

How to Map Open Space Preservation for the FEMA Community Rating System

Russell Jackson

NOAA Office for Coastal Management

Get CRS Credit for Preserving Natural and Beneficial Functions!

Digital Coast

An enabling platform for coastal decision making

The screenshot shows the NOAA Digital Coast website homepage. At the top left is the NOAA logo and the text "Office for Coastal Management DIGITALCOAST". To the right is a navigation menu with links for "ABOUT", "DATA", "TOOLS", "TRAINING", "TOPICS", and "STORIES", along with a search icon. The main header features a large "10" logo for the "DIGITAL COAST ANNIVERSARY" and the headline "MORE THAN JUST DATA". Below this is a sub-headline: "Dive into the Digital Coast to Get the Data, Tools, and Training Communities Need to Address Coastal Issues." The main content area is divided into two columns. The left column is titled "What is Digital Coast?" and contains a paragraph describing the website's purpose, a link to "Learn More about the Digital Coast", and a list of links: "Tips for First Time Users", "Contributing Partners", and "GeoZone Blog". The right column is titled "Top 5" and lists five popular items: "1. Historical Hurricane Tracks", "2. Sea Level Rise Viewer", "3. Data Access Viewer", "4. Introduction to Lidar", and "5. Flood Exposure Mapper".



Digital Coast

A constituent-driven, integrated, enabling platform supporting coastal resource management that is used

- Data
- Tools
- Training
- Success Stories

The screenshot shows the Digital Coast website homepage. At the top, there is a navigation bar with the logo for the Office for Coastal Management and Digital Coast, and links for ABOUT, DATA, TOOLS, TRAINING, TOPICS, and STORES. Below the navigation bar is a large blue banner with the text "10 Years of Digital Coast" and "MORE THAN JUST DATA". Underneath the banner, there is a sub-header: "Dive into the Digital Coast to Get the Data, Tools, and Training Communities Need to Address Coastal Issues." The main content area is divided into several sections: "What is Digital Coast?" with a brief description and a list of links; "Sea level rise visualizations for your community" with a video player; "Partner News" with a list of recent news items; and "Website Feedback" with a "Have Feedback" button. The page is designed with a clean, modern aesthetic using blue and white colors.

Digital Coast Partnership

- American Planning Association
- Association of State Floodplain Managers
- Coastal States Organization
- National Association of Counties
- National Estuarine Research Reserve Association
- National States Geographic Information Council
- The Nature Conservancy
- Urban Land Institute



The Digital Coast in Action: Facilitating Use and Application



DISCOVER

Information on the C-CAP land cover data set on the Digital Coast website



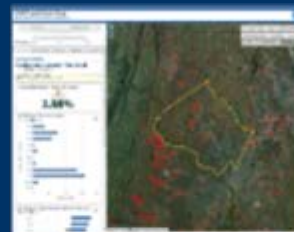
DOWNLOAD

Land cover data for your community via the Data Access Viewer



MAP

Develop mash-ups with ESRI and OGC map services



ANALYZE

Change in your county with the Land Cover Atlas



LEARN

From data experts through recorded webinars



SHARE

Outcomes with others though Stories in the Field

DATA

INFORMATION

ACTION





Sea Level Rise Viewer

NOAA Office for Coastal Management

Overview

Use this web mapping tool to visualize community-level impacts from coastal flooding or sea level rise (up to 6 feet above average high tides). Photo simulations of how future flooding might impact local landmarks are also provided, as well as data related to water depth, connectivity, flood frequency, socio-economic vulnerability, wetland loss and migration, and mapping confidence.

Try the new **beta version**, which now includes local sea level rise scenarios.

Features

- Visualize potential impacts from sea level rise through maps and photos
- Learn about data and methods through documentation
- Share maps and links via email and social media
- Download inundation layers and digital elevation models, and access web map services for custom GIS applications

Tool Overview Video



Additional Information

- + Sea Level Rise Tool FAQ
- + Mapping Methods
- + Data Updates
- + Acknowledgments
- + Story Maps
- + Publications

[LAUNCH](#)

[DOWNLOAD DATA](#)

[ACCESS MAP SERVICES](#)

