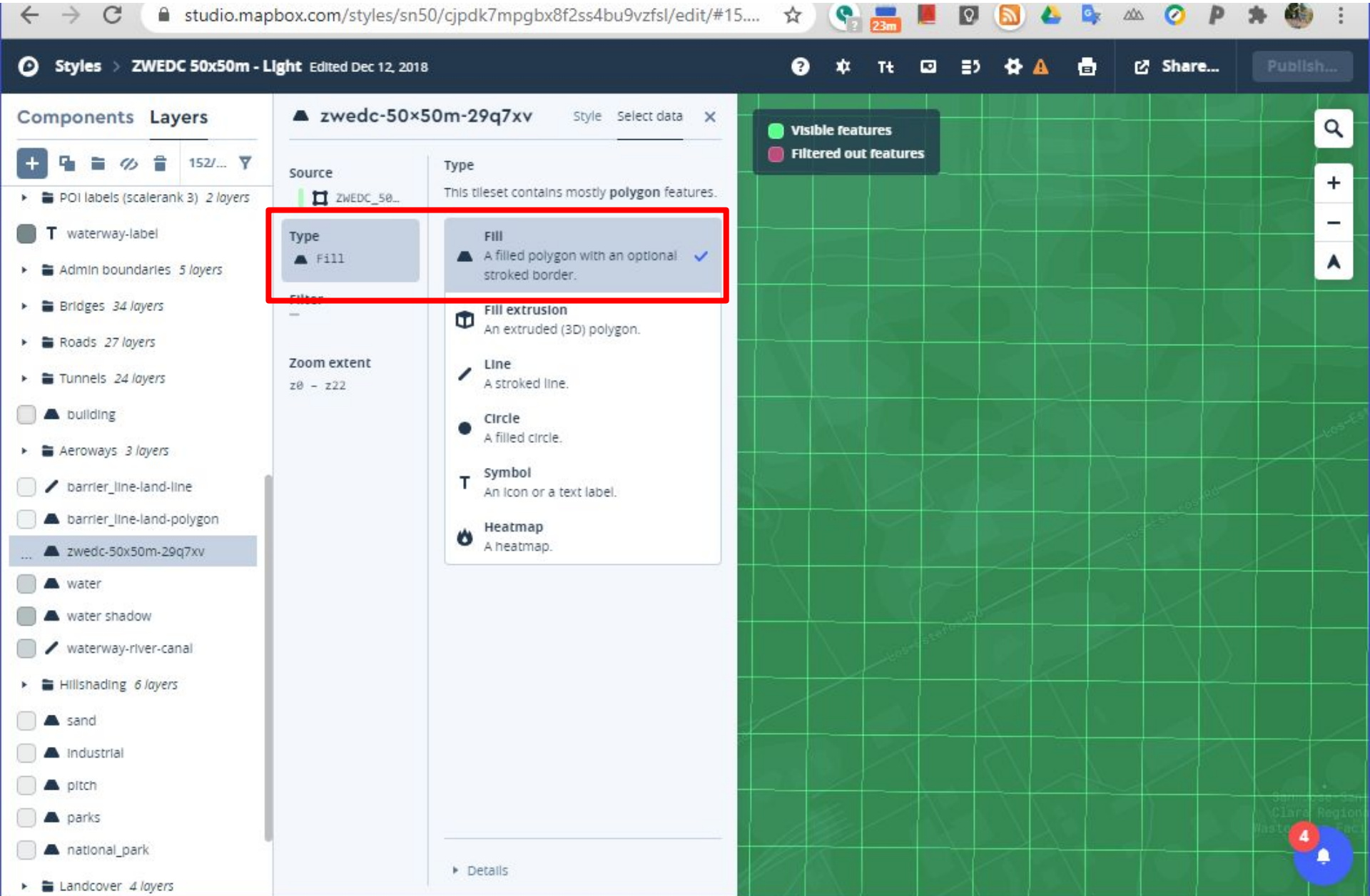
Style a base map



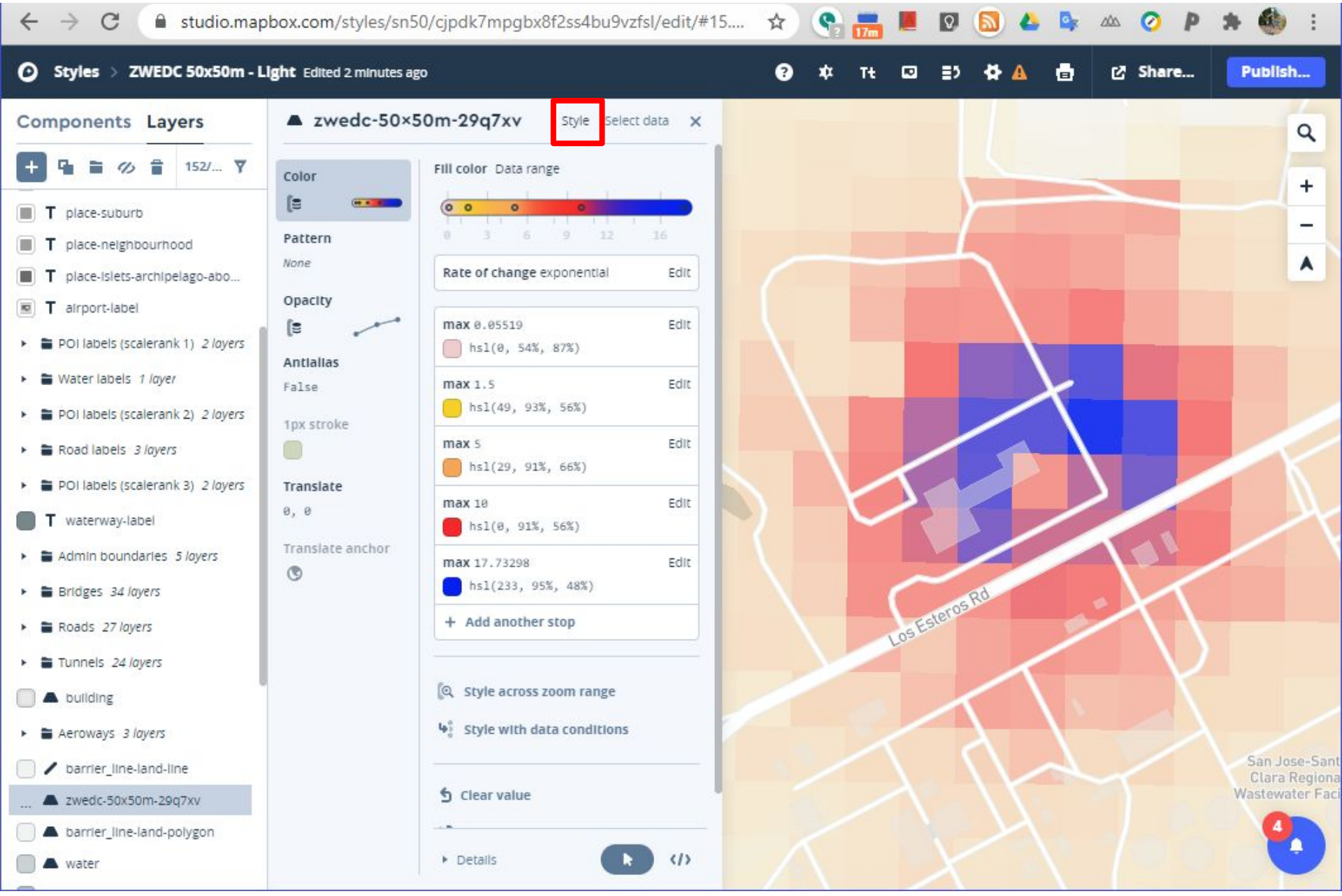
Add Tileset to New Layer



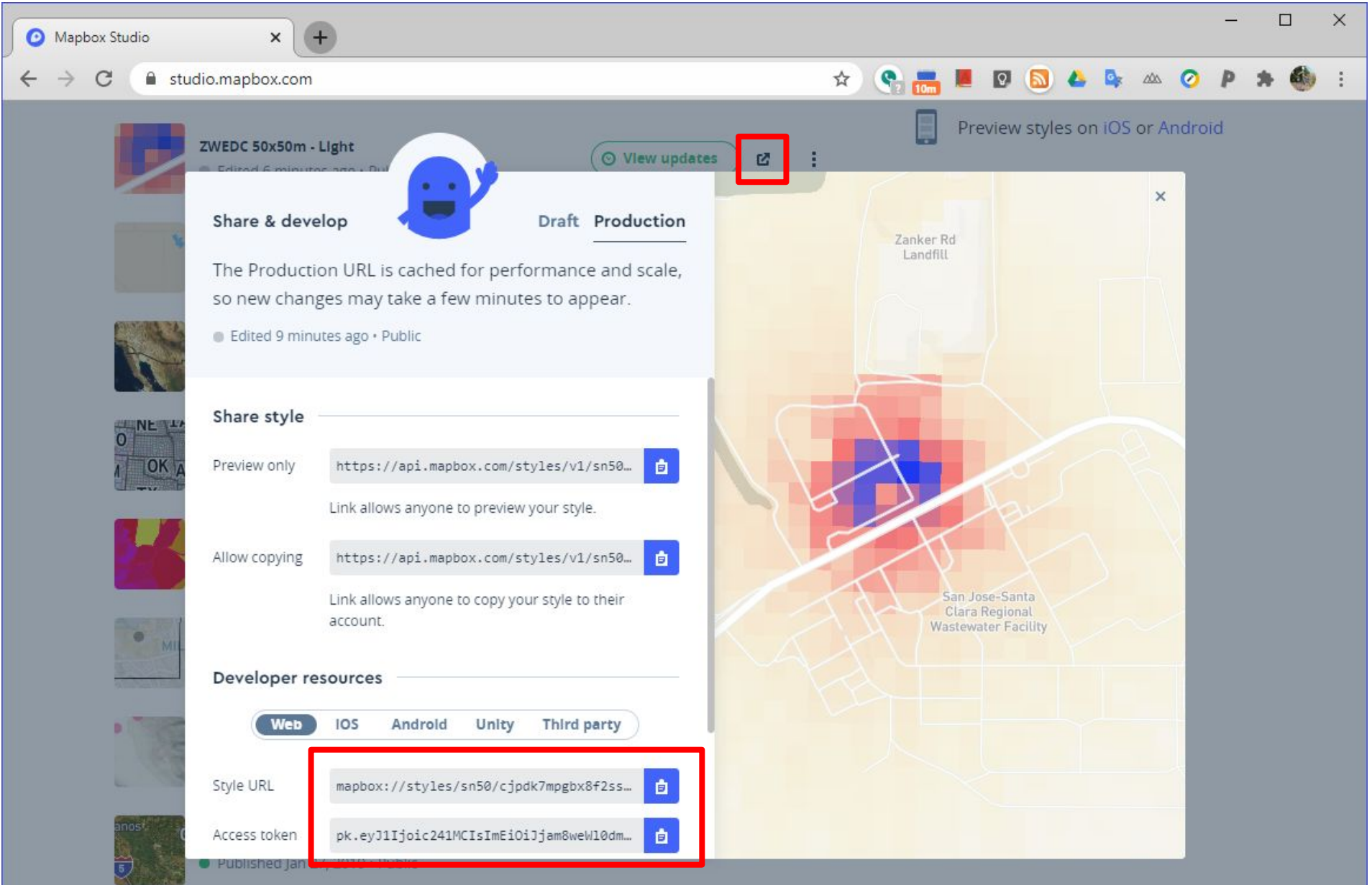
Select data source & type



Style data dynamically



Publish your map



Copy web page template

https://docs.mapbox.com/mapbox-gl-js/api/

Mapbox GL JS | API Reference | Examples | Plugins | Style Specification | Search

Search API Reference

Introduction

