



Progress Update



Group 64 - Develop a Visual Model for
Sea Turtle Strandings

19 March 2019



Meet the Team

- Daniel Domme - Senior in Applied CS, Loves sea turtles
- Alea Weeks - Applied CS with Business Minor, cat enthusiast
- Amar Raad - Applied CS with JPN Minor
- Zachary Tusing - Applied CS, Security Background
- Justin Disalvo - Applied CS, Data Science

Project Client

Dr. William Hanshumaker -

Oregon Sea Grant Chief Scientist
Fisheries and Wildlife Senior Instructor
Hatfield Marine Science Center



Project Background

- Washed up sea turtles are found and reported by beach strollers
- Many animals are dead when they are found
- Groups like the Oregon Marine Mammal Stranding Network actively try to save stranded animals

Project Purpose and Goal

Purpose:

- Use archival data
- Create visual model of stranded sea turtles
- Incorporate sea temperatures, currents, and wind direction

Goal:

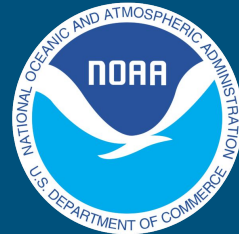
- Gain insights to help save sea turtles



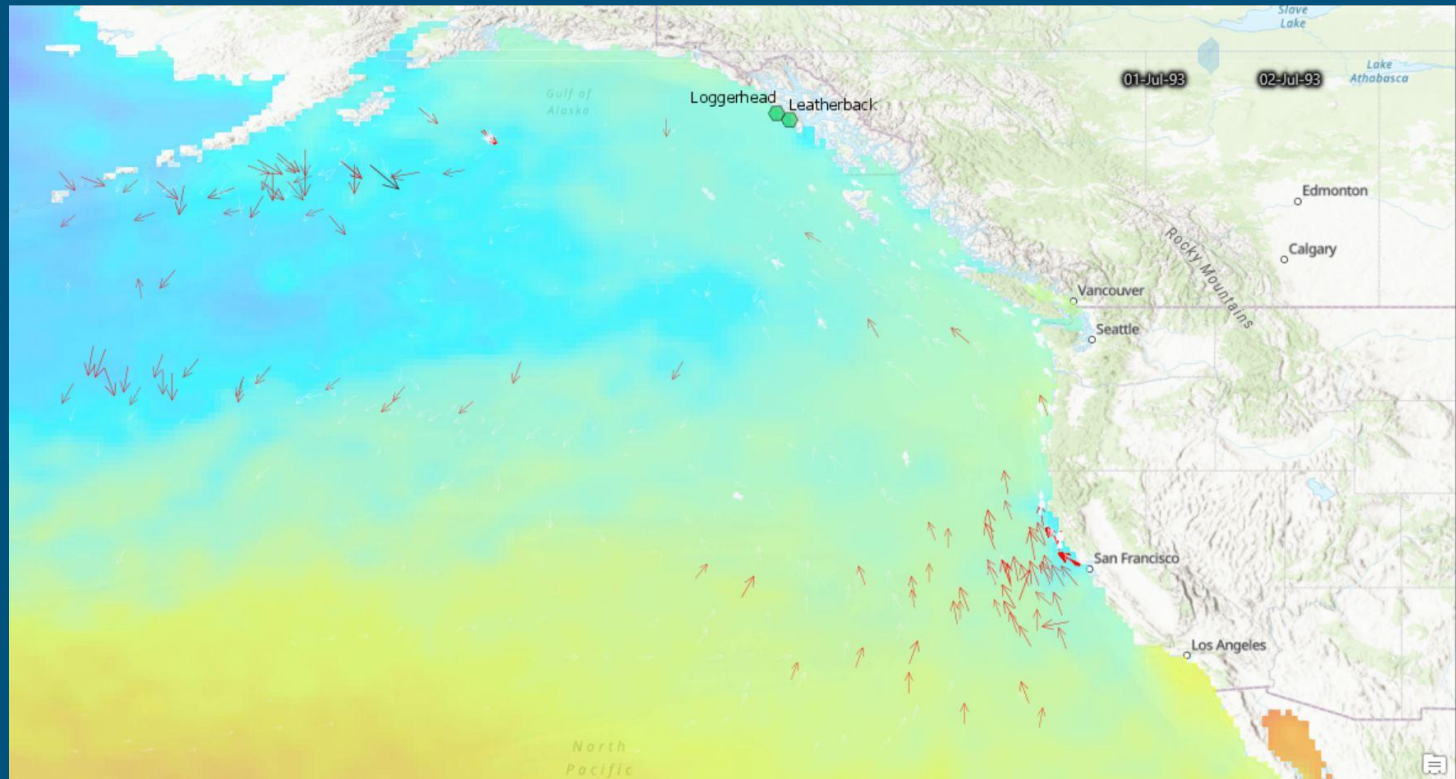
Dave Fleetham/Getty Images/Perspectives
<https://www.travelandleisure.com/animals/sea-turtles-making-comeback>

