A geo-temporal analysis and visualization of migrant boats

Anika Mahmud
University of British Columbia
CPSC-533

Task

1. Characterize the choice of landing sites and their evolution over the three years.
2. Characterize the geographical patterns of interdiction over the three years.
3. What is the successful landing rate over the time period?

Data Set

<CoastGuardRecord>
<EncounterCoords>
-80.33100097073213,25.107429162229 47</EncounterCoords>
<RecordType>**Interdiction**</RecordType>
<Passengers>**23**</Passengers>
<USCG_Vessel>**Ironwood**</USCG_Vessel>
<EncounterDate>**2005-04-24**</EncounterDate>
<RecordNotes />
<NumDeaths>**0**</NumDeaths>
<LaunchCoords>
-80.23429525620114,24.086803874756 95</LaunchCoords>
<VesselType>**Rustic**</VesselType>

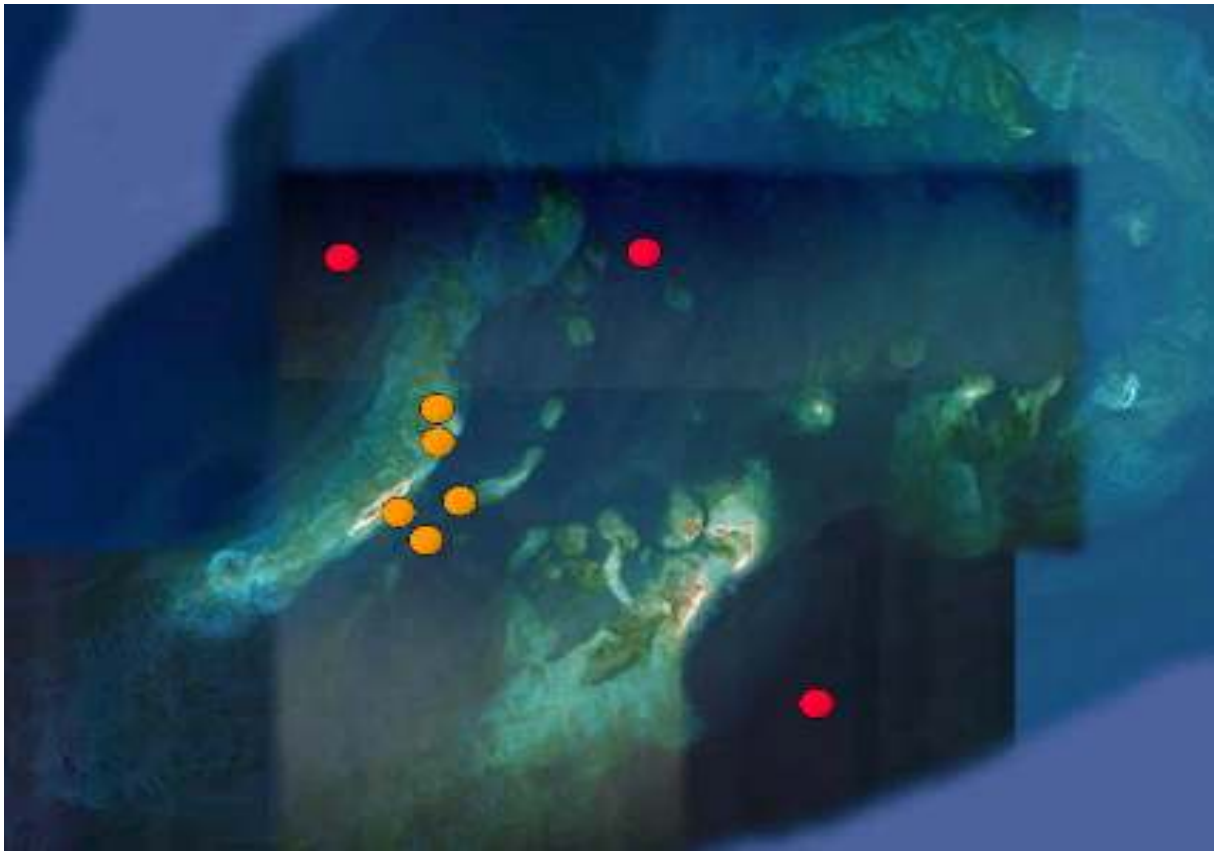
Tools

- Google earth
- Google charts
- Google earth api
- Google chart api
- Ark2Earth

Design Issue

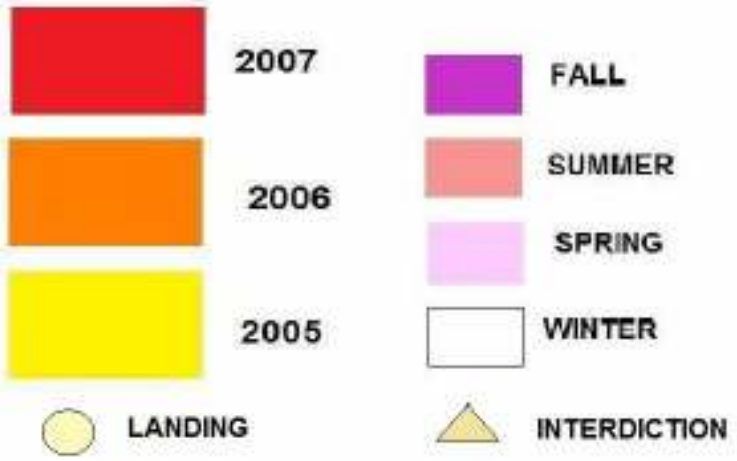
- Occlusion or Pattern?

Migrant Boats: Atypical pattern



Design/Coding

- Small multiples for comparison
- Different hue
- Gradual progression
- Tested by colorbrewer



Landing Pattern:

- Yearly
- Seasonal landing
- Yearly seasonal landing
- Successful Landing Sites
- Tentative yearly landing

