

# SEA LEVEL RISE IN IPSWICH, MASS.

- ▣ Prepared by Dan Falotico, 12/11/08



# Introduction / Background

- ▣ Why analyze sea level rise?
  - To find out how sea level rise impacts coastal communities and ecosystems
- ▣ What causes sea level rise?
  - GLOBAL WARMING!
- ▣ Key concerns with sea level rise
  - Land Loss
  - Storms
  - Saline water supplies

# Objectives

- ▣ To show impacts that sea level rise has on Ipswich, under three scenarios
- ▣ 2, 5, and 10 meters
- ▣ To show which areas are most vulnerable and will be effected by sea level rise
- ▣ To produce maps that illustrate the impacts on Ipswich, MA

# Methods / Data

- ▣ Downloaded data from MassGIS website
- ▣ Prepared data for ArcMap in Excel
- ▣ Added Excel workbook data to ArcMap where I converted it into a point shapefile
- ▣ Point shapefile converted into raster elevation grid

# Methods/Data cont.

- ▣ Identified areas vulnerable to sea level rise @ 3 scenarios, using raster calculator
- ▣ Converted flood zone data to polygon
- ▣ Added aerial photo data from MassGIS
- ▣ Clipped flood zone data to aerial photo
- ▣ Calculated total area inundated @ 3 scenarios