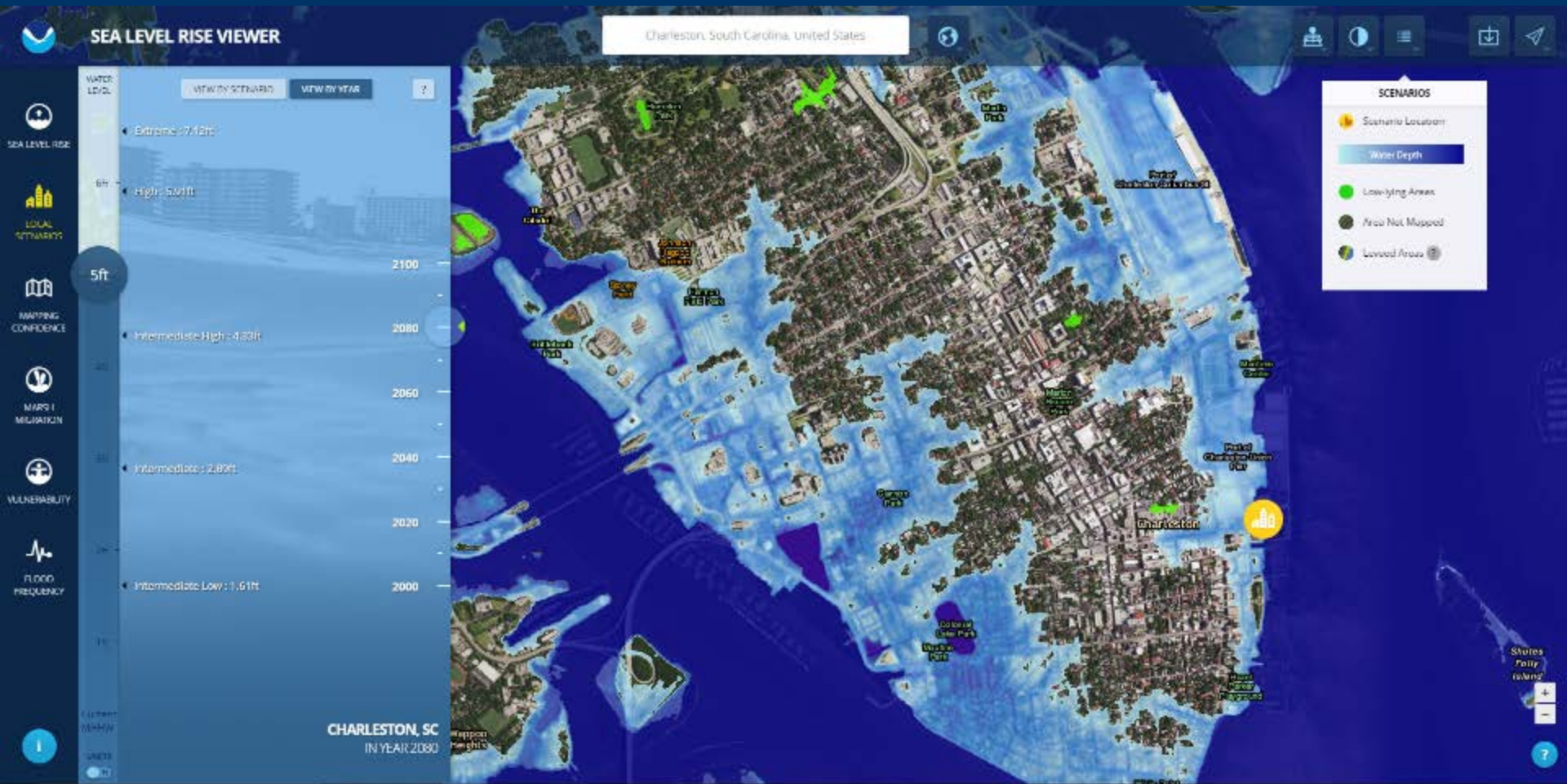
Related Resources

Stories	25
Data	7
Tools	6
Publications	5
Videos and Webinars	3
Self-Guided Resources	2
Classroom, Instructor-Led	2
Contributing Partners	1

- NOAA Office for Coastal Management

<https://coast.noaa.gov/digitalcoast/tools/slr/>







Coastal Flood Exposure Mapper

NOAA Office for Coastal Management

Overview

This online visualization tool supports communities that are assessing their coastal hazard risks and vulnerabilities. The tool creates a collection of user-defined maps that show the people, places, and natural resources exposed to coastal flooding. The maps can be saved, downloaded, or shared to communicate flood exposure and potential impacts. In addition, the tool provides guidance for using these maps to engage community members and stakeholders. *The current geography includes the East Coast and Gulf of Mexico.*

Features

- Visualize people, places, and natural resources exposed to coastal flood hazards
- Share online maps to communicate with and engage stakeholders