Project's Current State

- Data Collection and ArcGIS Representation:
 - Sea Surface Temp., Wind Direction and Speed, Air Temperature, Ocean Currents
 - Turtle Data mapped
- GUI and Integration
 - The GUI is complete
 - Working on Integration



ArcGIS Map



What's Left To Do

- Data Collection and ArcGIS Representation
 - Merge some NetCDF files into one
 - Refine symbology of weather data layers on map
 - Ocean Currents coordinates need to be converted
- Integration
 - Getting a map to display on the GUI
 - Creating the sorted data buttons
 - If there's time, make the GUI prettier



Project's Problems and Solutions

- Group and general project problems
 - Snow and school closures
 - Limited availability of client at times
 - Busy schedules
 - Realizing where extra help/work might be needed
 - Discussing possible direction changes

Project's Problems and Solutions Continued

- Data Collection and Representation
 - Government Shutdown
 - Historical weather data with needed information
 - Too much data
 - Knowing needed format: multidimensional raster/netCDF files
 - Lack of software documentation pertaining to project objectives
 - Creating NetCDF format out of data

Project's Problems and Solutions Continued

- GUI and Packaging
 - Creating a good looking GUI from scratch
 - QtDesigner
- Integration
 - ArcPY lacks API for standalone applications
 - QGIS alternative has different problems
 - ArcEngine requires a complete restructuring of our GUI into CPP

Interesting Code

condenseWeather.py

```
83 with open('BMC_WeatherData_1957_2018.csv', 'r') as csv_file:
84     csv_reader = csv.reader(csv_file, delimiter=',')
85     csv_file1 = open('BMC_WeatherData_1957_2018_Avg.csv', 'w', newline='')
86     csv_writer = csv.writer(csv_file1, delimiter=',', quotechar='"', quoting=csv.QUOTE_MINIMAL)
87     line_count = 0
88     avgNum = 1
89     prevRows = None
90     procRows = []
91     for row in csv_reader:
92         if line_count == 0:
93             heads = row
94             csv_writer.writerow([heads[0],heads[1],heads[2],heads[3],heads[4],heads[5],heads[6]])
95             print(heads)
96         elif line_count == 1:
97             prevRows = row
98             for val in row:
99                 procRows.append(val)
100         elif ((abs(float(prevRows[1]) - float(row[1])) <= 3) and (abs(float(prevRows[2]) - float(row[2])) <= 3) and (prevRows[0] == row[0])):
101             procRows = run_add(procRows, row)
102             avgNum += 1
103         else:
104             prevRows = avg_data(procRows, avgNum)
105             csv_writer.writerow([prevRows[0], prevRows[1], prevRows[2], prevRows[3], prevRows[4], prevRows[5], prevRows[6]])
106             prevRows = row
107             procRows.clear()
108             for val in row:
109                 procRows.append(val)
110             avgNum = 1
111             print("printed", line_count)
112     line_count += 1
```

Thanks for watching



<https://www.worldwildlife.org/stories/how-long-do-sea-turtles-live-and-other-sea-turtle-facts>