UAA College of Engineering
University of Alaska Anchorage

Alaska Native History Interactive Webmap

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What did we set out to make?

What did we make it with?

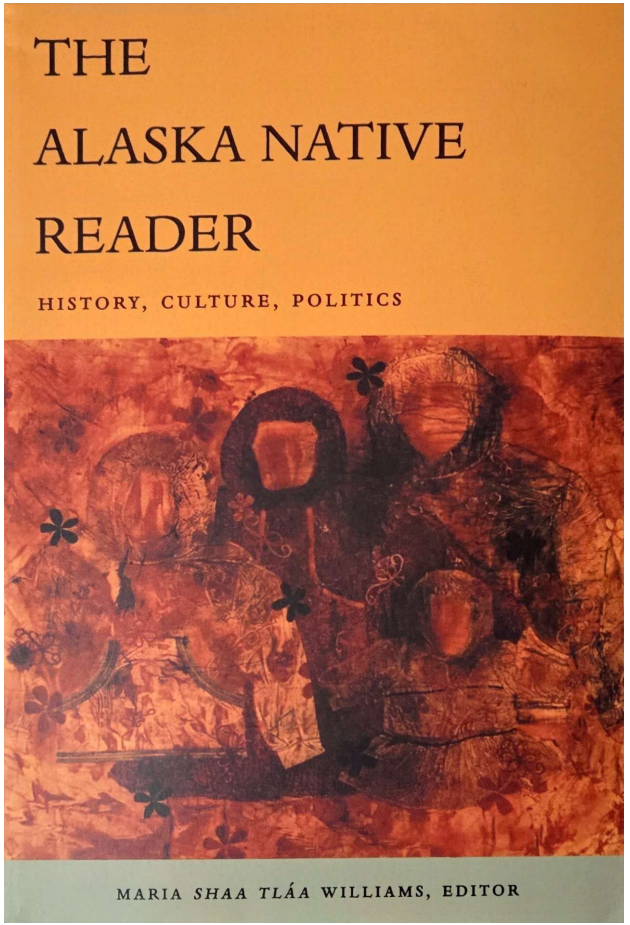
How did it turn out?

What happened along the way?

Where do we go from here?

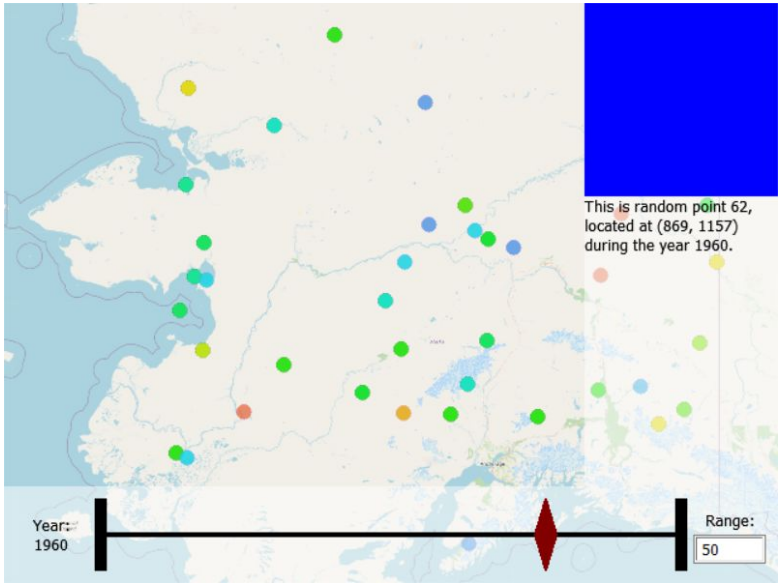
The Prompt

- Requested by Maria Williams
  - Alaska Native Studies Program Chair
- Take timeline of events, plot on a map
- Must be accessible online
  - Point is to share information
- Finer details to our discretion



The cover of our project sponsor's book.

