GEOG 817 Final Project paper

Kun-Yuan Lee

Instructor: Dr. Robert Shepherd

Date: 05/06/2021

The project idea is to extract real-time weather information and provide the user ability to understand the surrounding weather. This can be done via leaflet or the ArcGIS JavaScript API. Both have their advantage and disadvantage. The leaflet is an open-source JavaScript library that can be used to build web mapping applications. It enables the user to develop without using a GIS background and relatively easy to display the tilemaps hosted from the public server. The leaflet is supported web map service layers, GeoJSON layers, vector layers and tile layers. The main advantage is easy to use and enable a user to toggle on and off the map layers (Agafonkin, 2021).

The ArcGIS JavaScript API was developed by ESRI and is an application program interface using JavaScript. It can be used for ArcGIS Server REST service and embed an interactive map in webpages. The ArcGIS servers are selected for this project framework for the following reasons: 1) Many of the meteorological variables have been developed as ArcGIS server 2) The NOAA live time server is developed using the ArcGIS API. 3) It is not easy to find a single tile that can match the information with other tiles (consistency).

The project framework is used ArcGIS JavaScript API and consumes a variety of meteorological data from the server website. It showed the current meteorological information such as ocean temperature, meteorological symbols, and satellite pictures when it open. More specifically, the NEXRAD radar information, current storm location, and lightning hotspots (update every 15 minutes). The radar sites are imported via GeoJSON; other feature layers were imported via the MapImagelayer. I also restyle the feature layer, so users can click the information, and the information associated with that icon will appear.

The NOAA's web mapping portal (NowCoast) provides many web mapping features. It is live data provides direct access to its data layer through both ArcGIS REST Map service and OCG web map service (NOAA, 2021). This service provides users the ability to connect to observation, analyses, forecasts, and guidance products overlay them with other custom layers. The NowCoast system consists of an interactive web map viewer, ESRI JavaScript API, Java Servlet-based web service, and ArcGIS server-based web mapping services. The map viewer was constructed using a combination of JavaScript, HTML/CSS, and Java servlet. The most notable feature of the ArcGIS JavaScript API implemented by NOAA (NowCoast) is the integrated time control(NOAA, 2021). The layer can be added and removed based on the time control and on the availability of each visible layer's data. In my opinion, the ArcGIS Javascript API is more suitable for the developing environment in weather applications compared to the leaflet because many of the weather variables are very complexed and require many feature layers. The ArcGIS JavaScript API style made the overlay layers more organized and simple.

# Bibliography

Agafonkin, V. (2021, April 21). *Leaflet*. Retrieved from an open source JavaScript library for mobile-friendly interactive maps : https://leafletjs.com/reference-1.7.1.html

NOAA. (2021, April 21). *nowCOAST*. Retrieved from NOAA's Web Mapping Portal to Real-Time coastal Observations, Forecasts, and Warning: https://nowcoast.noaa.gov/help/#!section=techinfo