Tutorial



Additional Information

- + Support

LAUNCH

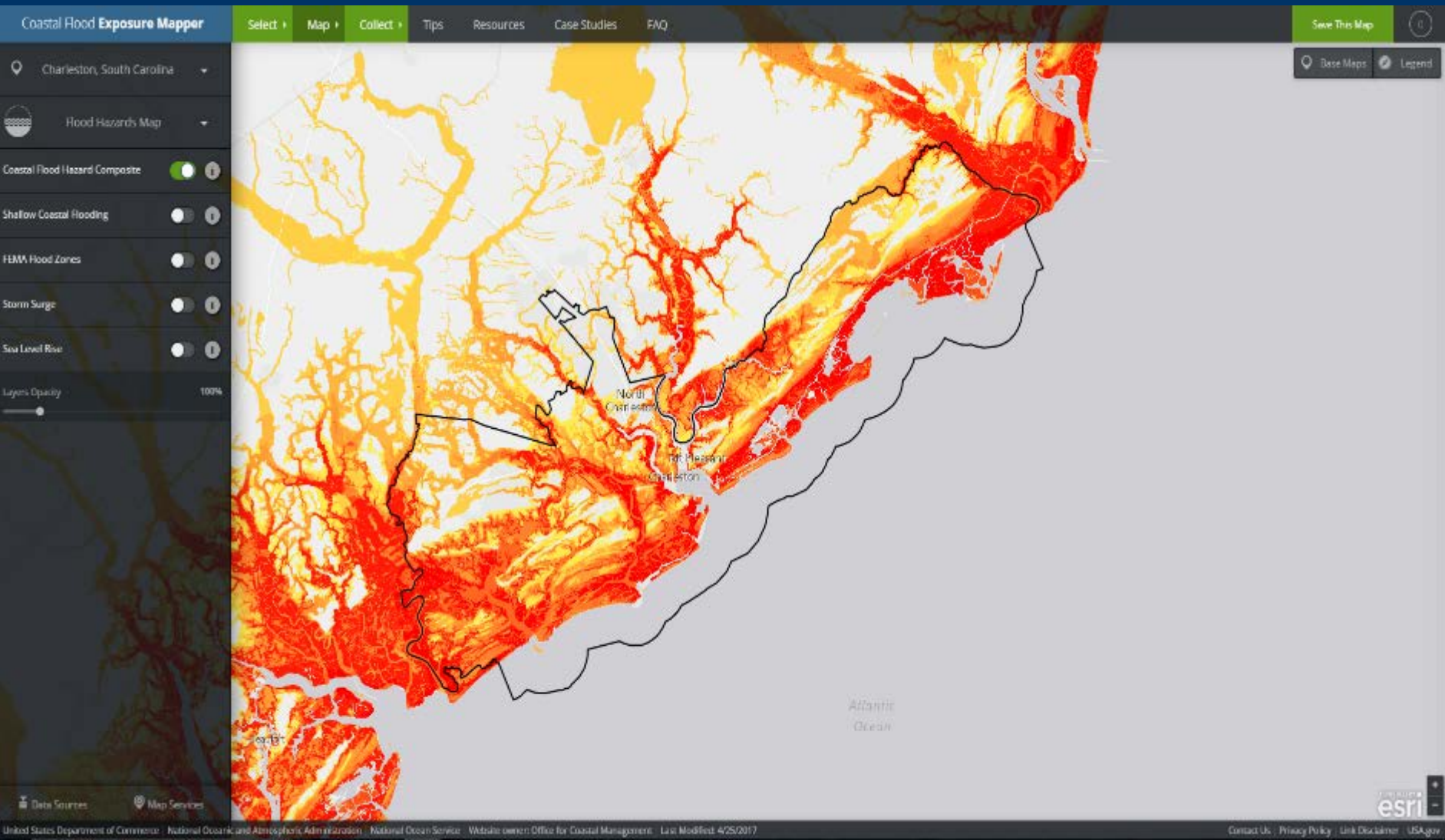
Related Resources

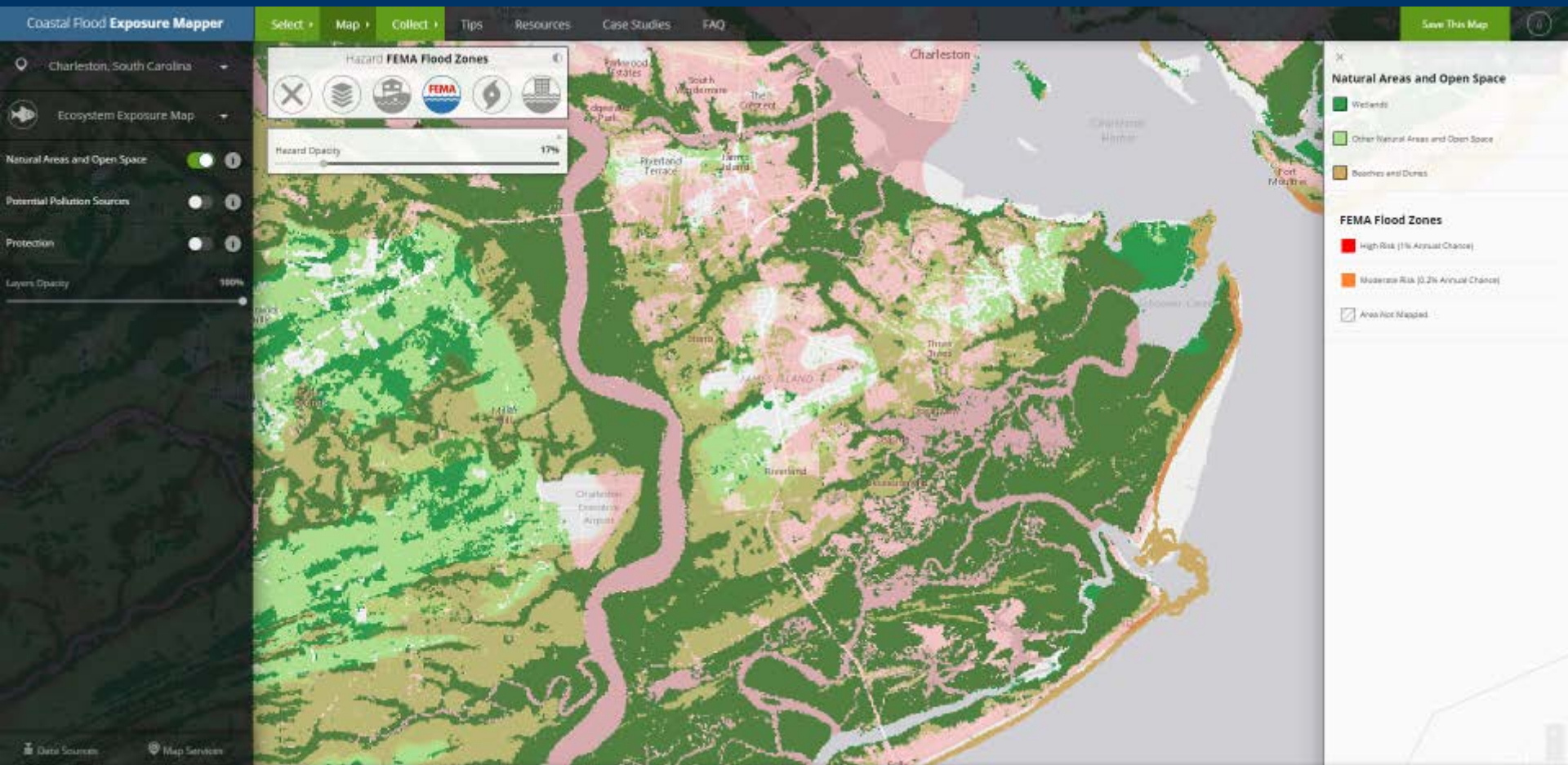
Publications	5
Tools	4
Classroom, Instructor-Led	3
Quick References	2
Stories	2
Videos and Webinars	2
Online, Instructor-Led	1
Data	1
Self-Guided Resources	1
Contributing Partners	1

- NOAA Office for Coastal Management

<https://coast.noaa.gov/digitalcoast/tools/flood-exposure.html>







United States Department of Commerce · National Oceanic and Atmospheric Administration · National Ocean Service · Website owner: Office for Coastal Management · Last Modified: 4/25/2017 · [Contact Us](#) · [Privacy Policy](#) · [Link Disclaimer](#) · [USA.gov](#)



