AMBUR-HVA: A New Hazard Vulnerability Assessment Tool for Regional Coastal Resiliency Planning

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What is HVA?
Hazard Vulnerability Assessment Tool

What is this tool?
- Incorporates 4 datasets into a vulnerability ranking of 1-5:
  1. Storm surge (SLOSH)
  2. Shoreline Change + translation (invasion)
  3. Flooding (FEMA QF/DIRM)
  4. Social/economic vulnerability (SoVI)
- Stand-alone PEMS
- Does not require GIS skills
- Does require that you gather/create GIS layers
- ArcGIS compatible products

Four component datasets

Shoreline Change Rate Calculation

AMBUR
(Analyzing Moving Boundaries Using R)

Four component datasets

Coastal Vulnerability Analysis

AMBUR-HVA
(Combining Shoreline Change and Flooding with Social Vulnerability)

What are the products?

- Shoreline Change Analysis
  - HVA Category
    - 1 year
    - 5 year
    - 10 year
    - 50 year
    - 100 year
    - Infinite time
- Shoreline Change - compiled into HVA categories
- Shoreline Translation - compiled into HVA categories
- Flooded areas - compiled into HVA categories
- Social Vulnerability Index
- Coastal Vulnerability Index

Confidential South Atlantic Alliance

Georgia South Atlantic Alliance

Florida South Atlantic Alliance

South Carolina Coastal Alliance

What are the steps to using the tool?

GIS User

Download the tool:

Install the tool:

Load the data:

Run the HVA model:

Save the outputs:

Vulnerabilities to WHAT?

- STORM SURGE
- EROSION
- FLOODING
- ECONOMIC and SOCIAL (SoVI)

Future Tool Development

Further Information

- AMBUR, http://r-forge.r-project.org/ or http://r-forge.r-project.org/R/?group_id=476
- Tool documentation: http://r-forge.r-project.org/`

For Whom is this tool useful?

- Coastal Managers
- State Emergency Managers
- Researchers
- Local Municipalities
- GIS Users

Tool Highlights

- Over 10,000 km of shorelines for calibration
- 58,178 transect locations for calibration
- Data from 4 States encompassing varying coastal geology
- Morphologic settings
- Includes risk to environmental hazards
- Includes risk to social vulnerability
- Nearly 1000 lines of code
- Cut that simplifies analysis

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