

NOAA DIGITAL COAST

Jewel Tuiasosopo

Advancing Nature-Based Solutions for Coastal Resilience

September 28, 2023

Overview:

- Quick background on NOAA Office for Coastal Management and the Digital Coast
- Visualizing and communicating coastal hazards
- Learning products to implement nature-based solutions





**National
Coastal Zone
Management
Program**



**National
Estuarine
Research
Reserve
System**



**Coral Reef
Conservation
Program**



Digital Coast



Use spatial data to visualize coastal hazard risks



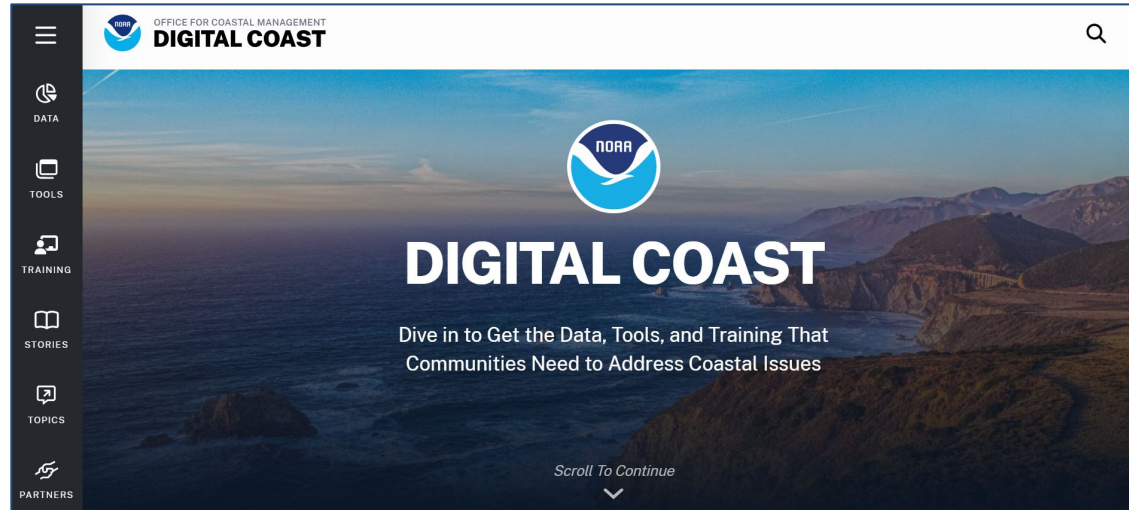


Natural or green infrastructure is existing natural resources and engineered systems that re-create natural processes to manage floodwater and erosion



Digital Coast

coast.noaa.gov/digitalcoast



NOAA Office for Coastal Management | 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

Digital Coast

coast.noaa.gov/digitalcoast

NOAA OFFICE FOR COASTAL MANAGEMENT
DIGITAL COAST

DATA

TOOLS

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STORIES

TOPICS

PARTNERS

NOAA

DIGITAL COAST

Dive in to Get the Data, Tools, and Training That
Communities Need to Address Coastal Issues