How To Map Open Space Preservation (OSP) for Community Rating System Credits

1. Step-by-step instructional “How To” guide (for planners)
2. GIS workflow (for GIS analysts)
 - Supplementary documents
 - Before you get started
 - [GIS dataset checklist](#)
 - Job aids



CRS Activity 420: Open Space Preservation

- Communities earn credits for permanently preserved open space
- First five elements provide credit for parcels that qualify for:

OSP Credit

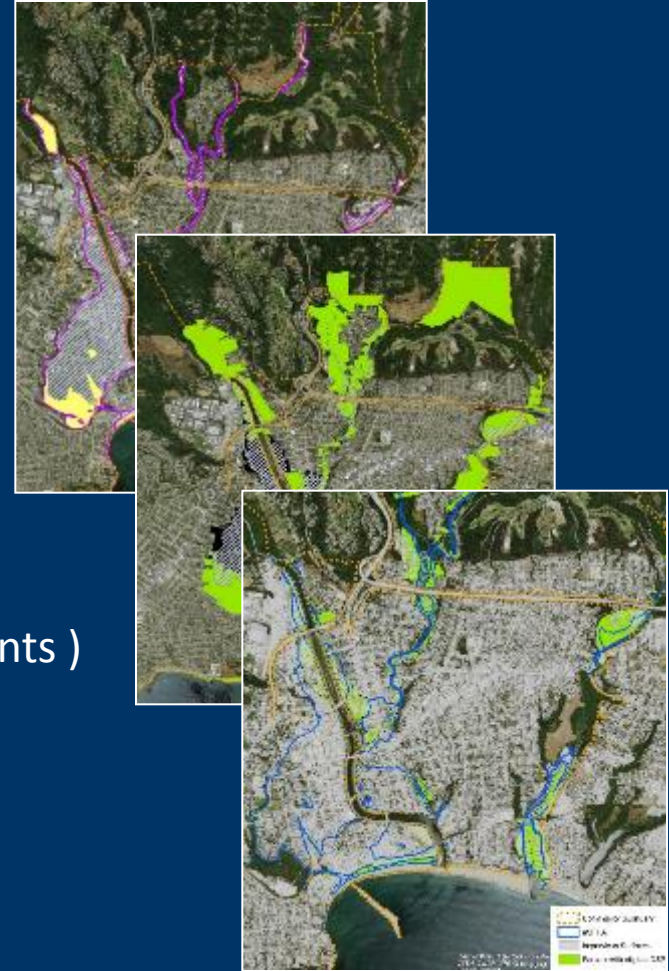
- Open Space Preservation (OSP) – 1450 points