Our Pitch



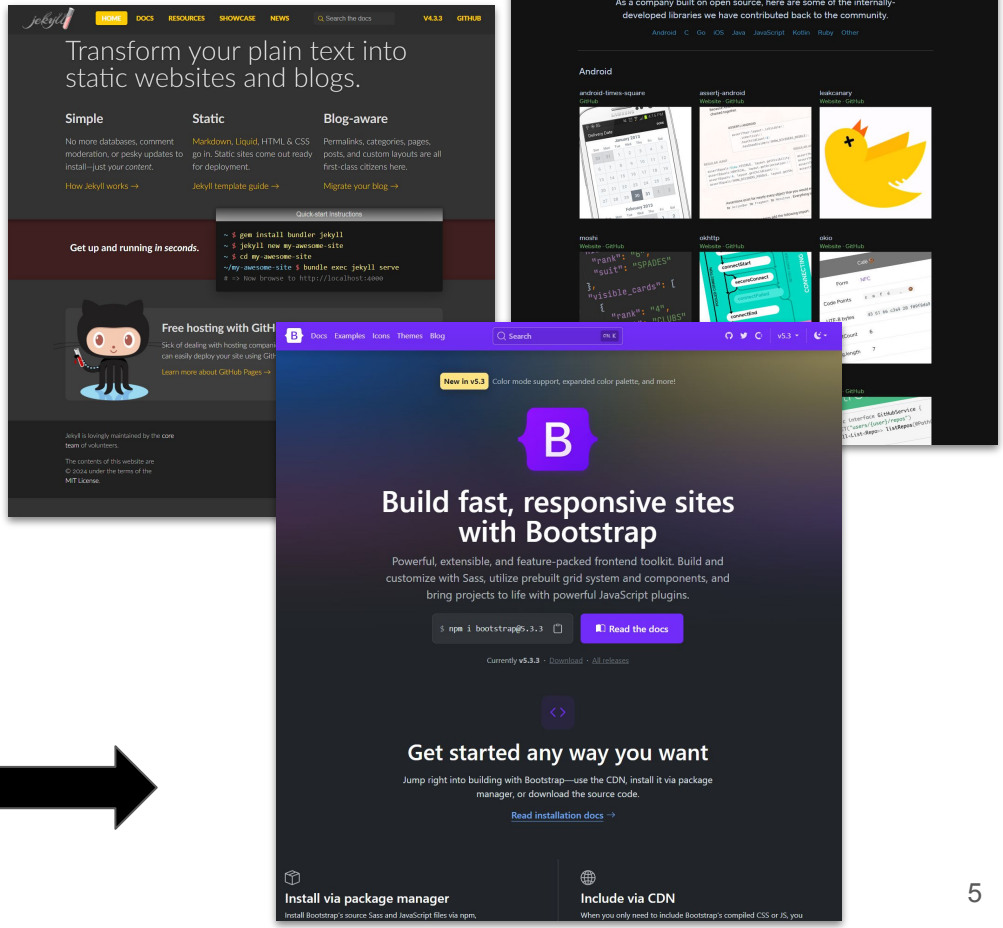
A prototype developed as part of our design pitch. Made in Clickteam Fusion.

- Web application
- “Slippy” map (click and draggable)
- Points on map for AK Native historical events
- Clicking map points gives more information
- Sense of relative time
- System must be “set and forget”
  - Client does not have technical background for involved maintenance

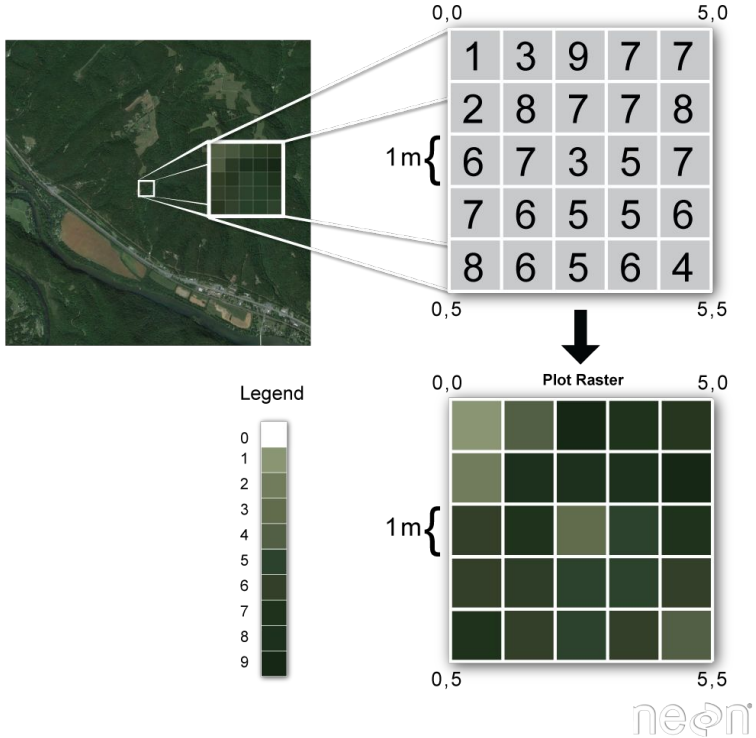
Implementation: Web Hosting

- Usage limits
  - One site per GitHub account
  - Max size 1 GB
  - Soft bandwidth limit 100GB per month
  - Soft limit of 10 builds an hour
- Customization features
  - Choose your own domain
  - Custom 404 pages
  - Examples shown to the right