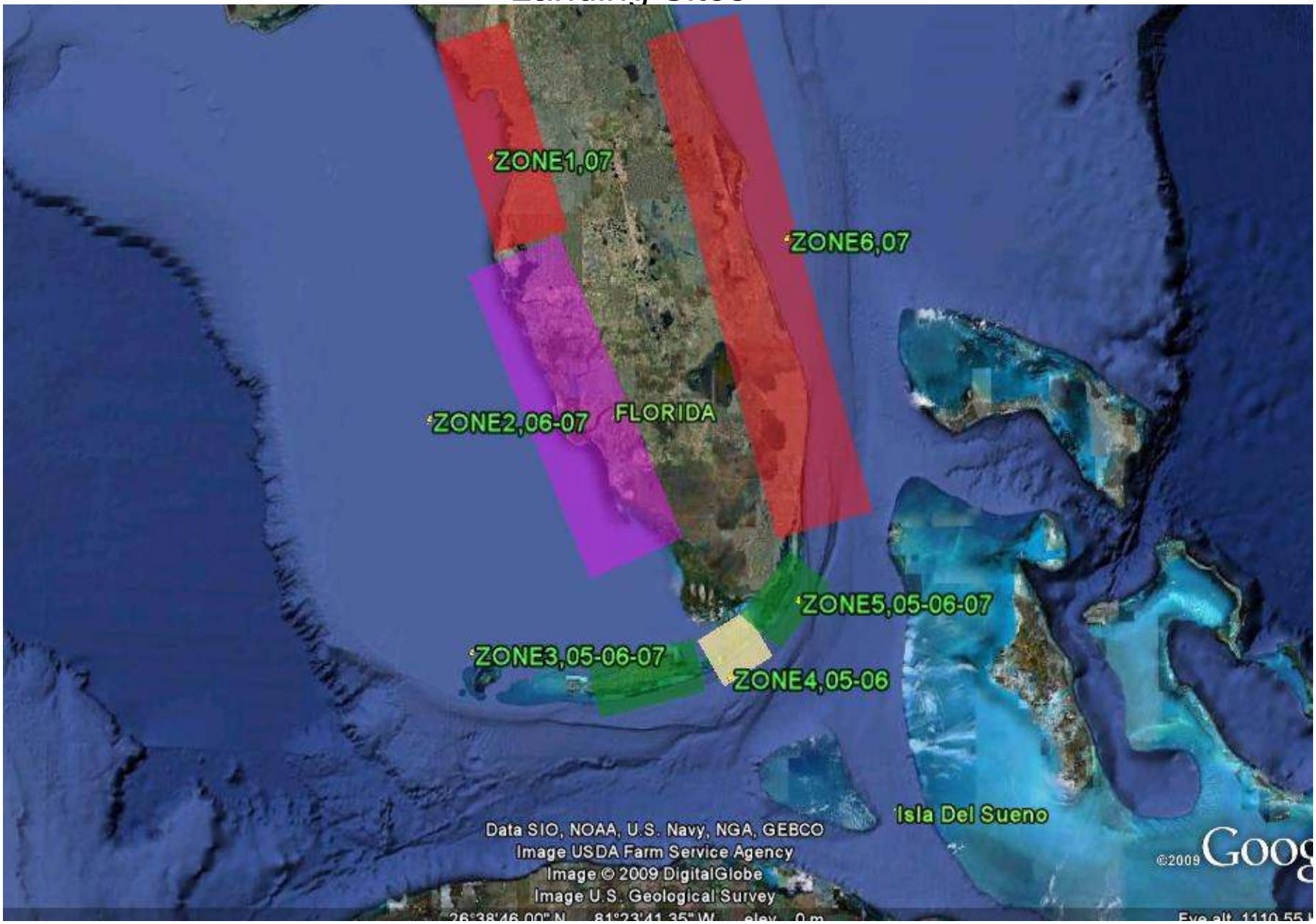
YEARLY LANDING

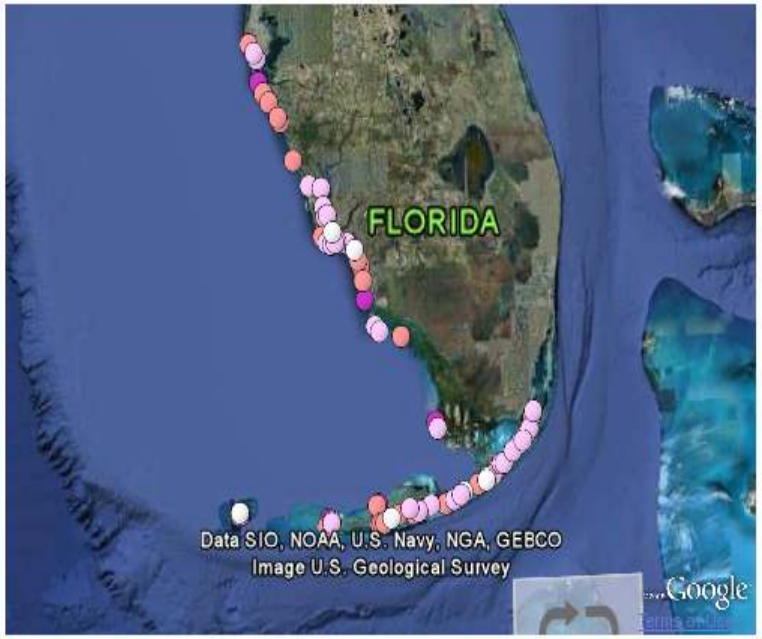
Go

2007
2006
2005

FALL
SUMMER
SPRING
WINTER

Landing Sites



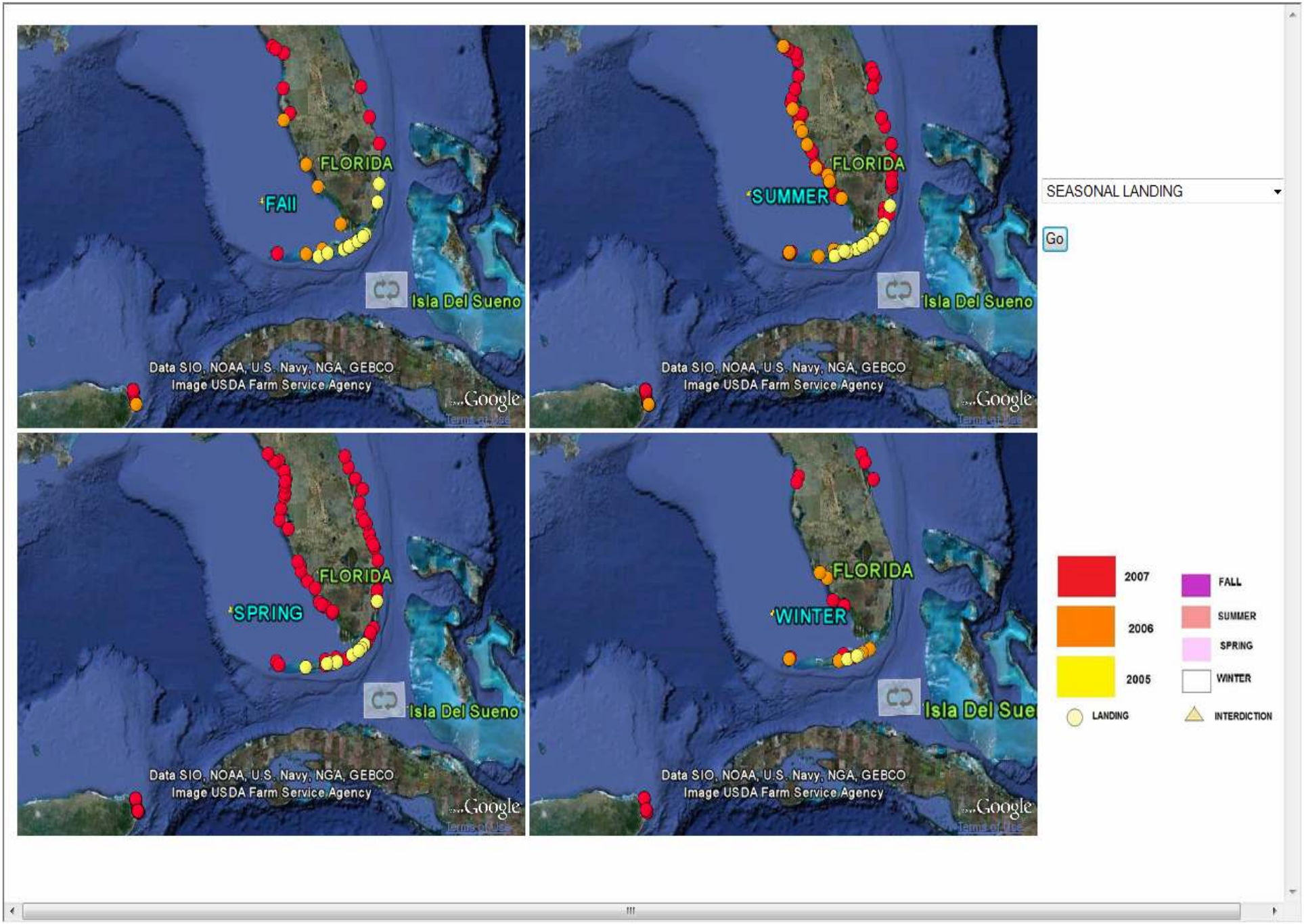


YEARLY SEASONAL LANDING

Go

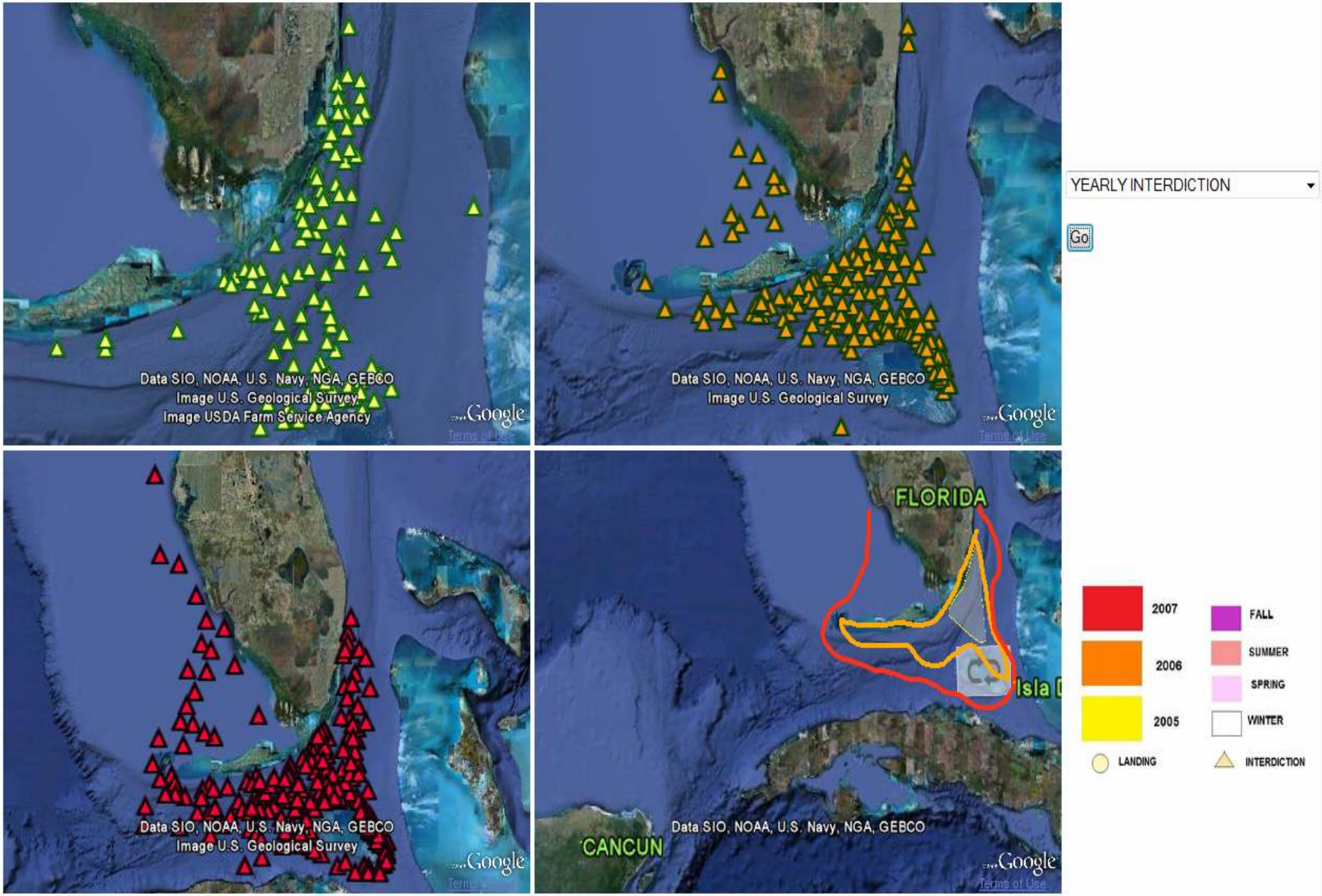
2007
2006
2005

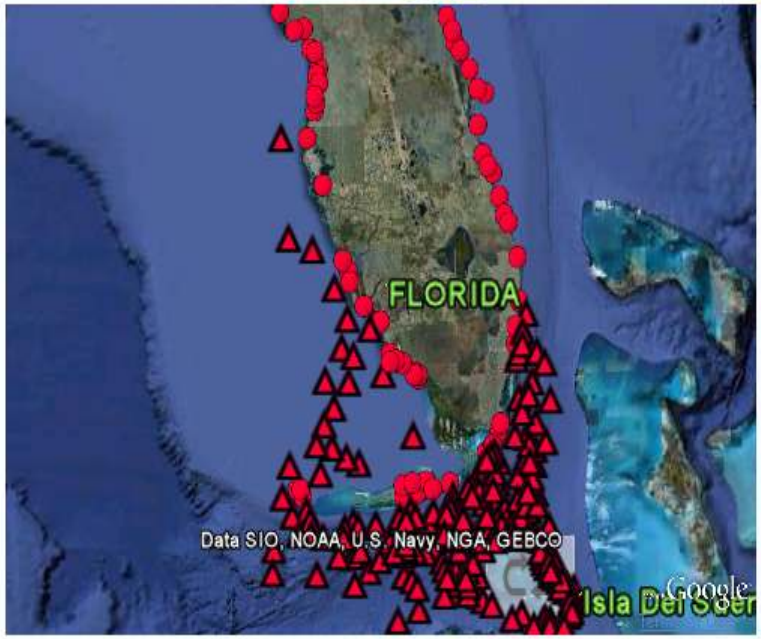
FALL
SUMMER
SPRING
WINTER


FLORIDA
FALL
Isla Del Sueno
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image USDA Farm Service Agency
Google
FLORIDA
SUMMER
Isla Del Sueno
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image USDA Farm Service Agency
Google
FLORIDA
SPRING
Isla Del Sueno
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image USDA Farm Service Agency
Google
FLORIDA
WINTER
Isla Del Sue
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image USDA Farm Service Agency
Google
SEASONAL LANDING
Go
2007
2006
2005
FALL
SUMMER
SPRING
WINTER
LANDING
INTERDICTION

Interdiction Pattern

- Who is influencing whom and how?
  -interdiction changing pattern of migration?
  -migrants following any patterns?
  -Coast guards changed their pattern?


Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image U.S. Geological Survey
Image USDA Farm Service Agency
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image U.S. Geological Survey
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image U.S. Geological Survey
FLORIDA
CANCUN
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
YEARLY INTERDICTION
Go
2007
2006
2005
FALL
SUMMER
SPRING
WINTER
LANDING
INTERDICTION