- Quickstart
- Reading this documentation
- CSP Directives
- Referrer Policies
- Mapbox CSS

Map

Properties and options

Markers and controls

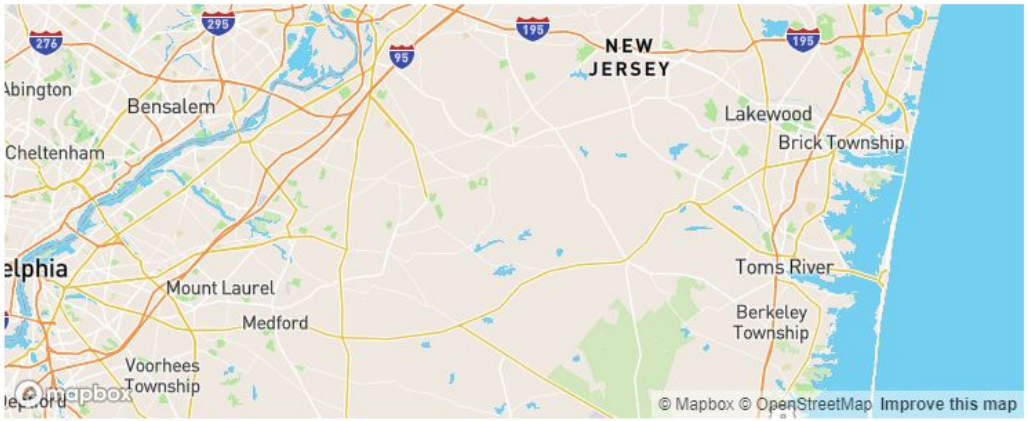
Geography and geometry

User interaction handlers

Sources

Events

Quickstart



To get started, you need an access token and a style URL. You can choose from one of our professionally designed styles or create your own using Mapbox Studio.