GitHub Pages



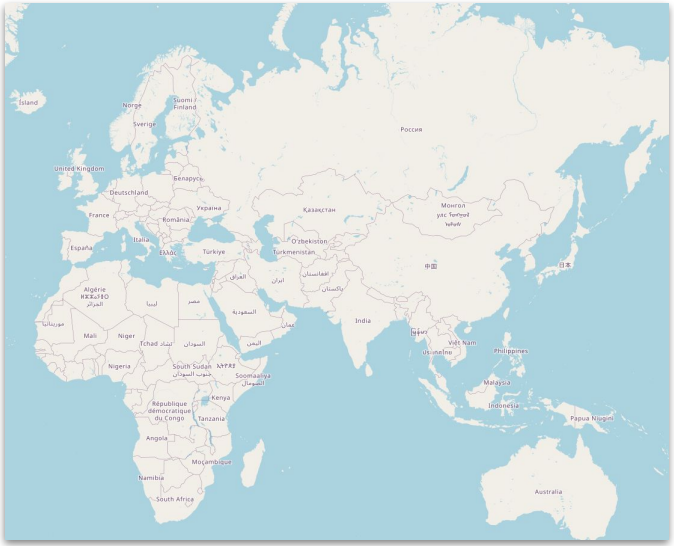
Implementation: Tile Layer



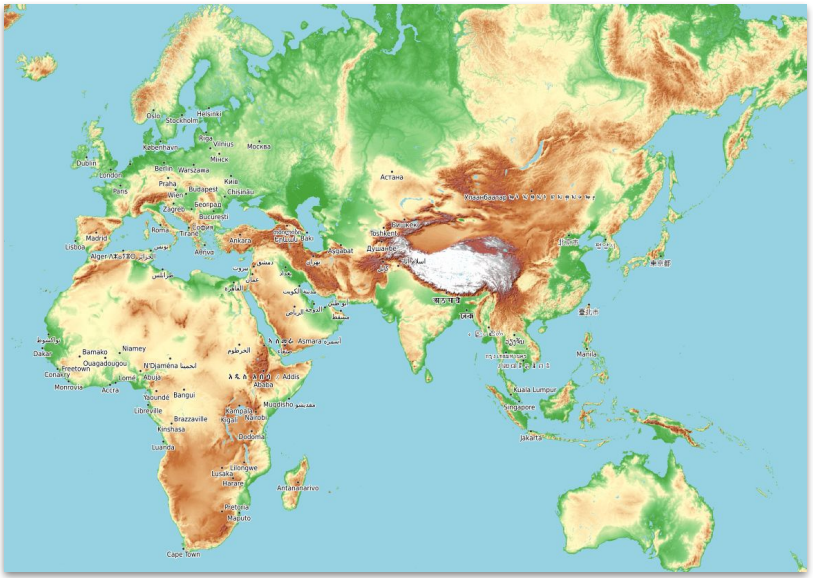
- Self-hosting
  - Have raster map data stored in the GitHub repository
  - Raster data too big (~30GB for Alaska, three zoom levels)
- Hosting service
  - Majority are pay by usage, except for a couple
  - No need to store any raw map data in the repository
  - Relies entirely on the hosting service… good to have fallbacks

Source: National Ecological Observatory Network (NEON)