YEARLY INTERDICTION/LANDING

Go

2007
2006
2005

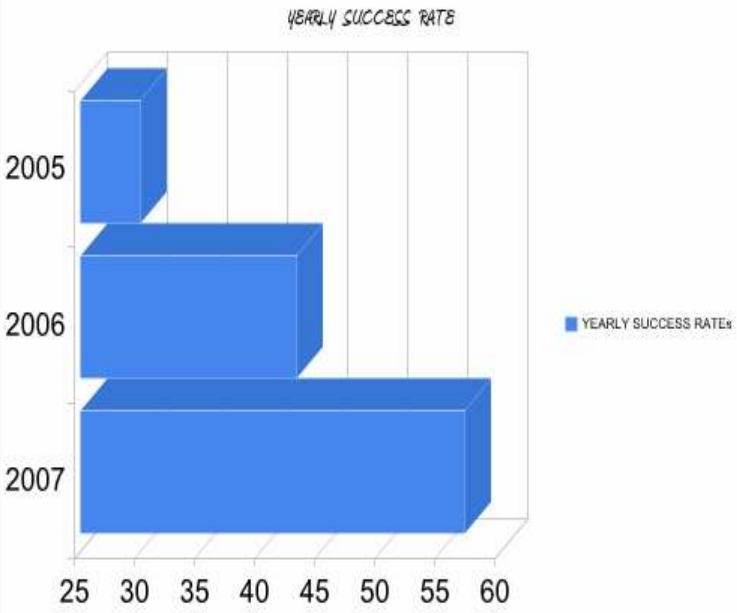
FALL
SUMMER
SPRING
WINTER

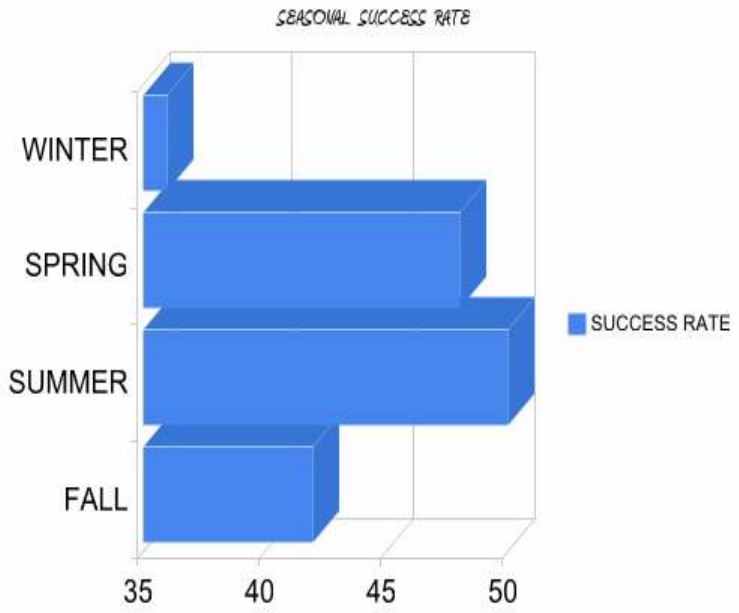
LANDING
INTERDICTION

Cat and Mouse Game?

Success Rate

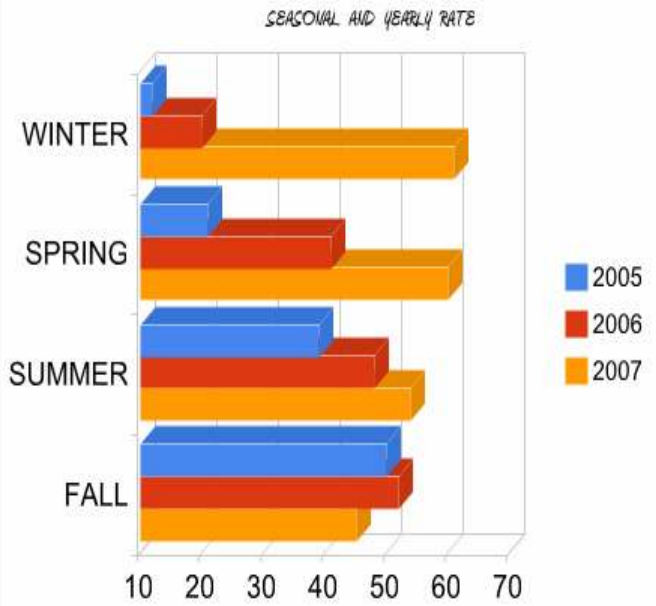
- Yearly success rate
- Seasonal success rate
- Season wise yearly success rate
- Zone wise success rate