OSP Extra
Credit

- Deed Restrictions (DR)
- Natural functions open space (NFOS)
- Special flood-related hazard open space (SHOS)
- Coastal erosion open space (CEOS)

Workflow Steps

- Map the impact adjusted SFHA
- Identify lands that may qualify
- Exclude areas that do not qualify
- Calculate the number of possible OSP credits $rOSP = aOSP/aSFHA$ (x 1,450 points)
- Determine if parcels qualify for “extra credit”



[DRAFT] Job Aid: Calculating Open Space Credits under Activity 420 of the National Flood Insurance Program's Community Rating System

e. Cells shaded in [green] are fields where data will need to be entered. Cells shaded in [grey] are "write-protected" and fill automatically. The row highlighted in blue is an example and is not included in the calculations. If using this worksheet for more than 10 parcels, additional sheets can be found on the tabs at the bottom of the Excel window.

This worksheet is intended to complement the 2017 CRS Coordinator's Manual, which should be referenced as the official source for guidance on credit criteria, appropriate documentation, impact adjustments, credit calculations, and descriptions of creditable activities. Please direct questions to your community's FEMA/ISO Specialist. All calculations and supporting documentation will need to be verified by a FEMA/ISO specialist before credit can be awarded to a community, and may be subject to the community satisfying pre-requisites for Class 6, 4, or 1 in order to earn all the potential credits for preserved open space.

Community Name,

CREDITS FOR PARCEL-SPECIFIC ACTIVITIES under Activity 420: Open Space Preservation

Explanation: This table summarizes key information and credit calculations for parcels that are being requested for Open Space Preservation Credits under elements 422.a. through 422.e. of CRS Activity 420. This table can be used as documentation to support the request for credits. Credit calculations are automatically filled from the tables below. Use the tables below to calculate credit for elements 422.a. through 422.e. The labeling of property names on this table (which automatically fill in other tables on this worksheet) should correspond with those used on the Impact Adjustment Map and other documentation.

Instructions: In column B, add a unique parcel name for each property being documented. (Note: this name should be consistent with the impact adjustment map.) In column C, insert the total acreage of the parcel. In column D, insert the area of each parcel that falls within the SFHA and qualifies as protected open space (after excluding ineligible areas), using the results from a GIS or other parcel analysis. In column E, list the FEMA flood zone, or zones, in which the parcel falls. In column F, add the name of the parcel's owner. In column G, add the parcel's land use designation from property tax

SUMMARY TABLE - Parcel documentation and Summary of Potential Credits (Parcels 1-10)

Location (Parcel Name or Number)	Total Acreage for Parcel	Area of parcel within SFHA (or regulatory floodplain) that qualifies as protected open space (aOSP)	Flood zone of parcel (particularly for any parcel outside SFHA but within regulatory floodplain)	Name of Parcel Owner	Parcel's Land Use Designation	Element 422 a. Preserved Open Space Credits (cOSP)	Element 422 b. Credits for Deed Restrictions (cDR)	Element 422 c. Credits for Natural Functions Open Space (cNFOS)	Element 422 d. Credits for Special Flood Hazards Open Space (cSHOS)	Element 422 e. Credits for Coastal Erosion Open Space (cCEOS)	Element 423 Subtotal - Credits for Preserved Open Space
<i>e.g. City Parks</i>	236	143.2	AE	City	Public parks	411.66	2.41	85.17	6.54	16.69	522.47
City Parks	236	143.2	AE	City	Public parks	411.66	2.41	85.17	6.54	16.69	522.47
Country Club	73	55.3		South Scottsdale Country Club	Golf course	158.97	5.48	0.00	0.00	0.00	164.45
Indian Bend Wash Floodway	29.1	29.1		Private	Residential / Commercial	83.65	0.00	0.00	4.76	6.45	94.86
McCormick Creek Floodway	15.3	15.3		Private	Residential	43.98	0.00	0.00	0.00	0.00	43.98
						0.00	0.00	0.00	0.00	0.00	0.00
						0.00	0.00	0.00	0.00	0.00	0.00
						0.00	0.00	0.00	0.00	0.00	0.00
						0.00	0.00	0.00	0.00	0.00	0.00
						0.00	0.00	0.00	0.00	0.00	0.00
						0.00	0.00	0.00	0.00	0.00	0.00
Totals:	353.40	242.90				698.27	7.89	85.17	11.30	23.15	825.77

TASK - Element 422.a.: Calculate Credits for Preserved Open Space ("OSP")

Explanation: This table calculates the number of credits for the portion of each parcel within the adjusted SFHA (or regulatory floodplain) that qualifies as preserved open space.