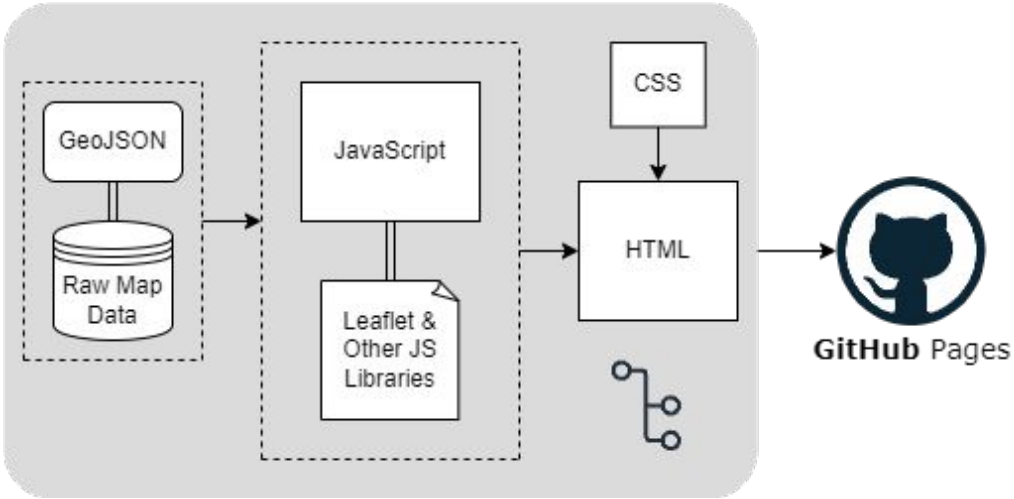
OpenStreetMap



OpenTopoMap



Implementation: Framework

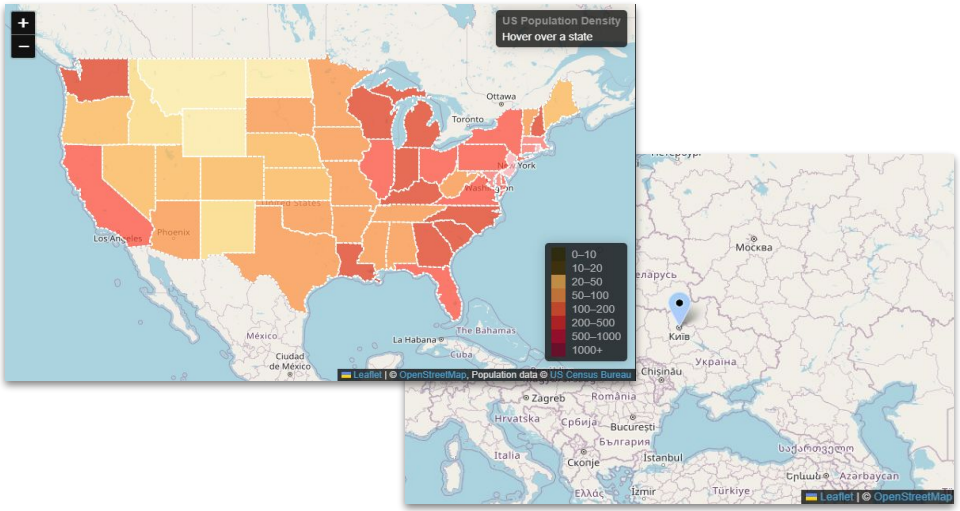


GeoJSON Format

```
{
  "type": "Feature",
  "properties": {
    "name": "m3",
    "description": "Russians close all ports in Kamchatka to
    control a smallpox epidemic. (Black 1980:96)<br>",
    "startDate": 1770,
    "endDate": 1770,
    "dataRef": "",
    "imageUrl": "https://images.unsplash.com/
    photo-1604762093467-ac22c30cc60e?q=80&w=1331&auto=format&
    fit=crop&ixlib=rb-4.0.3&
    ixid=M3wxMjA3fDB8MHxwaG90by1wYWdlfHx8fGVufDB8fHx8fA%3D%3D"
  },
  "geometry": {
    "type": "Point",
    "coordinates": [-201.53, 56.13]
  }
},
```