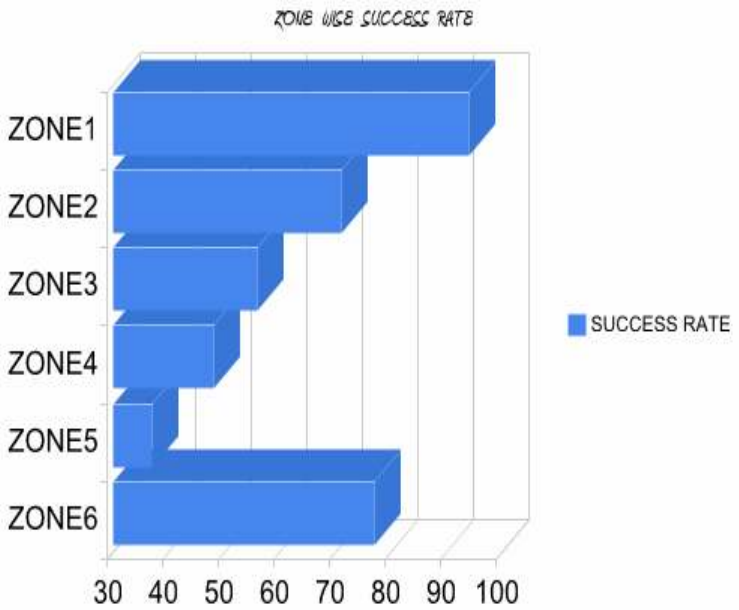




YEARLY SUCCESS RATE

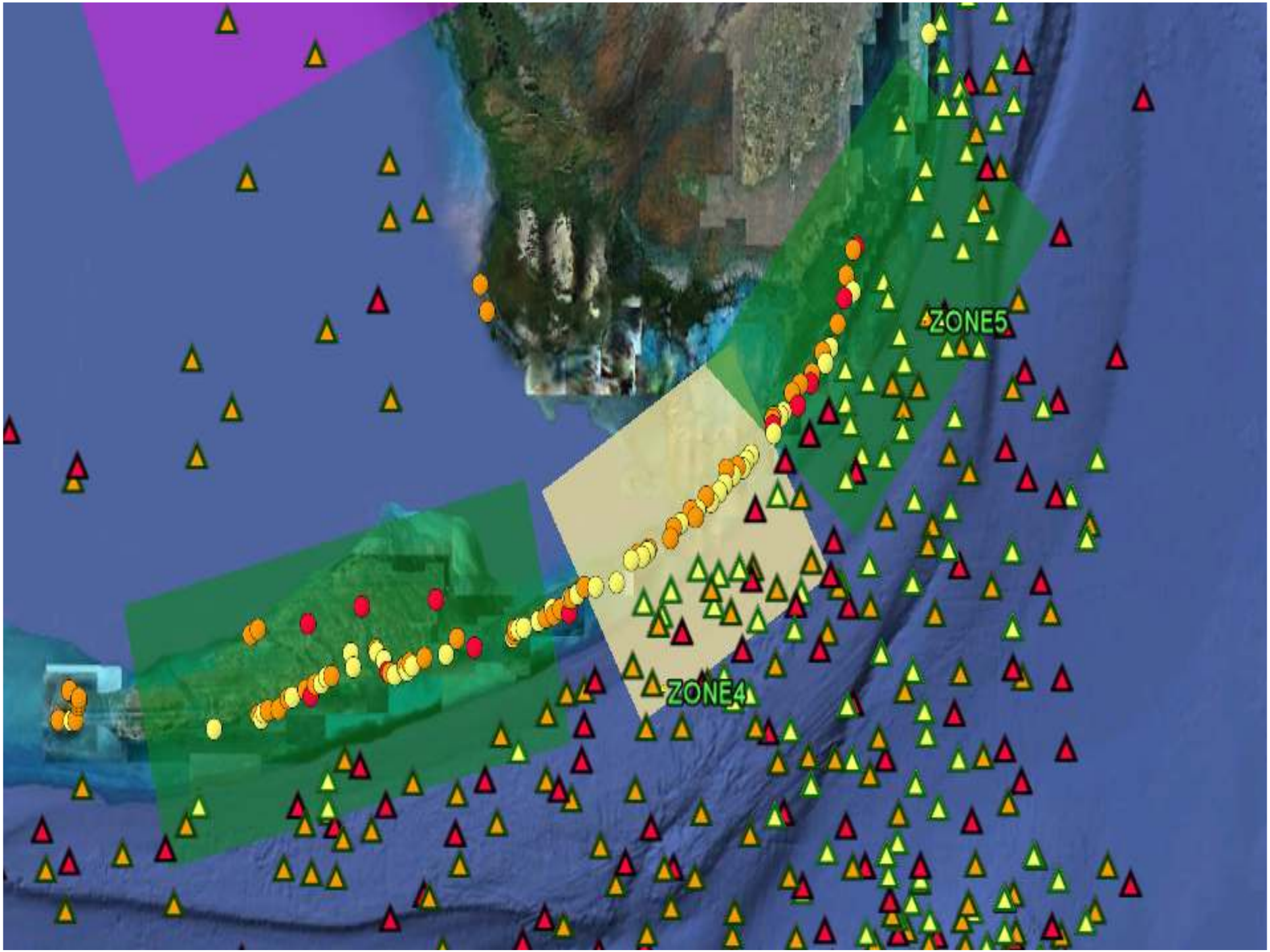
Go





Is landing data enough?

- Places near the shore counted
- How much is enough distance?
- Does it give better idea?


ZONE5
ZONE4

Future Work?

- Finding migrant patters and the relative factors for real life data

Question?