NC Changing Shorelines

Using NC Coastal Atlas to Measure Erosion
NC Shoreline Program

- Erosion
- Science currently in use
- Strategies to combat erosion
- Measure shoreline change with software
- Design waterfront business or residence
- Present
Shoreline Erosion

- Natural Causes
  - Wind
  - Waves
  - Current

- Human Impact

- Impacts estuary and ocean shorelines

Delawareestuary.org
Science

- UNC CSI geologists
  - Map shorelines using GPS
  - 300+ miles of ocean shorelines
  - Over 12,000 miles of estuarine shoreline
  - Valuable to track changes

- https://www.youtube.com/watch?v=cYxZNG7AxLg
Managing Erosion

- Vegetation
- Beach nourishment
- Hardened structures
Vegetation

- Vegetation holds sediment in place
- Natural vegetation can be planted to stabilize shores
- Provides habitats for native species
Beach Nourishment

- Nourishment not long term solution
- Erosion can happen rapidly during storms
- Can negatively impact environment
Hardened Structures

- Jetties
- Walls
- Bulkheads
- Stone revetments

- Can cause change in sand movements
- Impacts shallow water ecosystem
NC Coastal Atlas – Estuary Shoreline

1. Go to website
   https://www.nccoastalatlas.org/maps

2. Choose “Create a new map using our data”

3. Click the plus sign on left menu

4. Choose Dare County Historic Estuarine Shoreline
   • Add to map
   • Done
5. Zoom in so map scale is 1:9,027

6. Move your cursor to position 35.864389 and -75.657269

7. Use Measure tool (ruler in top row) to find changes in shoreline between 1949, 1970 and 2009. Use meters.

8. Calculate rate of erosion to find average change per year.
NC Coastal Atlas – Ocean Shoreline

1. Using map from Estuarine shorelines (or follow steps 1 -3 on previous slide).

2. Click on the “+” tab in the left menu to open options for other map layers.

3. Choose Ocean Shoreline (1998) and add to the map.

4. Choose Ocean Shoreline (2004) and add to the map.

5. Choose Ocean Shoreline (2009) and add to map. Click Done.
6. Using the mouse zoom out until you see the beach and the colored lines of the shorelines from different years.

7. Zoom in over the ocean shoreline until you are at a 1:2,256 scale.

8. Use the measure tool (small ruler in top menu) to measure changes to the shoreline, record in meters:
   a. 1998 – 2004
   b. 2004 – 2009
   c. 1998 – 2009

9. Record you cursor position (35.something and -75.something)