Instructions: Insert the total area of the adjusted SFHA, in acres (or square feet), in cell F36. The spreadsheet will automatically calculate the number of open space credits for each parcel in Column F. Note: For parcels located in a community's mapped "regulatory floodplain" that fall outside the SFHA, the parcel's "impact adjustment ratio" cannot



Parcel screening and documentation checklist

Community Name: South Scottsdale

Parcel Name: Country Club

Check all that apply:	Documentation (if applicable): <i>(examples provided below)</i>
<i>Land types:</i>	
<input type="checkbox"/> Does the property contain qualifying open space within the flood hazard area(s) (after adjusting for non-qualifying land types)?	<i>Impact adjustment map (attached)</i>
<i>Type of protections:</i>	
<input type="checkbox"/> Is the parcel protected through ownership? If so, has the landowner documented that it will remain protected?	<i>Letter from landowner (attached)</i>
<input type="checkbox"/> Is parcel protected through open space incentives? (requirements or other incentives that keep flood-prone portions of new developments open)	
<input type="checkbox"/> Is parcel protected through low-density zoning district(s) that require lot sizes of 5 acres or larger?	
<input type="checkbox"/> Does the parcel protect natural channels and shorelines?	
<i>Extra credits - Deed restrictions:</i>	
<input type="checkbox"/> Is parcel protected with deed restrictions? Can you obtain a copy of the deed that shows the restriction language?	<i>See Notice of Restrictive Covenant: Maricopa County, Instrument #____ (attached, with restriction language marked)</i>
<i>Extra credits - Natural Functions Open Space:</i>	
<input type="checkbox"/> Is parcel in an undeveloped natural state or restored to pre-development conditions?	<i>Not applicable</i>
<input type="checkbox"/> Is parcel designated in a natural floodplain functions protection plan?	<i>See pg. xx of South Scottsdale Flood Protection Plan (attached)</i>
<input type="checkbox"/> Is parcel designated as critical habitat for threatened or endangered species? (see https://www.fws.gov/ipac/)	
<input type="checkbox"/> Is parcel in a designated open space corridor?	



Natural Floodplain Functions Form [Template]

Property Name	
Property location	
Summary of the habitat or natural benefits provided at this property	
Name of person completing this form	
Signature	
Degree or other qualification	

Natural Floodplain Functions Form	
Property Name	Pettaway County Park
Property location	1 mile northeast of <u>Frenchford</u> , on the Pettaway River
Summary of the habitat or natural benefits provided at this property	<p>Pettaway Park was created in 1954 in order to protect the area from the booming logging industry. The area has never been developed or farmed.</p> <p>It lies at the headwaters of the Pettaway River and consists of bottomlands, ravines, white-oak forest interspersed with marsh and meadows. It is a stop on the Mississippi Flyway for migrating birds, including <u>sandhill cranes</u>. In 2002, a white winged wood duck (<u>Cairina scutulata</u>), an endangered species, was spotted in the park.</p> <p>The park's Nature Center houses a variety of exhibits, nature displays, maps, photographic studies, and a research library. The Nature Center also offers a variety of nature-oriented programs for families and adults such as owl prowls and astronomy programs.</p>
Name of person completing this form	Jonathon Richards, ASLA
Signature	<i>Jonathon Richards</i>
Degree or other qualification	<p>Bachelor of arts from Wall State University in landscape architecture, 1990.</p> <p>Registered landscape architect.</p> <p>Planner and then Director of natural area programs for Delaware County since 1994.</p>

Source: FEMA: Figure 420-2 (Example form to inventory natural floodplain functions) from National Flood Insurance Program Community Rating System Coordinator's Manual (FIA-12/2013)



How to Consider Climate Change in Coastal Conservation

LAUNCH

Related Resources

Publications	1
Contributing Partners	1
• NOAA Office for Coastal Management	



TRAINING TYPE
Self-Guided Resources

DURATION
Self-Paced

Overview

Climate change is affecting coastal environments and the way coastal conservation is approached. It is increasingly important to consider climate change impacts during conservation planning and action in order to protect natural habitat and allow it to adapt and continue to provide natural protective benefits for communities over time.

This step-by-step approach can be used to create a new conservation plan or update an existing one that incorporates climate change information. It is suitable for anyone working to manage or conserve lands in coastal areas. This includes wetland, floodplain, or emergency managers; planners; or conservation organizations. The six iterative steps draw from existing strategic conservation planning frameworks; however, the steps here focus on climate considerations and key resources relevant to the coastal environment, including coastal watersheds.

Six-Step Process:

1. Articulate conservation goals and scope
2. Identify conservation targets and key supporting attributes
3. Identify non-climate stressors and evaluate their impact on conservation
4. Identify climate stressors and evaluate the impact on conservation targets
5. Review goals and identify management strategies
6. Formulate a long-term management plan based on selected strategies

<https://coast.noaa.gov/digitalcoast/training/coastal-conservation.html>



How to Consider Climate Change in Coastal Conservation

Steps:

6

- 1 Articulate conservation goals and scope
- 2 Identify conservation targets
- 3 Identify non-climate stressors
- 4 Identify climate stressors
- 5 Review goals and identify strategies
- 6 Formulate a long-term management plan



This online companion to the *Guide to Considering Climate Change in Coastal Conservation* provides easy access to select resources for each of the following steps. More detail and additional supporting resources can be found in the guide. Many of those resources also contain examples or case studies. In addition to the national resources listed, there may be regional, state, or local sources available that are more specific to your area.