Mapbox CDN | Module bundler

Include the JavaScript and CSS files in the `<head>` of your HTML file.

```
<script src='https://api.mapbox.com/mapbox-gl-js/v1.12.0/mapbox-gl.js'></script>
<link href='https://api.mapbox.com/mapbox-gl-js/v1.12.0/mapbox-gl.css' rel='stylesheet' />
```

Include the following code in the `<body>` of your HTML file.

```
<div id='map' style='width: 400px; height: 300px;'></div>
<script>
mapboxgl.accessToken = 'pk.eyJ1Ijoic241MCIsImEiOiJjam8weWl0dm0wNWVhM3dubmgyb3hwaTZsIn0.2Cv1-
  nnhZAoavESou_RqiQ';
var map = new mapboxgl.Map({
    container: 'map',
    style: 'mapbox://styles/mapbox/streets-v11', // stylesheet location
    center: [-74.5, 40], // starting position [lng, lat]
    zoom: 9 // starting zoom
});
</script>
```

Edit web page template with your map info

*C:\tin\tin-gh\lbnl-scienceit\smelly\labtech_demo.html - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

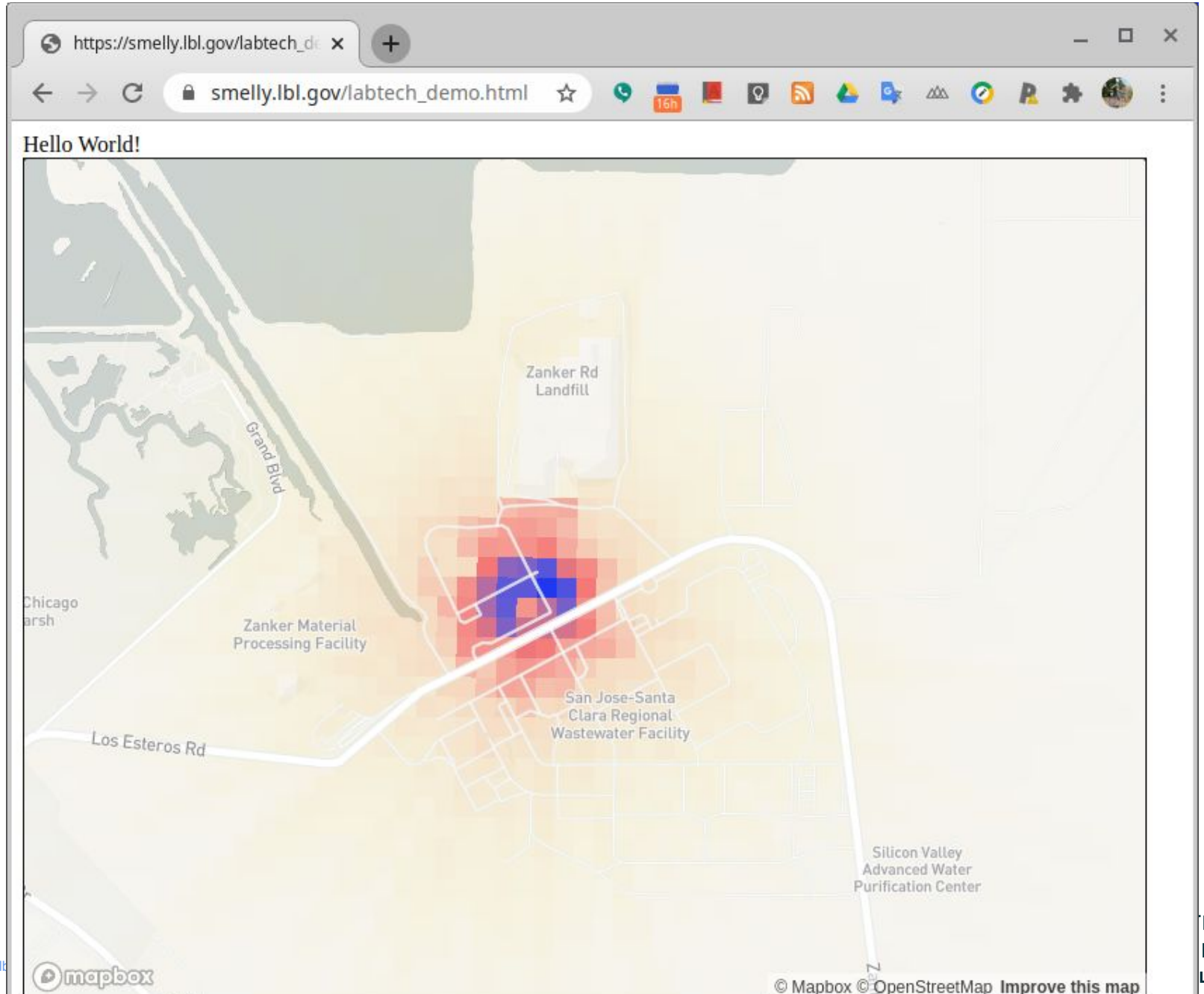
labtech_demo.html

```
1  <HTML>
2  <!-- https://docs.mapbox.com/mapbox-gl-js/api/ -->
3
4
5  <script src='https://api.mapbox.com/mapbox-gl-js/v1.12.0/mapbox-gl.js'></script>
6  <link href='https://api.mapbox.com/mapbox-gl-js/v1.12.0/mapbox-gl.css' rel='stylesheet' />
7
8
9  Hello World!
10
11 <div id='map' style='width: 800px; height: 600px;'></div>
12         <script>
13         mapboxgl.accessToken = 'pk.eyJ1Ijoic24lMCxxxxxxxxxxxxxxxxx'; // use your own token
14         var map = new mapboxgl.Map({
15             container: 'map',
16             style: 'mapbox://styles/sn50/cjpdk7mpgbx8f2ss4bu9vzfsl', // use your own style
17             center: [-121.945, 37.434], // starting position [lng, lat]
18             zoom: 14 // starting zoom
19         });
20         </script>
21
22
23 </HTML>
24
```