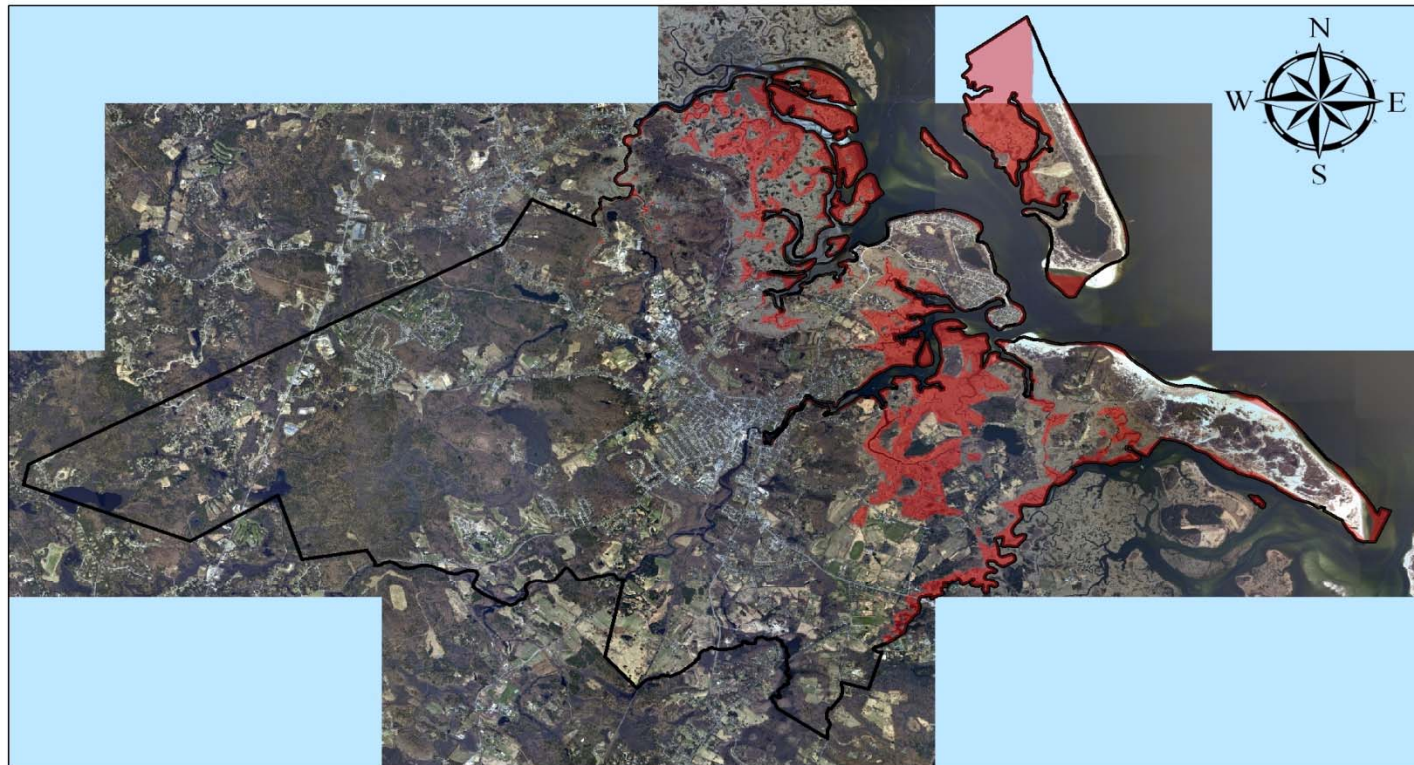


# Results

- ▣ Total area of Ipswich inundated at three scenarios
  - At 2 meters of sea level rise, a total of 4.38318 square miles were inundated
  - At 5 meters of sea level rise , a total of 10.997701 square miles were inundated
  - At 10 meters of sea level rise, a total of 16.7306 square miles were inundated
- ▣ TOTAL AREA OF IPSWICH=42.1 sq. miles

# Area Inundated At 2 Meters

Area Inundated at a Sea Level Rise of 2 meters



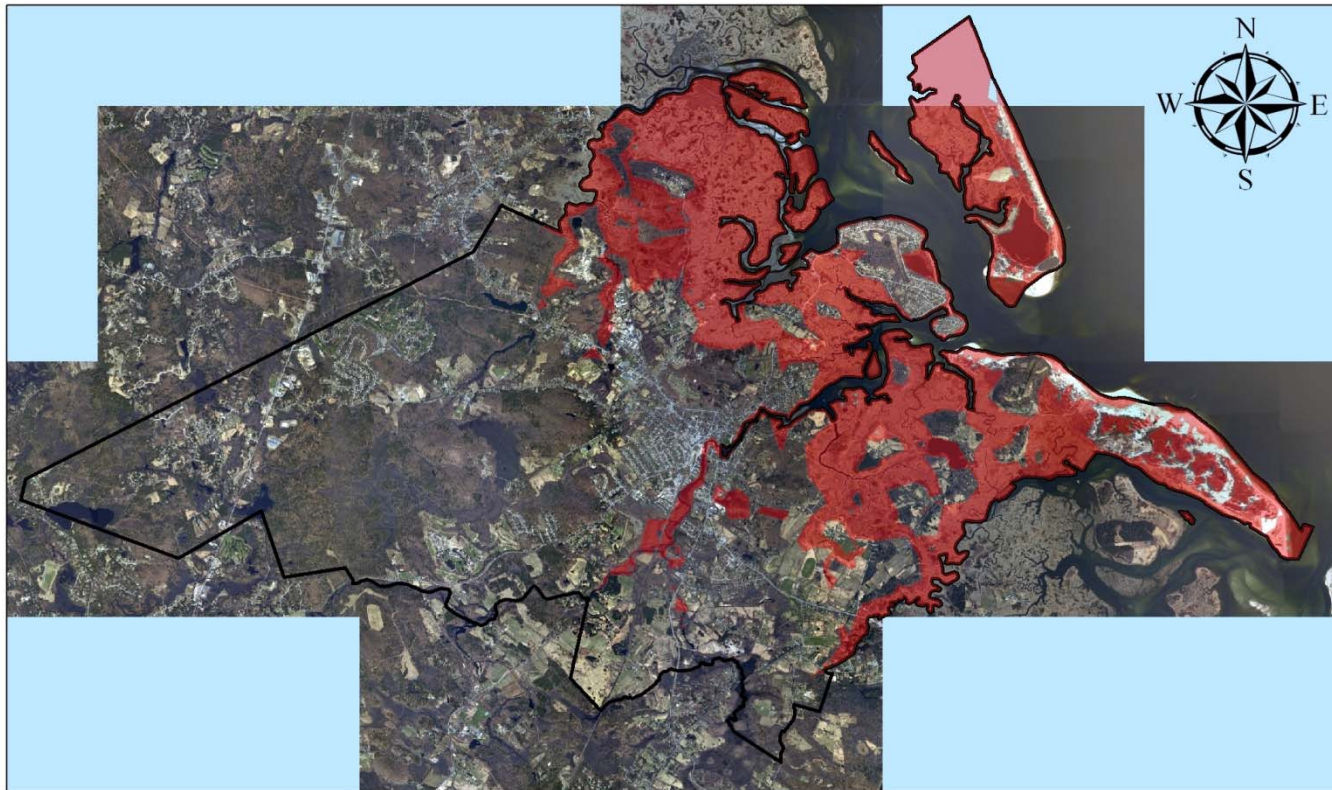
0 0.5 1 2 Miles

Ipswich, Mass.