Implementation: Map & Slider

Leaflet



noUiSlider
JavaScript Range Slider

```
<div id="slider"></div>
```

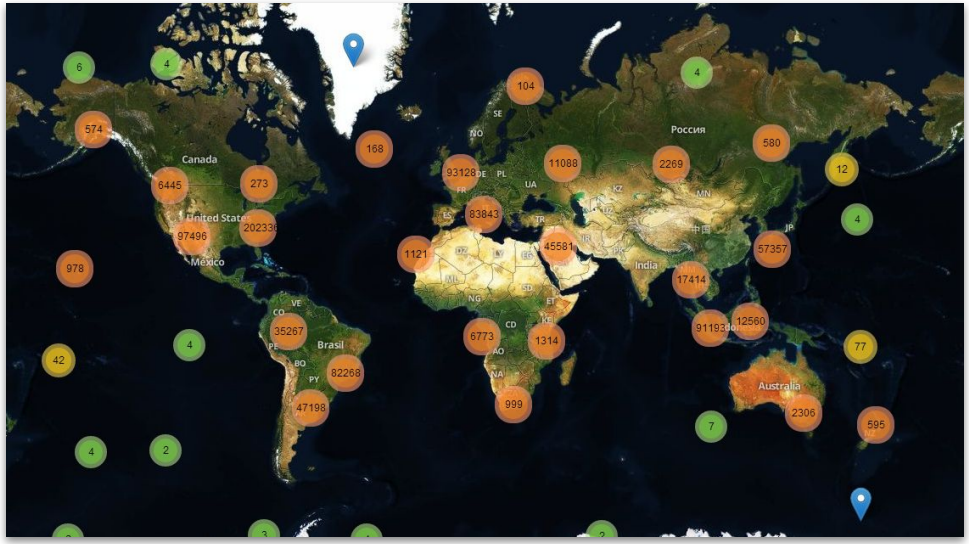
```
var slider = document.getElementById('slider');

noUiSlider.create(slider, {
    start: [20, 80],
    connect: true,
    range: {
        'min': 0,
        'max': 100
    }
});
```

(Click to show code) **Installation**

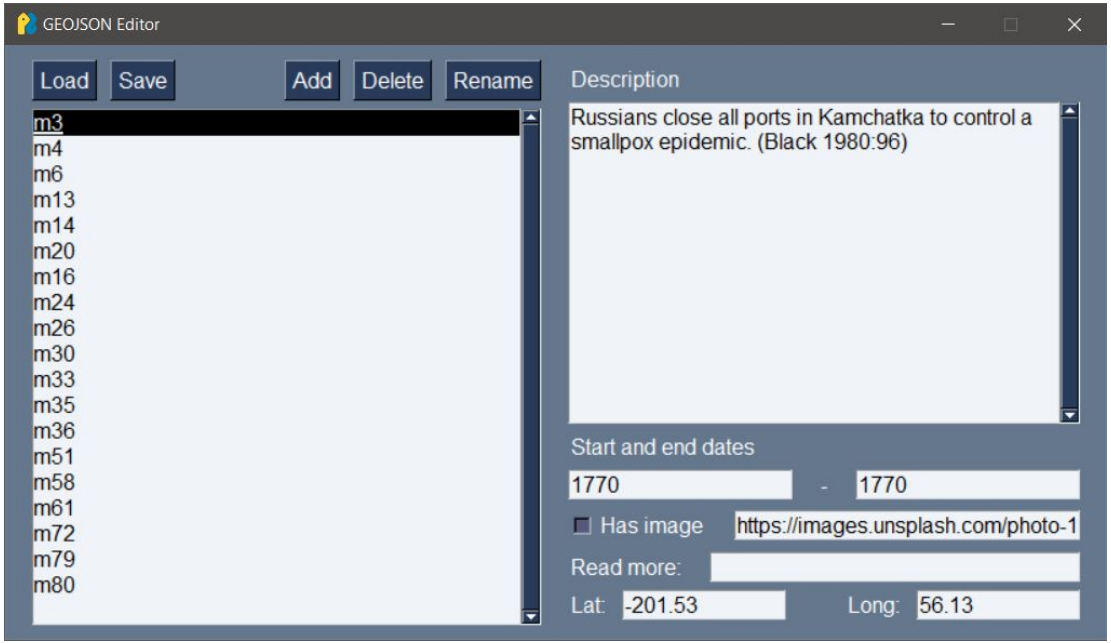
Implementation: Markers

- PruneCluster JS library
  - Extremely fast
  - Designed for real-time changes
  - Integration with Leaflet
- Example on the right:
  - Thousands of markers, one for each new tweet
  - Real-time updating
  - Very small performance loss

PruneCluster
Realtime markerclustering



For our own benefit…



The GEOJSON editor in action.

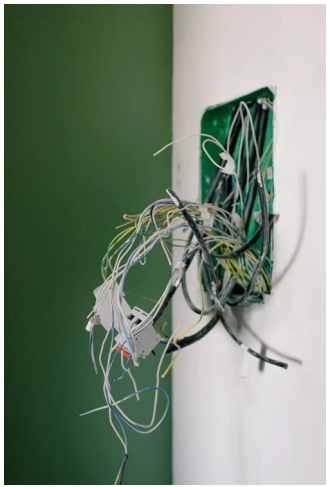
- Data needed to be embedded into GEOJSON format
- Would be very time consuming to write by hand
- Made an editor GUI to speed up process
  - Uses PySimpleGUI

How it turned out

Challenge: Not-so-modularity

- Expected to build framework, then add modules
  - Straightforward path to feature completeness
- In reality: each new feature often required refactoring prior code
- Had to get disparate pieces to work together

Our expectations.