1 Articulate Conservation Goals and Scope

To reach your destination, you need to know where you're going. Clear goals represent the foundation of the planning process and are necessary for determining conservation targets and management strategies. Whether you're developing a new conservation plan or revising an existing one, clear goals are needed in order to evaluate time and resource investments and evaluate success in getting there. In coastal areas, these goals may focus on a single objective or multiple benefits for the community and environment (e.g., to improve water quality, reduce flooding, and conserve biodiversity or public open space).

► **Determine the geographic scope** of the conservation planning effort

► **Understand relevant policy or management drivers** to inform conservation goals that will yield multiple benefits for the community and the environment

► **Identify and engage relevant stakeholder interests**

► **Establish conservation goals** based on the scope, drivers, and stakeholder considerations identified (e.g., reduce coastal flooding using natural areas)

[Detailed guidance, examples, and additional resources from the guide](#)

2 Identify Conservation Targets and Key Supporting Attributes

Selecting conservation targets helps the team focus its efforts on the species, habitats, and ecological processes that most directly contribute to the conservation goal. Once selected, it's time to check on the health of these targets, which means assessing the condition of the underlying attributes (key supporting attributes) that sustain target health over time.

► **Identify the conservation targets** that represent the most critical elements contributing to the conservation goal(s)

► **Identify the key supporting attributes** that sustain the chosen conservation targets

► **Identify the spatial location or extent** of the selected conservation targets

How to Consider Climate Change in Coastal Conservation

Steps:

6

- 1 Articulate conservation goals and scope
- 2 Identify conservation targets
- 3 Identify non-climate stressors
- 4 Identify climate stressors
- 5 Review goals and identify strategies
- 6 Formulate a long-term management plan



This online companion to the [Guide to Considering Climate Change in Coastal Conservation](#) provides easy access to select resources for each of the following steps. More detail and additional supporting resources can be found in the guide. Many of those resources also contain examples or case studies. In addition to the national resources listed, there may be regional, state, or local sources available that are more specific to your area.

1 Articulate Conservation Goals and Scope

To reach your destination, you need to know where you're going. Clear goals represent the foundation of the planning process and are necessary for determining conservation targets and management strategies. Whether you're developing a new conservation plan or revising an existing one, clear goals are needed in order to evaluate time and resource investments and evaluate success in getting there. In coastal areas, these goals may focus on a single objective or multiple benefits for the community and environment (e.g., to improve water quality, reduce flooding, and conserve biodiversity or public open space).

▼ Determine the geographic scope of the conservation planning effort

[Climate-Smart Conservation: Putting Adaptation Principles into Practice](#)

Pages 75 to 76 provide information on defining the appropriate geographic scope.

[NOAA Digital Coast GeoZone Blog: Watershed or County Boundaries?](#)

This short discussion can help when considering whether the geographic scope should follow natural or political boundaries.

▼ Establish conservation goals based on the scope, drivers, and stakeholder considerations identified (e.g., reduce coastal flooding using natural areas)

[Detailed guidance, examples, and additional resources from the guide](#)

2 Identify Conservation Targets and Key Supporting Attributes

Selecting conservation targets helps the team focus its efforts on the species, habitats, and ecological processes that most directly contribute to the conservation goal. Once selected, it's time to check on the health of these targets, which means assessing the condition of the underlying attributes (key supporting attributes) that sustain target health over time.

▼ Identify the conservation targets that represent the most critical elements contributing to the conservation goal(s)

▼ Identify the key supporting attributes that sustain the chosen conservation targets

▼ Identify the spatial location or extent of the selected conservation targets



Guide for Considering Climate Change in Coastal Conservation

National Oceanic and Atmospheric Administration (NOAA)
Office for Coastal Management



Where You'll find it

Office for Coastal Management
DIGITALCOAST

ABOUT DATA TOOLS TRAINING TOPICS STORIES

TRAINING

Digital Coast Academy offers a wide range of learning resources.

[VIEW ALL TRAINING](#)

Scheduled Training

- Classroom, Instructor-Led**
Bring these courses and our instructors to your location.
- Online, Instructor-Led**
Learn at your desk, or a coffee shop, with sessions taught in real time by our instructors.
- Mixed Delivery**
Access courses that blend classroom or web-based instruction with self-guided components.

Additional Resources

You may also be interested in additional training resources from our Digital Coast and Contributing Partners.