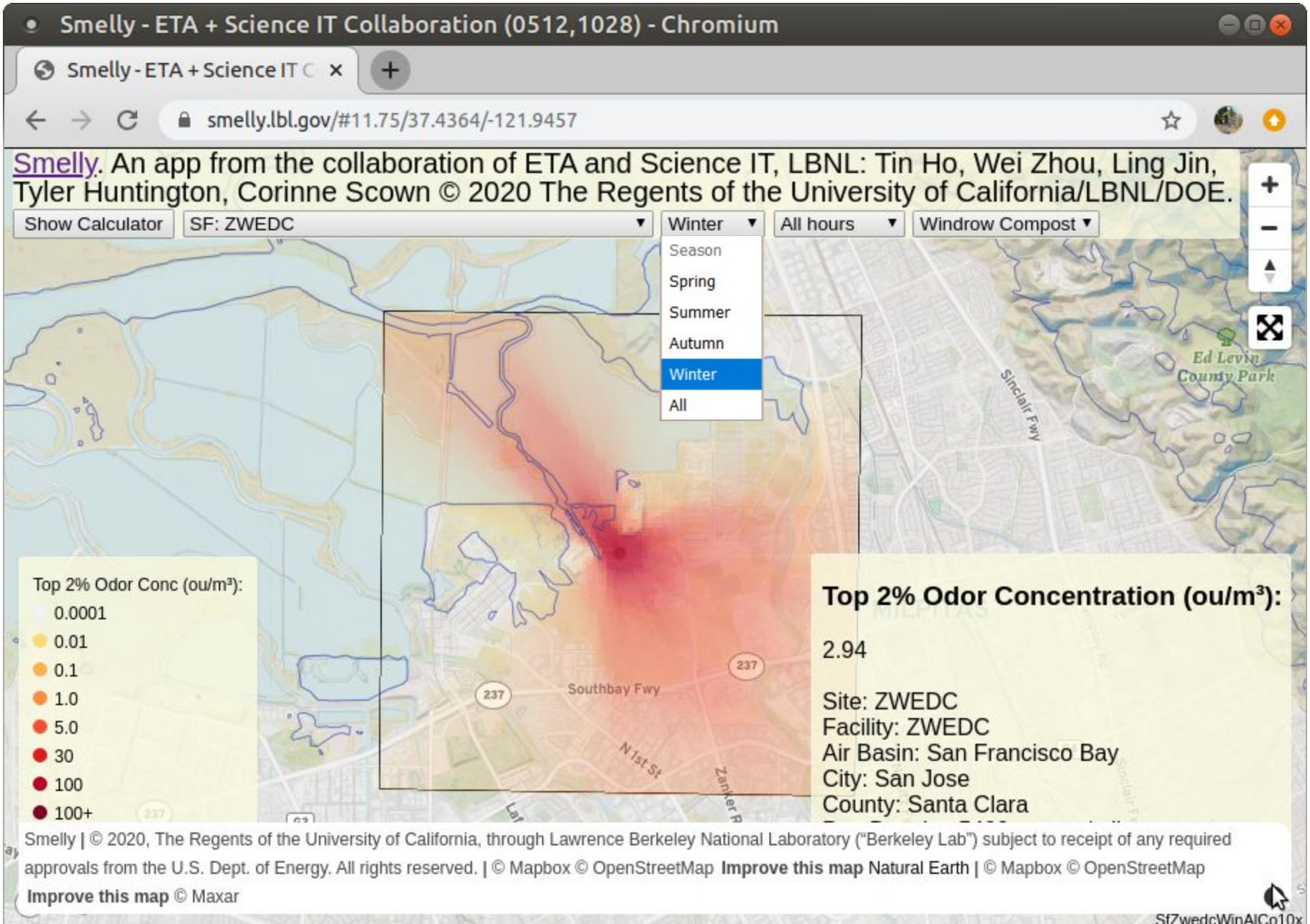
Hyper Text Markup La length : 722 lines : 24 | Ln : 13 Col : 66 Sel : 0 | 0 | Unix (LF) | UTF-8 | INS

