



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
<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

	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)

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

		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
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](#)