The reality.

Challenge: The mists of time

“The Yakutat area” is not very exact; we did our best with what we had.

- Many events 100 or 200 years old
- Precise records not always available
- Many time ranges or locations are vague
  - Event may also not be localized to one location.
- Data may also reference locations that no longer exist
- For current version: did our best with single map point

Challenge: Information Overload

- 270 years is a lot of time
- A lot of things can happen in that time
- Document does not directly contain coordinates for map point
  - Need to find these for each event
- Formatting each point for entry into map takes time, even with GUI
- Limited our ability to import data in time allotted

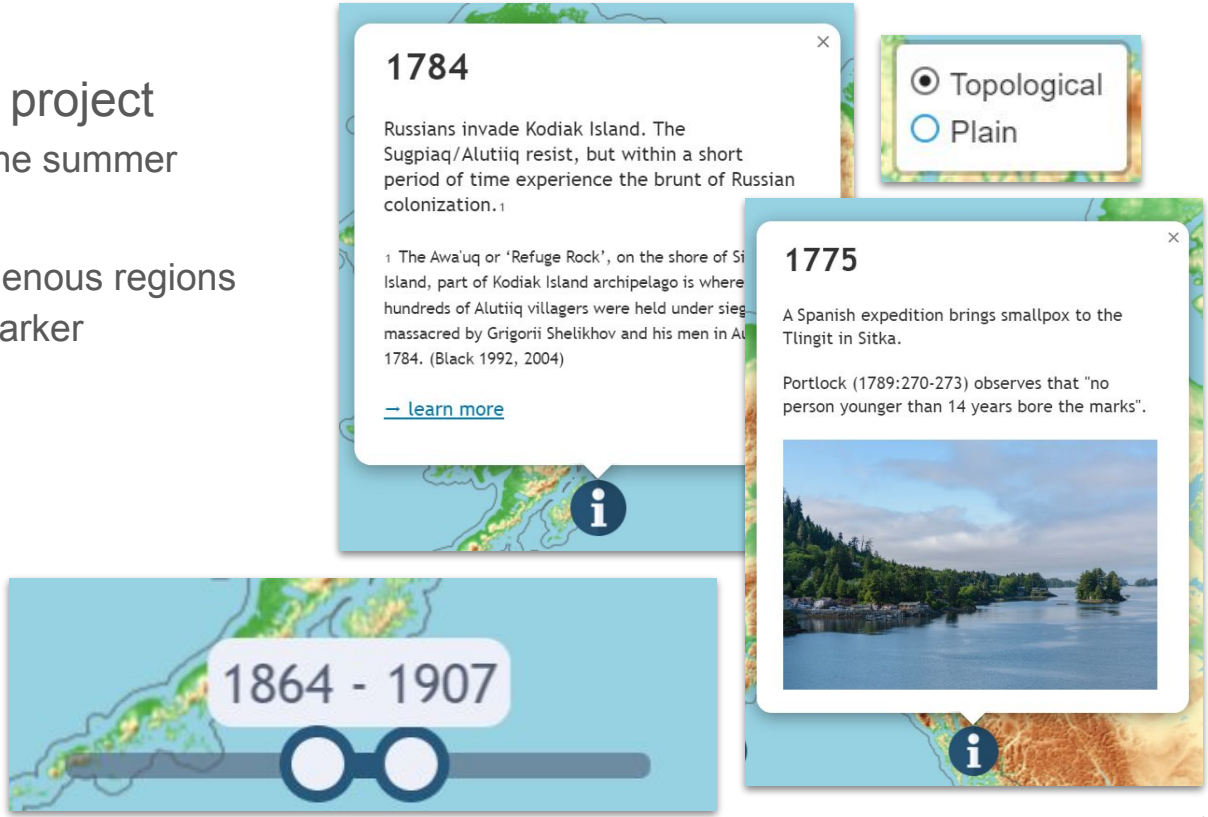
Word Count

Pages	18
Words	6515
Characters	42009
Characters excluding spaces	35940

The actual word count of the document that contained our data. Note: This is already the condensed notes.

For The Future

- Not the final state of the project
  - Will continue work over the summer
- Goals
  - Tile layer displaying indigenous regions
  - Visible range for each marker
  - About page
  - Accessibility settings
  - New slider features
  - Marker popup overhaul
    - Static window
    - Relevant images



Questions?

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