Result

https://smelly.lbl.gov/labtech_demo.html



More Advance Setup https://smelly.lbl.gov/

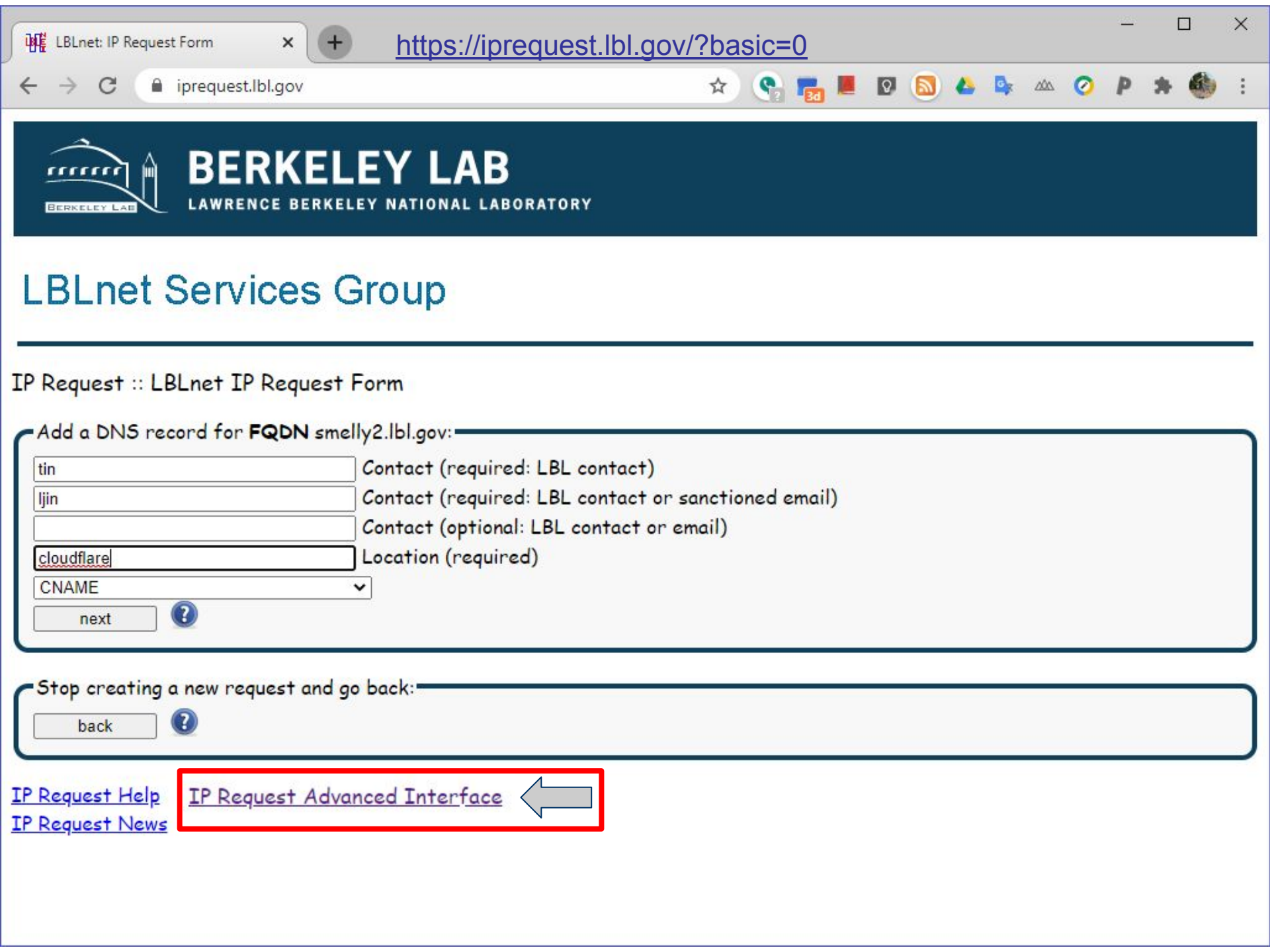


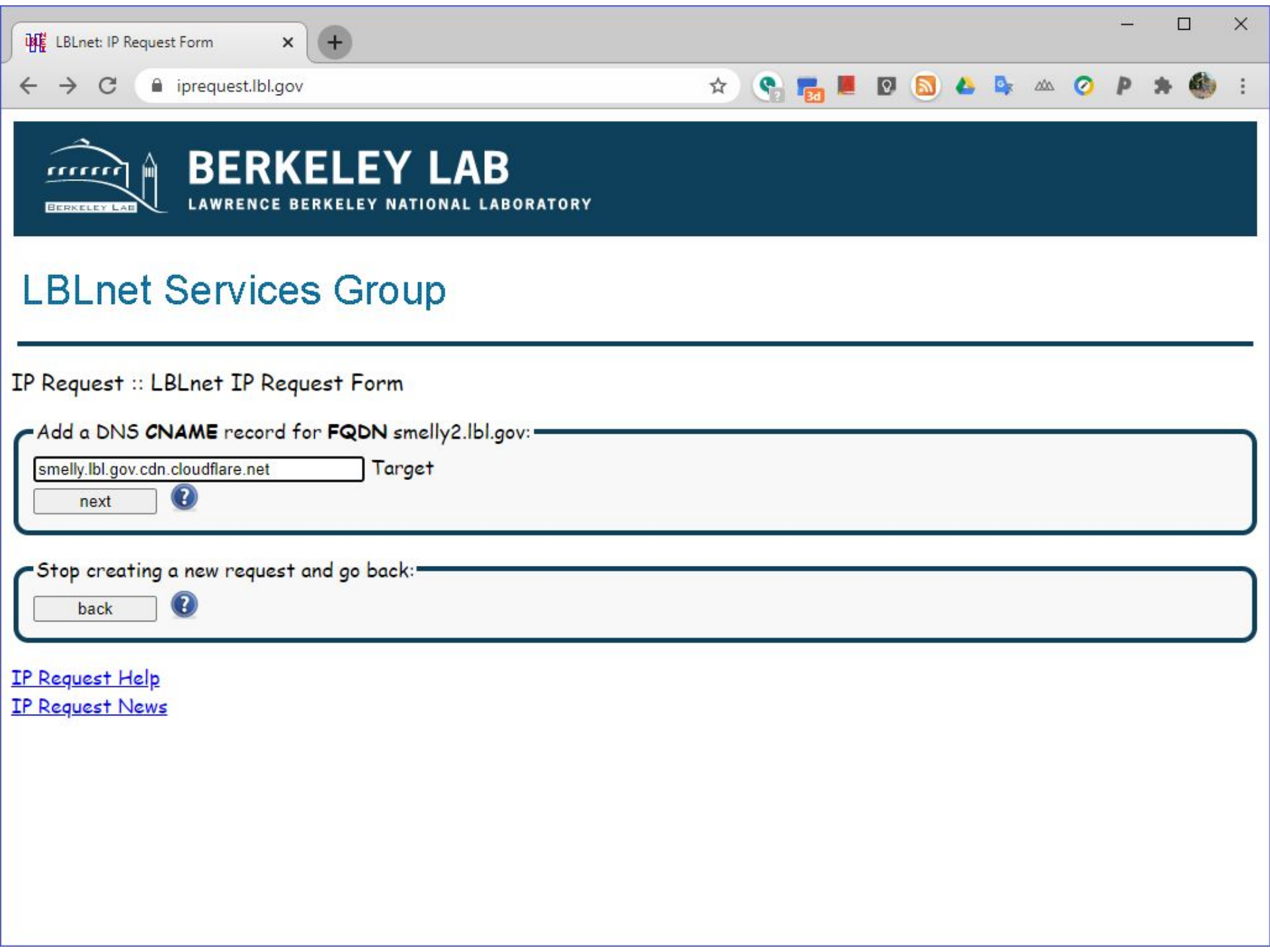
Create Public Web Site

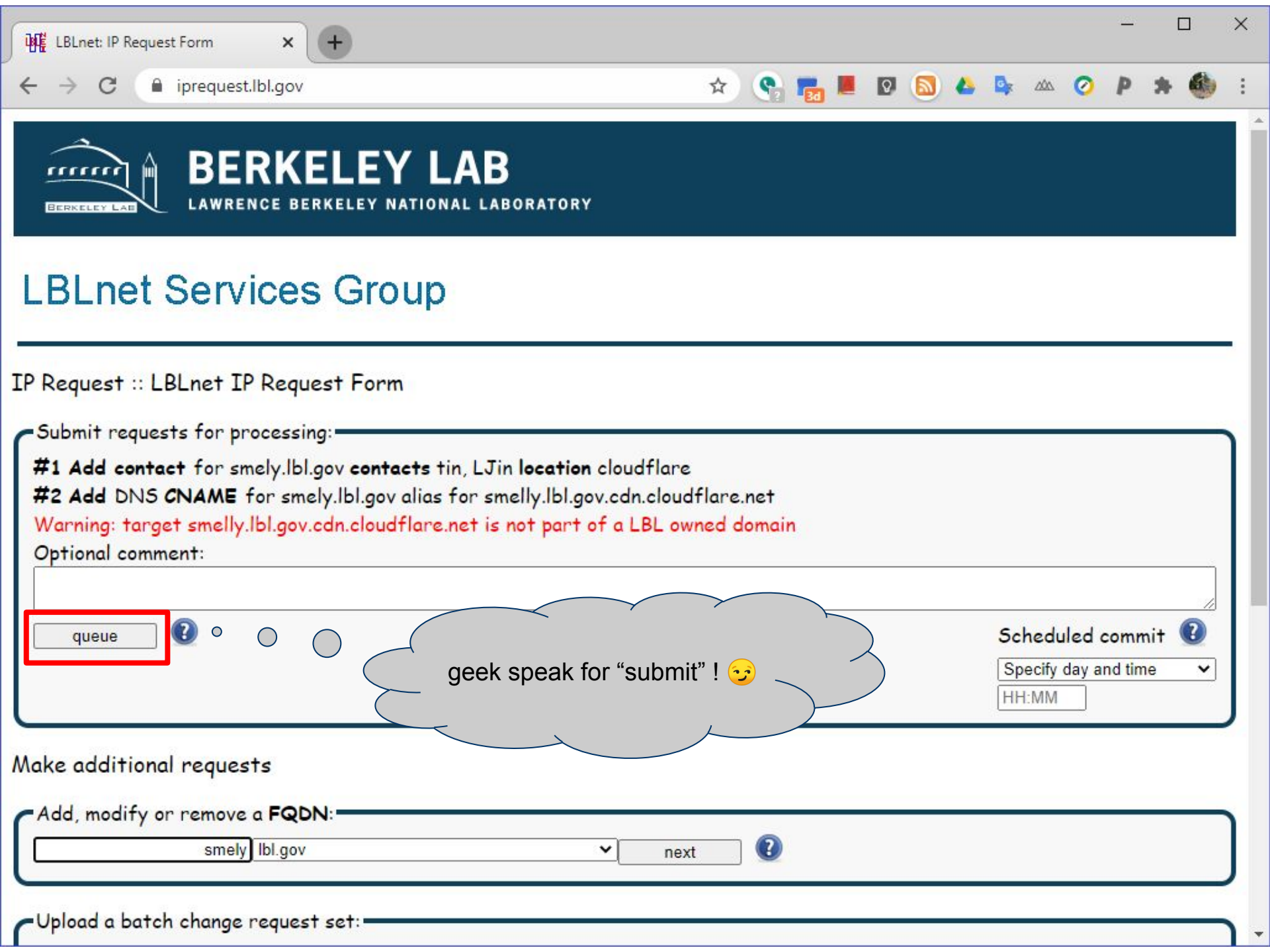
Use Github to host HTML page

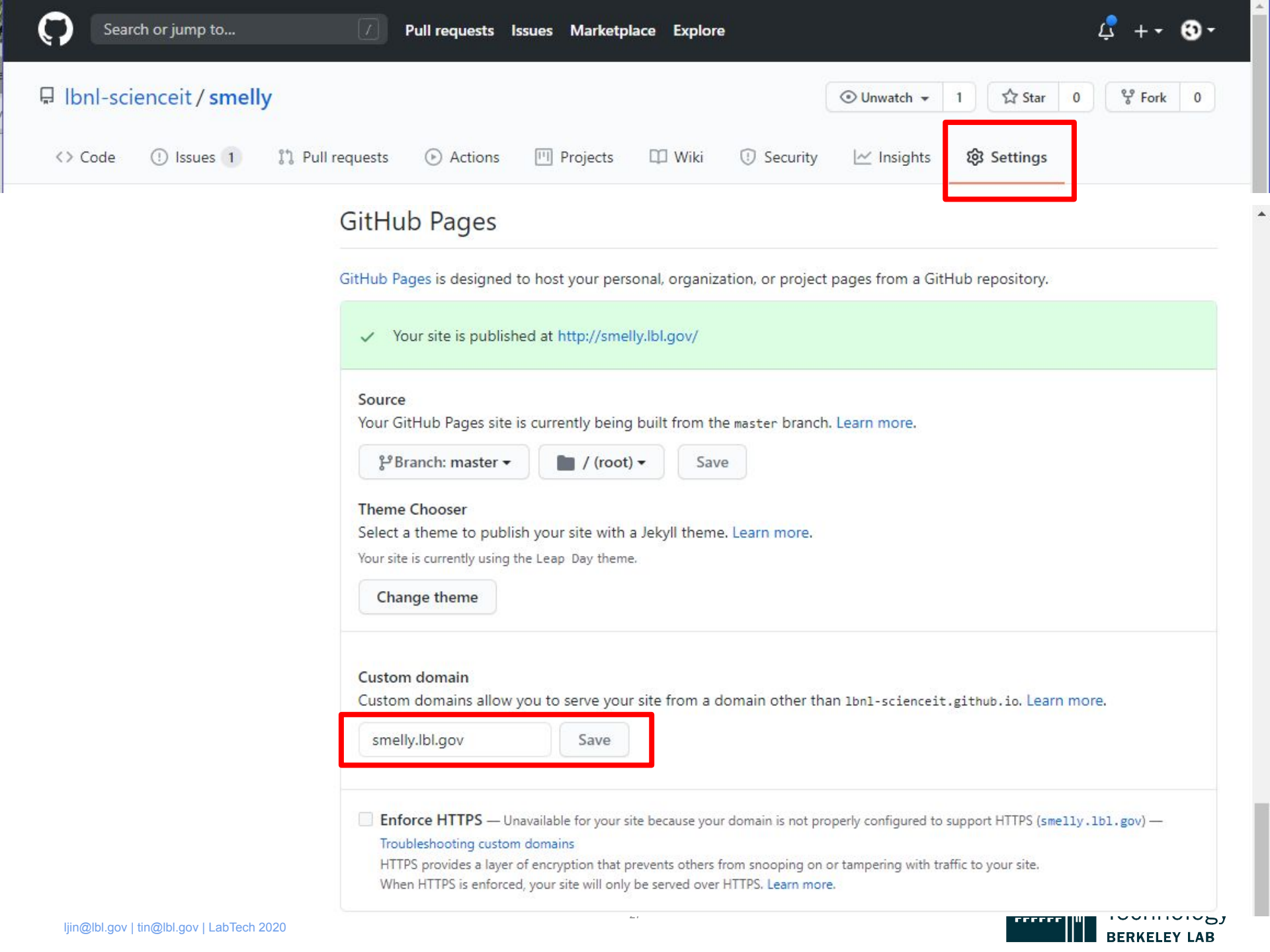
Create CNAME with lbl.gov

complete form in https://iprequest.lbl.gov


LBLnet: IP Request Form
https://iprequest.lbl.gov/?basic=0
iprequest.lbl.gov
BERKELEY LAB
LAWRENCE BERKELEY NATIONAL LABORATORY
LBLnet Services Group
IP Request :: LBLnet IP Request Form
Add a DNS record for FQDN smelly2.lbl.gov:
tin
Contact (required: LBL contact)
ljin
Contact (required: LBL contact or sanctioned email)
Contact (optional: LBL contact or email)
cloudflare
Location (required)
CNAME
next
Stop creating a new request and go back:
back
IP Request Help
IP Request News
IP Request Advanced Interface


LBLnet: IP Request Form
iprequest.lbl.gov
BERKELEY LAB
LAWRENCE BERKELEY NATIONAL LABORATORY
LBLnet Services Group
IP Request :: LBLnet IP Request Form
Add a DNS CNAME record for FQDN smelly2.lbl.gov:
smelly.lbl.gov.cdn.cloudflare.net
Target
next
Stop creating a new request and go back:
back
IP Request Help
IP Request News


