

Ocean Cleanup Data Challenge

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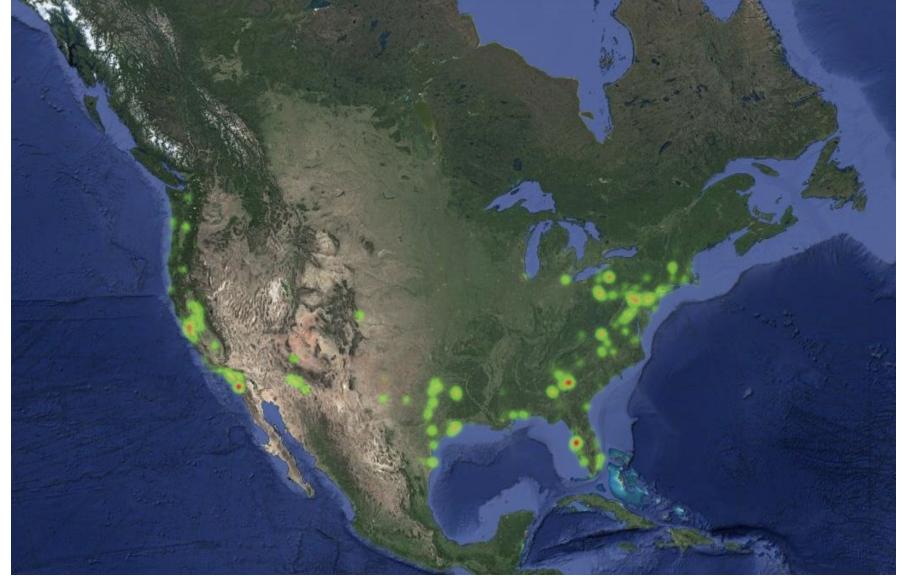
The Problem

- Ocean cleanup efforts are ineffective
- It is hard to visualize how efficient ocean cleanup efforts have been
- Volunteers and organizers need to know where they would be able to find and pick the most trash



Our Approach

- Ocean Cleanup Dataset
- Creation of Web Interface
- Interactive heatmap to display data
- Shows users:
 - Type of Trash
 - Location and Time
 - Analysis of Cleanup Effort
- Allows for easy user exploratory data analysis



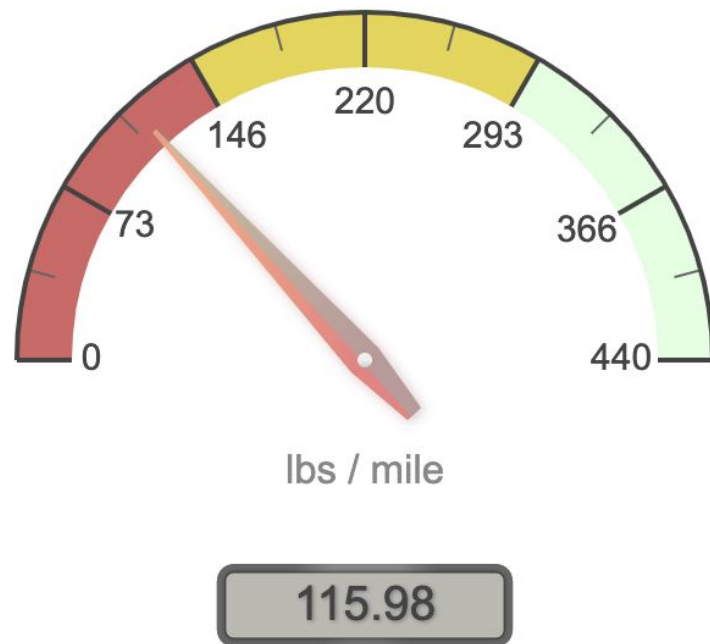
How We Designed The Website

- Challenge: Not to use ArcGIS
- Google Maps API
- Booz Allen Hamilton Dataset
- Countless hours of coding :)
 - Python
 - SQLite
 - Flask
 - HTML/JS/CSS

```
1 let activeFilters = [];
2
3 function setInitialFilters() {
4   setFilters($("#option-form").serializeArray());
5 }
6
7 function setFilters(filts) {
8   activeFilters = [];
9   filts.forEach((f) => {
10     if (f.value == 'on')
11       activeFilters.push(f.name);
12   })
13 }
14
15 function submitFilters() {
16   $.post("/query", $("#option-form").serializeArray(), function(data) {
17     refreshPage(readDate(), data);
18   });
19 }
20
21 function refreshPage(date, raw) {
22   if (date.month == -1)
23     $("#date-header")[0].innerHTML = 'All Data';
24   else
25     $("#date-header")[0].innerHTML = `${date.month} / ${date.year}`;
26   let data = JSON.parse(raw.replace(/&#34;/g, '"'));
27
28   importMapData(data);
29   initMap();
30   setAvailableZones(data);
31
32   refreshAnalysis(date)
33   $('#load').hide();
34   closeNav();
35 }
36
37 function refreshAnalysis(date) {
38   if (!date)
39     date = readDate()
40   $.post("/zone", zoneFilters(date), function(data) {
41     //console.log(data)
42     let meas = $('input[name="measurement"]:checked').val();
```

Map Features

- Zoom and Scroll on Map
- Date-Time Input
- Gauge Analysis
- Analyze by Zone
- Filter by Trash Type



Results

Navigate to <http://localhost:5000/> for a live demo

Impact

- Increase social participation
 - Accessible Web Platform
- Water Quality
 - Increase effectiveness of Ocean Cleanup
 - Show locations with more harmful trash
- Decrease Costs of Ocean Cleanup
 - Improved allocation of human resources



Future Efforts

- Expand the website
 - Introduce User Accounts
 - Improve Usability - UI Redesign
 - Expand analysis section
- Predictive Analysis
 - Predict the best locations for volunteers to collect trash
 - Group trash to better predict where the most harmful trash can be found

