



Vulnerability Assessment Resources Inventory

Use these resources to create a coastal flooding vulnerability assessment. Resources are organized into three categories: 1) general tools including checklists, quick reference guides, visualization tools, and step-by-step workbooks; 2) state and region-specific guides and tools; and 3) additional resources. (Currently the additional resources category is specific to habitat vulnerability.)

General Tools To Support Vulnerability Assessments

| Tool | Function | Source | Other |
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| <i>Digital Coast Resources</i> | | | |
| Participant Checklist for Risk and Vulnerability Assessment | Identify stakeholders to engage with during vulnerability assessment. | NOAA | |
| Vulnerability Assessment - Informing Adaptation Actions Guide | Use to scope your vulnerability assessment for an identified asset or resource. | | Includes questions to consider, example answers, and blank version |
| Data Needs and Information for Community Risk and Vulnerability Assessment | -Data and information needs. -Topics to consider during community risk and vulnerability discussions. | | |
| Coastal County Snapshots | Understand country resilience as it relates to flooding, critical facilities, jobs, etc. | | Print or electronic options available |
| Coastal Flood Exposure Mapper | -Visualization tool used to support coastal hazard risks and vulnerabilities assessments. -User-defined, shareable maps. | | Decision support document for this tool |
| Coastal Adaptation Planning Guide | - Helps users figure out where to start the coastal adaptation planning process. Includes discussion of scoping vulnerability, pitfalls, action steps, etc. | | See pages 20-28 (step 3 of the guide) |
| TRAINING: Adaptation Planning for Coastal Communities | Learn to 1) apply the basic elements of an adaptation planning to organize preparedness efforts; 2) translate | | For planners, public works staff, floodplain, sustainability, or |

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| | climate science into impacts on local communities; 3) practice a qualitative approach to scope and compile a vulnerability assessment, plus more. | | emergency managers, community groups, coastal resource managers |
| TRAINING: Coastal Inundation Mapping | Learn to 1) Identify the different types of coastal inundation; 2) interpret mapping products and terminology; 3) access topographic and bathymetric data; 4) perform datum conversions; 5) use interpolation methods to create digital elevation models; 6) explore water level data; and 7) map coastal inundation (including sea level rise) using a GIS. | | Requires ArcGIS and intermediate (6-12 months) of GIS skills prior |
| Other Resources | | | |
| Climate Resilience Toolkit- Assess Vulnerability and Risk | Overview for assessing vulnerability and understanding and characterizing risk. | Climate.gov | Step 2 of 5 steps to resilience ; steps 3-5 focused on what to do after a vulnerability assessment |
| NASA Flooding Analysis Tool | The focus is on how sea level rise and other factors will affect, on a location-specific basis, the future frequency of high-tide flooding. | NASA with data from NOAA | Shows observed flooding, sea level rise scenarios, and projected flooding days per year |
| FEMA Hazus Tool and Loss Library | Standardized tools and data for estimating risk from floods, tsunamis, hurricanes. The loss library is a collection of Hazus-generated risk assessments. | FEMA | Some inland scenarios as well as coastal |
| Being Prepared for Climate Change: A Workbook for Developing Risk-Based Adaptation Plans | Use this guide to assist organizations that manage environmental resources and want to prepare a broad, risk-based adaptation plan. | EPA Office of Water | Intended for environmentally focused coastal or watershed organizations, but steps are broadly applicable |
| EPA Risk-Based Adaptation Site | Videos and recorded webinars to help with vulnerability planning. | EPA | Also includes risk identification checklist (not limited to flood risk) |

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| Tribal Climate Adaptation Guidebook– Step 3: Assess Vulnerability | Outlines selecting vulnerability assessment approach, determining relative climate change vulnerability, and selecting priority planning areas. | Created by Oregon Climate Change Research Institute with Tribal Advisors | Includes vulnerability assessment content, a checklist, and tribal case studies |
| Vulnerability, Consequences, and Adaptation Planning Scenarios (VCAPS) | A process to help local decision makers understand how various environmental outcomes translate to social, economic, and other community outcomes. Useful for adaptation and hazard management. | Social Environmental Research Group and Carolinas Integrated Sciences and Assessments Program | Includes case studies and a link to the open source diagramming program, VUE |
| South Central CASC Climate Vulnerability Assessments Resource Page | A how-to guide for training community leaders about vulnerability assessments using documents and videos. | South Central Climate Adaptation Science Center | Home website also includes page for tribal considerations Contact info@southcentralclimate.org with questions |
| Neighborhoods at Risk Tool | Identify neighborhoods possibly more impacted by climate change by showing where people may experience unequal impacts from flooding (and heat). | Headwaters Economics | |
| <i>Papers, Reports, & Definitions</i> | | | |
| A Review of Coastal Vulnerability Assessments: Definitions, Components, and Variables | Summary of coastal vulnerability assessments based on peer-reviewed articles and published reports. Includes introductory material, factors that contribute to vulnerability, comparison of different assessment methods, and knowledge gaps. | United States Army Corps of Engineers (USACE) Engineer Research and Development Center (ERDC) | Literature review; contains citations for many vulnerability assessment examples |
| Assessing Vulnerability | Provides a broad overview of a vulnerability assessment. Links to other papers. | Texas A&M University (TAMU) | Includes a list of tools (many which are in this table) |