LBLnet: IP Request Form
iprequest.lbl.gov
BERKELEY LAB
LAWRENCE BERKELEY NATIONAL LABORATORY
LBLnet Services Group
IP Request :: LBLnet IP Request Form
Submit requests for processing:
#1 Add contact for smely.lbl.gov contacts tin, LJin location cloudflare
#2 Add DNS CNAME for smely.lbl.gov alias for smelly.lbl.gov.cdn.cloudflare.net
Warning: target smelly.lbl.gov.cdn.cloudflare.net is not part of a LBL owned domain
Optional comment:
queue
geek speak for “submit” ! 😏
Scheduled commit
Specify day and time
HH:MM
Make additional requests
Add, modify or remove a FQDN:
smely
lbl.gov
next
Upload a batch change request set:


Search or jump to...
Pull requests
Issues
Marketplace
Explore
lbnl-scienceit / smelly
Unwatch 1
Star 0
Fork 0
Code
Issues 1
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
GitHub Pages
GitHub Pages is designed to host your personal, organization, or project pages from a GitHub repository.
Your site is published at http://smelly.lbl.gov/
Source
Your GitHub Pages site is currently being built from the master branch. Learn more.
Branch: master
/ (root)
Save
Theme Chooser
Select a theme to publish your site with a Jekyll theme. Learn more.
Your site is currently using the Leap Day theme.
Change theme
Custom domain
Custom domains allow you to serve your site from a domain other than lbnl-scienceit.github.io. Learn more.
smelly.lbl.gov
Save
Enforce HTTPS — Unavailable for your site because your domain is not properly configured to support HTTPS (smelly.lbl.gov) —
Troubleshooting custom domains
HTTPS provides a layer of encryption that prevents others from snooping on or tampering with traffic to your site.
When HTTPS is enforced, your site will only be served over HTTPS. Learn more.

Mapbox tutorials

Creating Custom site:

https://docs.mapbox.com/help/tutorials/create-a-custom-style/

HTML web page skeleton code (use Mapbox GL JS):

https://docs.mapbox.com/mapbox-gl-js/api/

This slidedeck 😊 :

http://tiny.cc/labtech2020

¿ Questions ?

Information Technology
BERKELEY LAB

LAB TECH

Thank You!

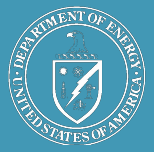
U.S. DEPARTMENT OF ENERGY

tin@lbl.gov Tin Ho
ljin@lbl.gov Ling Jin

http://tiny.cc/labtech2020

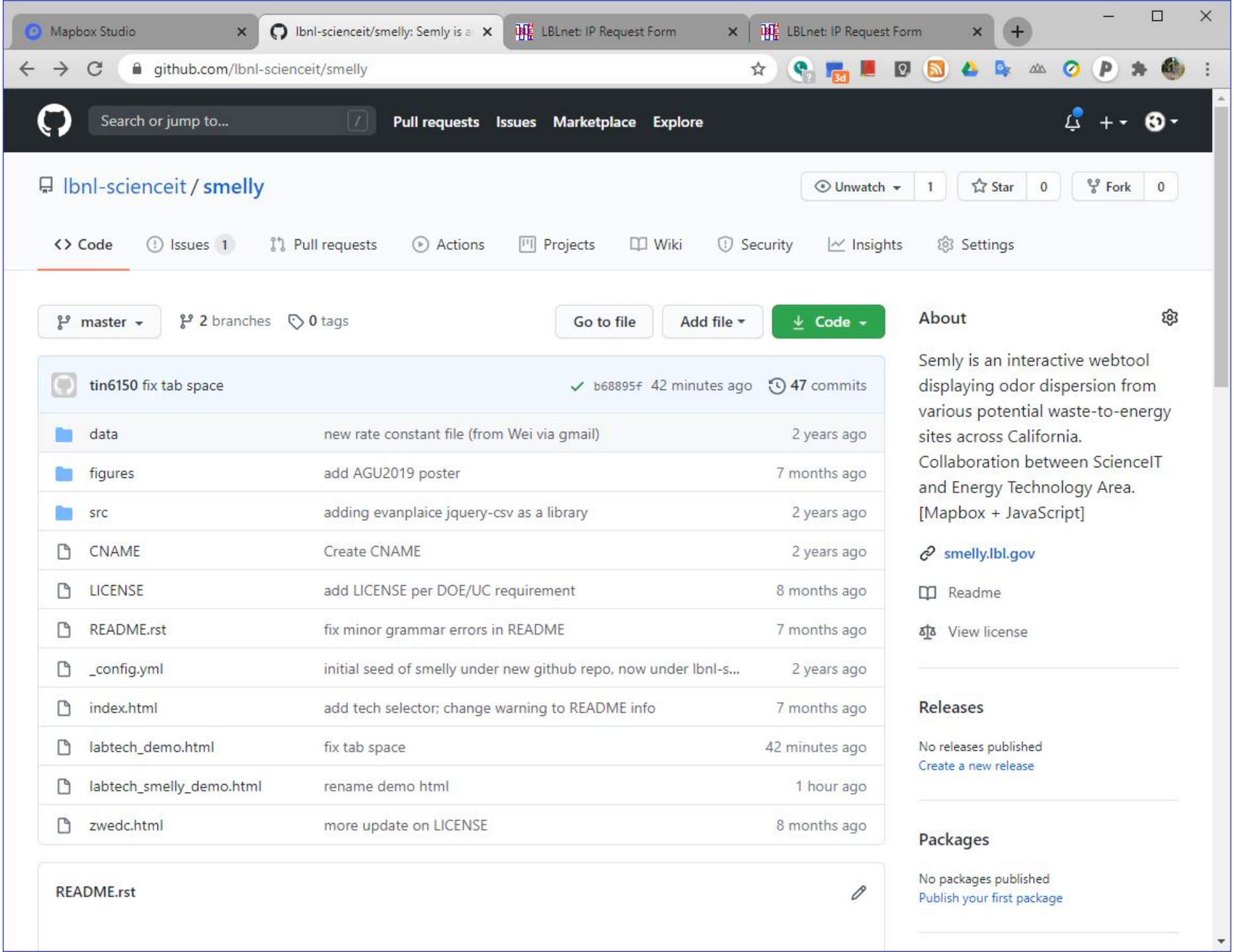
UNIVERSITY OF CALIFORNIA

Backup Slides



U.S. DEPARTMENT OF
ENERGY

UNIVERSITY OF
CALIFORNIA


Mapbox Studio
lbnl-scienceit/smelly: Semly is a
LBLnet: IP Request Form
LBLnet: IP Request Form
github.com/lbnl-scienceit/smelly
Search or jump to...
Pull requests
Issues
Marketplace
Explore
lbnl-scienceit / smelly
Unwatch 1
Star 0
Fork 0
Code
Issues 1
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
master
2 branches
0 tags
Go to file
Add file
Code
tin6150 fix tab space
b68895f 42 minutes ago
47 commits
data new rate constant file (from Wei via gmail) 2 years ago
figures add AGU2019 poster 7 months ago
src adding evanplaice jquery-csv as a library 2 years ago
CNAME Create CNAME 2 years ago
LICENSE add LICENSE per DOE/UC requirement 8 months ago
README.rst fix minor grammar errors in README 7 months ago
_config.yml initial seed of smelly under new github repo, now under lbnl-s... 2 years ago
index.html add tech selector; change warning to README info 7 months ago
labtech_demo.html fix tab space 42 minutes ago
labtech_smelly_demo.html rename demo html 1 hour ago
zwedc.html more update on LICENSE 8 months ago
README.rst
About
Semly is an interactive webtool displaying odor dispersion from various potential waste-to-energy sites across California. Collaboration between ScienceIT and Energy Technology Area. [Mapbox + JavaScript]
smelly.lbl.gov
Readme
View license
Releases
No releases published
Create a new release
Packages
No packages published
Publish your first package