[Additional training resources](#)

On-Demand Products

- Self-Guided Resources**
Develop and practice new skills on your own time with interactive guides and structured courses.
- Case Studies**
Learn from these peer-to-peer case studies how other coastal practitioners have tackled thorny issues.
- Publications**
Explore the digital library of topical publications and studies.
- Quick Reference**
Access helpful worksheets, checklists, and tip sheets.
- Videos And Webinars**
View short videos that make difficult topics easier to understand. View recorded webinars to learn from experts in the field.

Digital Coast Partnership CRS Strategy

Community Rating System (CRS) Strategy

Purpose:

The purpose of this Community Rating System (CRS) strategy is to coordinate, promote and encourage community participation in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) through decision support tool development and stakeholder engagement.

Objective:

The Nature Conservancy's (TNC) objective is to provide stakeholder-driven decision support to support comprehensive floodplain management through the Community Rating System with stakeholder engagement between planners and communities about the benefits of nature-based solutions and open space preservation for flood hazard mitigation.

Background:

CRS is a voluntary program, established in 1990, administered by the Federal Emergency Management Agency (FEMA). Communities that exceed the minimum NFIP requirements for flood insurance in CRS program points can receive a percentage of flood insurance in CRS program points for activities that reduce flood risk. Activities include, but are not limited to, community floodplain management activities that exceed the NFIP's minimum standards through a point system. As communities get more points, they can receive larger reductions on flood insurance.

While the program incentives are clear, many communities still face a variety of barriers to participation. Many coastal community planners do not have the technical capacity that supports the credit application process. The volume of information, data, and maps required to calculate potential CRS program points and submit an application to FEMA can be overwhelming for communities with little to no capacity to dedicate to CRS. Organizations including NOAA's Office of Coastal Management (OCM), Nature Conservancy (TNC), Climate Central, The Associated States of Floodplain Managers (ASFPM), and the Coastal States Organization (CSO) are therefore investing in the development of tools and guides



ASFPM and CSO Green Guide



TNC CRS Explorer



NOAA How To Guide & GIS Workflow

CRS Strategy



OPEN SPACE

Open Space

The Nature Conservancy is partnering with NOAA's Office for Coastal Management (OCM) to coordinate efforts to meet the goals and objectives of coastal zone management in the U.S. and highlight those actions that also receive credits from FEMA's Community Rating System (CRS).

WHAT IS CRS?

The Community Rating System (CRS) promotes comprehensive floodplain management and encourages communities to go beyond the minimum standards of the National Flood Insurance Program (NFIP). CRS is a voluntary program administered by the Federal Emergency Management Agency (FEMA) that rewards communities by providing policyholders discounts on their flood insurance premiums for activities that reduce flood risk. Activities include, but are not limited to, outreach activities about flood risk, floodplain mapping, and conserving open space.



<http://coastalresilience.org/project/open-space/>

COMMUNITY RATING SYSTEM EXPLORER

What is the Community Rating System Explorer app?



The **Community Rating System Explorer** (CRS Explorer) is an app that helps planners identify areas that are eligible for Open Space Preservation (OSP) credits in FEMA's **Community Rating System** (CRS). FEMA's CRS is a voluntary program that encourages communities to earn a discount on flood insurance premiums for actions that contribute to their flood risk reduction.

This tool provides exportable information to support the application process and allows communities to interactively explore their data to identify future open space which would further reduce flood risk and premiums.



<http://coastalresilience.org/project/community-rating-system-explorer/>


[Home](#) > [Products](#) > [CRS for Community Resilience](#)

CRS for Community Resilience

The goal of CRS for Community Resilience is to increase the number of communities making voluntary, effective measures to increase flood resilience. This project promotes CRS participation, provides guidance on actions that increase a community's rating, and works directly with communities to increase their resiliency through the CRS process.

This project aims to:

1. Get more communities to participate in the CRS, and
2. Increase resiliency by having a road map to undertake activities that strengthen the natural ecosystems and reduce growing vulnerability to floods

Have a question, recommendation or CRS success story of your own? [Share it with us!](#)

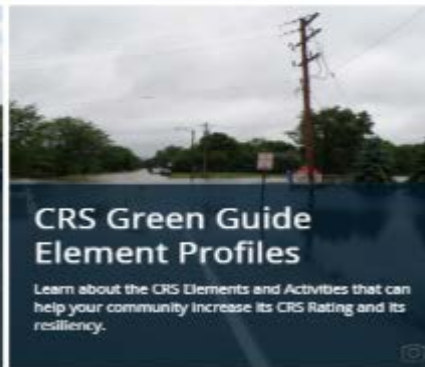


IMAGE CREDIT: AARON VOLKENING.



CRS for Community Resilience Green Guide

Learn more about the Green elements of CRS to enhance the resiliency of your community and the natural environment.



CRS Green Guide Element Profiles

Learn about the CRS Elements and Activities that can help your community increase its CRS Rating and its resiliency.



CRS Green Guide Success Stories

Learn how communities lowered their insurance premiums and increased their resiliency by achieving a higher CRS Rating.



<https://www.floodsciencecenter.org/products/crs-community-resilience/>

Questions & Feedback?



Russell.Jackson@noaa.gov