State-Specific Resources

| State | Resource | Function | Source | Other |
|-------|--|--|---|--|
| CA | Coastal Storm Modeling System (CoSMoS) | Modeling approach that allows more detailed predictions of coastal flooding due to future sea level rise and storms integrated with long-term coastal evolution. | U.S. Geological Survey | CoSMoS results are available as GIS shapefiles, including metadata, or viewable through the Our Coasts, Our Future flood mapper |
| FL | Sea-Level Rise Vulnerability Assessment Tools and Resources: A Guide for Florida's Local Governments | Guidance for vulnerability and risk assessments related to sea level rise. Includes description of different tools, how to select tools, where they fit in the process, and their use. | FL Dept of Economic Opportunity; ATKINS North America, Inc. with NOAA Funding | General concepts can be applicable to other states, but Florida-specific information is in the document |
| MI | Resilient Great Lakes Coast- Vulnerability Assessment Page | Background information for vulnerability assessments, aspects to consider, methods. | University of MI | -Uses state case study but concepts broadly applicable -Site hosts a list of data sources for evaluating biophysical vulnerability in Great Lakes |
| NJ | Getting to Resilience | Website with planning checklists, information, tools, etc. | Various state and federal agencies, Rutgers, SeaGrant, Monmouth Univ. | Includes New Jersey-specific tools such as NJAdapt ; checklists and much of the content can be applied beyond this state |
| SC | Coastal Hazard Vulnerability Assessment | Evaluate coastal hazard vulnerability for four components: 1) storm surge; 2) shoreline change; 3) flooding; and 4) social and economic vulnerability. | SC Department of Health and Environmental Control | Information Sheet |
| WI | Wisconsin Risk Assessment Flood Tool | Provides authoritative, and relevant | Wisconsin DHS + | *Not limited to coastal areas |

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| | | spatial data resources for emergency preparedness and planning efforts. | partner agencies | -A number of analysis layers for diff. vulnerability categories (social, medical, mitigation, etc) - User Guide |
| FL, MS, AL | Economic Impacts of Sea-Level Rise Data Viewer | Tool to explore maps, infographics, etc. regarding socioeconomic effects of sea level rise over the northern Gulf of Mexico region. Allows users to build area-specific reports and infographics. | NOAA, Program for Local Adaptation to Climate Effects (PLACE); Uses NOAA, FEMA Hazus, and Census data | User Guide Note: No plans currently exist to expand the tool over the rest of the Gulf or other states. |

ADDITIONAL RESOURCES

| Resource | Function | Source | Other |
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| Climate Change Vulnerability Assessment Tool for Coastal Habitats (CCVATCH) | -Created to understand how sea level rise and climate change impact coastal habitats and ecosystem functions. -Evaluation process. -Applicable at multiple geographic scales. | National Estuarine Research Reserve System | Jennifer Plunket, Stewardship Coordinator, North Inlet-Winyah Bay National Estuarine Research Reserve jen@baruch.sc.edu Guidance Document |
| Climate Adaptation Knowledge Exchange (CAKE) Rapid Vulnerability Assessment Tool | -Modified vulnerability assessment that is simple, focused on specific interests, and based on known facts and team. -Intended for marine protected areas and resource managers; concepts broadly applicable. | CAKE; managed by EcoAdapt | Includes 1) user guide; 2) blank worksheets; and 3) completed worksheet examples |

Resources compiled via the Coastal Inundation Community of Practice (CICoP) implementation team, discussions at conferences, and a Google search of terms and topics related to vulnerability assessments. Search terms included tribal-based coastal vulnerability assessments, coastal vulnerability, vulnerability assessment, vulnerability assessment tools, risk assessment, and various variations of these with U.S. and territory regional names added. Government, nonprofit, tribal, and academic resources were prioritized. We are always looking to add additional resources, so please let us know if you have recommendations.

WEBINAR FOLLOW UP RESOURCES

Case Study Reports

- **San Diego, CA:**
 - [City of San Diego, State Lands Sea Level Rise Vulnerability Assessment, July 2019](#)
 - [City of San Diego, Climate Change Vulnerability Assessment, Feb 2020](#)
- **Southern, ME:**
 - [Climate Ready Coast- Southern Maine](#)- A Regional Coastal Resilience Plan for Southern Maine (Nov 2023)
- **Kaua'i, Hawai'i:**
 - [VCAPS](#)
 - [West Kaua'i Community Vulnerability Assessment](#)

Digital Coast Resources

- [Reducing Hazard Impacts Through Plan Alignment](#)
- [Coastal Adaptation Planning Guide: Five Steps for Beginners](#) (see VA on page 20-28)
- [Questions to help scope a VA](#)
- [Assessment Questions](#) (From Adapting to Rising Tides - A CA effort)
- [Participant Checklist for Risk and Vulnerability Assessment Discussions](#)
- [Additional Data Needs and Information for a Community Risk and Vulnerability Assessment](#)
- [A Seat at the Table](#)
- [Coastal Resilience Index](#)
- [NOAA's Coastal Adaptation Planning Essentials Training](#)

Resources Shared by CoP Participants

- Cedar Key, FL - [Resilient Cedar Key](#)
- Virginia Beach, VA - [Sea Level Wise](#)
- Fairfax, VA- [Resilient Fairfax Climate Vulnerability and Risk Assessment \(VRA\)](#)
- City of Richmond, VA - [RVA Green 2050 Plan](#)