Example barebone .geojson

```
{
    "type": "FeatureCollection",
    "features": []
}
```

Example .geojson - 1 point

```
{
 "type": "FeatureCollection",
 "features":
 [
     {
             "type": "Feature",
             "properties": {
               "name": "Van Dorn Street",
               "marker-color": "#0000ff",
               "marker-symbol": "rail-metro",
               "line": "blue"
             },
             "geometry": {
               "type": "Point",
               "coordinates": [
                 -77.12911152370515,
                 38.79930767201779
               ]
             }
     }
 ]

}
```

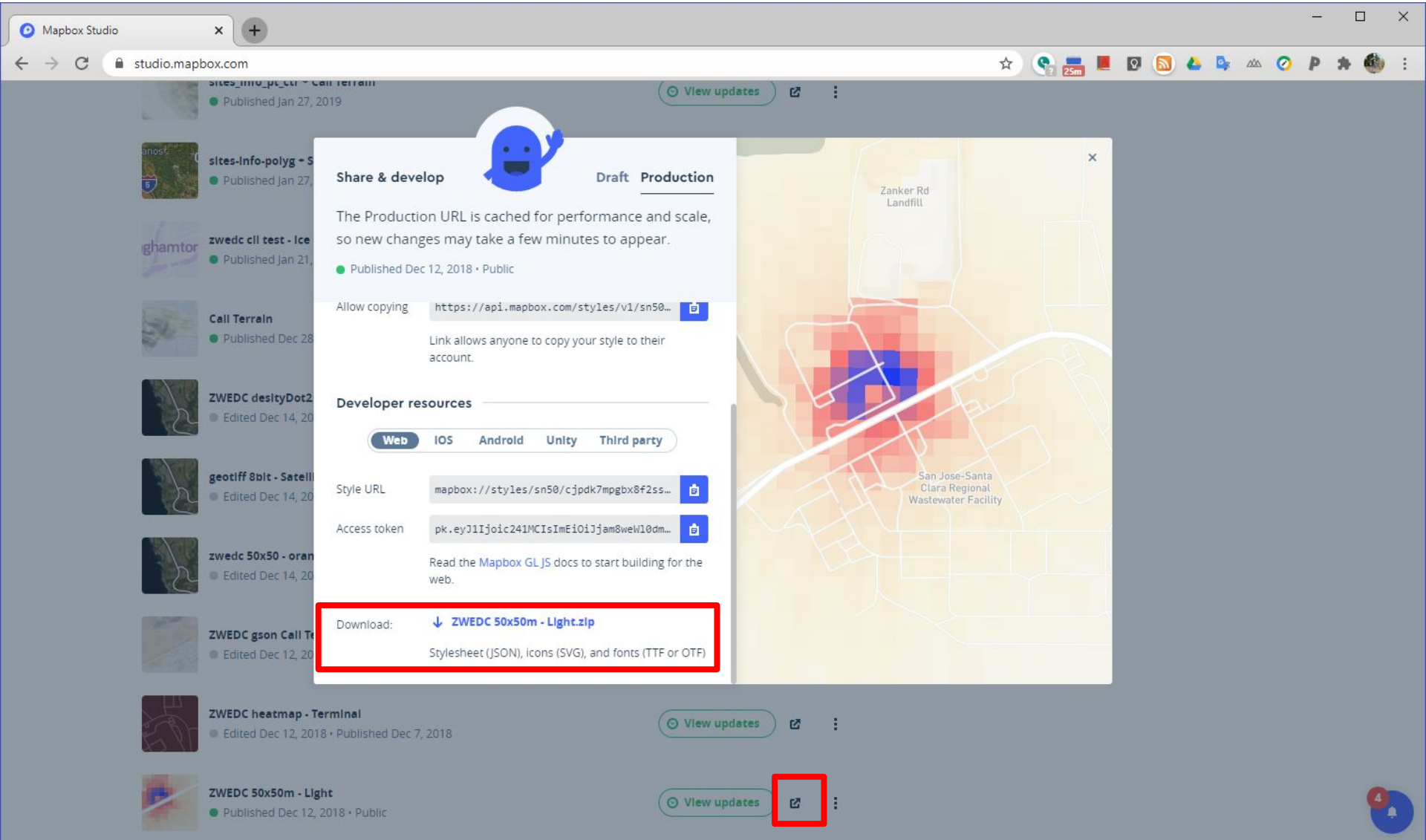
Example .geojson

```
{ "type": "FeatureCollection", "features": [
    { "type":       "Feature",
      "properties":
           {"avecon": 0.18577}
           // properties is required (at least for mapbox), even if empty.  could give it name or timestamp
      ,
      "geometry": { "type": "Point", "coordinates": [ -121.985002139616, 37.4079452829464 ] }
    }
    ,
    { "type":       "Feature",
      "properties":
           {"avecon": 0.18817}
      ,
      "geometry": { "type": "Point", "coordinates": [ -121.984437247048, 37.4079404316778 ] }
    }
           ] }
```

Creating HTML page

https://docs.mapbox.com/mapbox-gl-js/api/

```
<HTML>
<HEAD>
<script src='https://api.mapbox.com/mapbox-gl-js/v1.12.0/mapbox-gl.js'></script>
<link href='https://api.mapbox.com/mapbox-gl-js/v1.12.0/mapbox-gl.css' rel='stylesheet' />
</HEAD>

<BODY>
<div id='map' style='width: 400px; height: 300px;'></div>
<script>
mapboxgl.accessToken =
'pk.eyJ1Ijoic241MCIsImEiOiJjam8weWl0dm0wNWVhM3dubmgyb3hwaTZsIn0.2Cvl-nnhZAoavESou_RqiQ';
var map = new mapboxgl.Map({
    container: 'map',
    style: 'mapbox://styles/mapbox/streets-v11', // stylesheet location
    center: [-74.5, 40], // starting position [lng, lat]
    zoom: 9 // starting zoom
});
</script>
</BODY>
</HTML>
```

Publish Map Style (don’t use this, zip don’t have html page in it!)