# Area Inundated At 5 Meters

Area Inundated at a Sea Level Rise of 5 meters



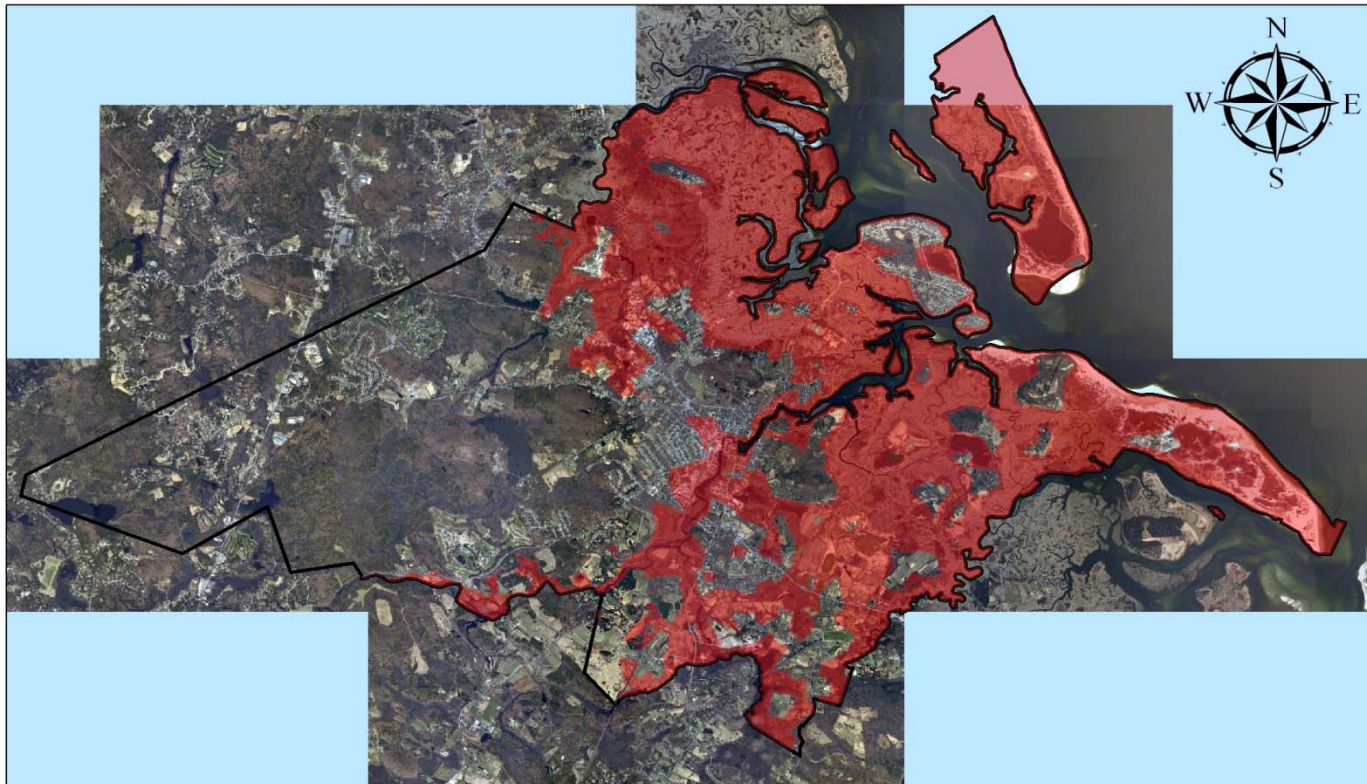
0 0.5 1 2 Miles

Ipswich, Mass.



# Area Inundated At 10 Meters

Area Inundated at a Sea Level Rise of 10 meters



0 0.5 1 2 Miles

Ipswich, Mass.

# Conclusion

- ▣ Significant project, sea level rise impacts homes, businesses, natural barriers from storms, water sources and important ecosystems
- ▣ Problems encountered
  - Obtaining data, calculations, and clipping data

# Sources

- ▣ MassGIS website

[www.mass.gov/mgis/](http://www.mass.gov/mgis/)

- ▣ EPA website on climate change

<http://epa.gov/climatechange/index.html>

- ▣ ArcMap

- ▣ Microsoft Excel