Scroll To Continue

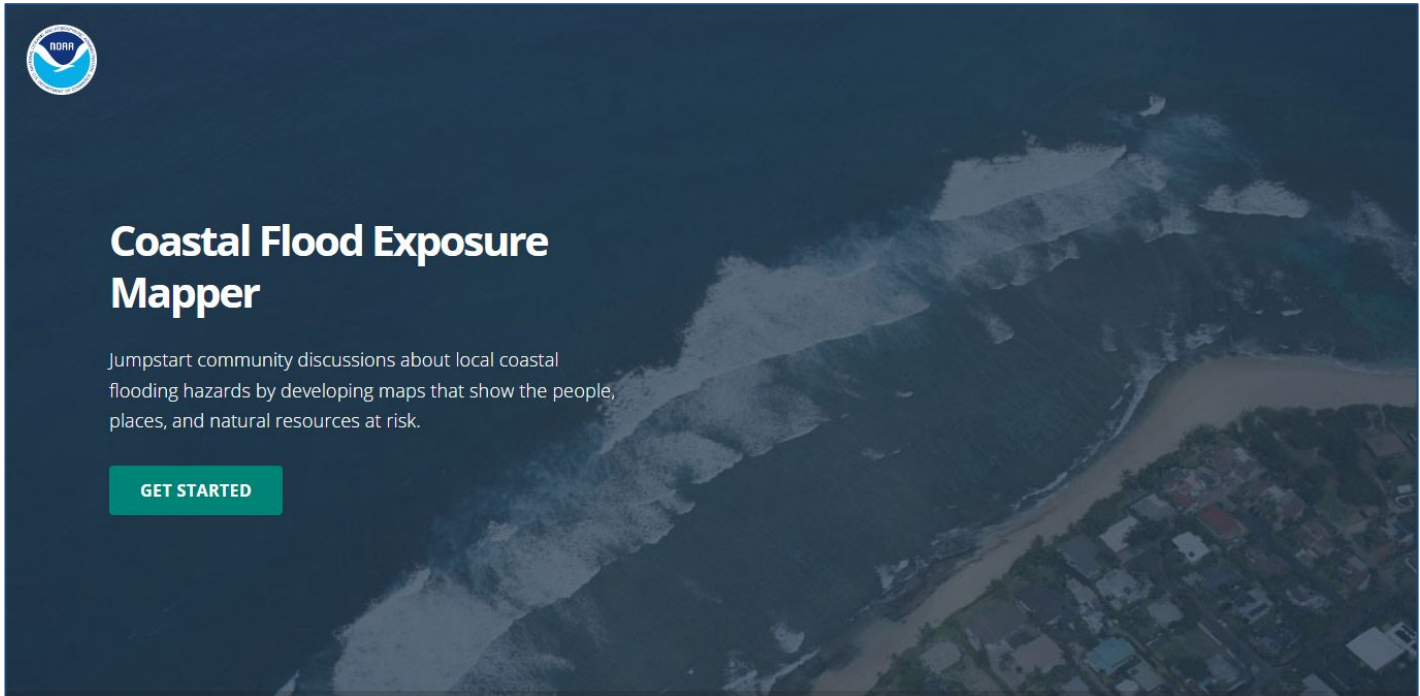



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Visualizing and Communicating Coastal Hazards





Coastal Flood Exposure Mapper

Jumpstart community discussions about local coastal flooding hazards by developing maps that show the people, places, and natural resources at risk.

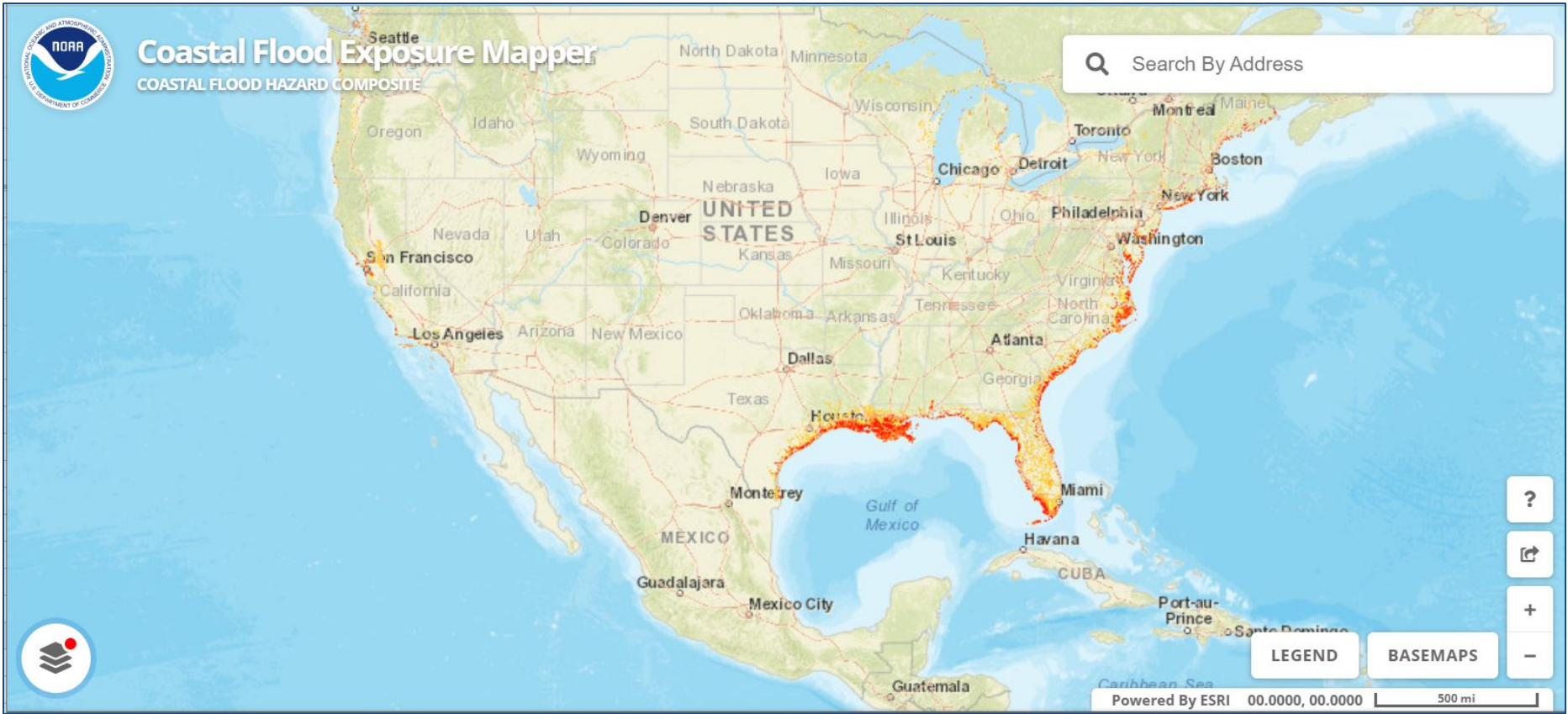
[GET STARTED](#)

coast.noaa.gov/digitalcoast/tools/flood-exposure.html



Coastal Flood Exposure Mapper

COASTAL FLOOD HAZARD COMPOSITE



LEGEND BASEMAPS

Powered By ESRI 00.0000, 00.0000 500 mi

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Coastal Flood Exposure Mapper

COASTAL FLOOD HAZARD COMPOSITE



🔍 American Samoa, ASM

American Samoa

American Samoa, ASM

American Samoa, Faleasao, **American Samoa, ASM**

American Samoa Community College, 001, Mesepa, Tualauta, West, American Samoa, 96799, ASM

American Samoa Bank, 016, Tafuna, Tualauta, West, American Samoa, 96799, ASM



LEGEND

BASEMAPS





CREATE

My Map

ACTIVE LAYERS

SAVED MAPS **2**

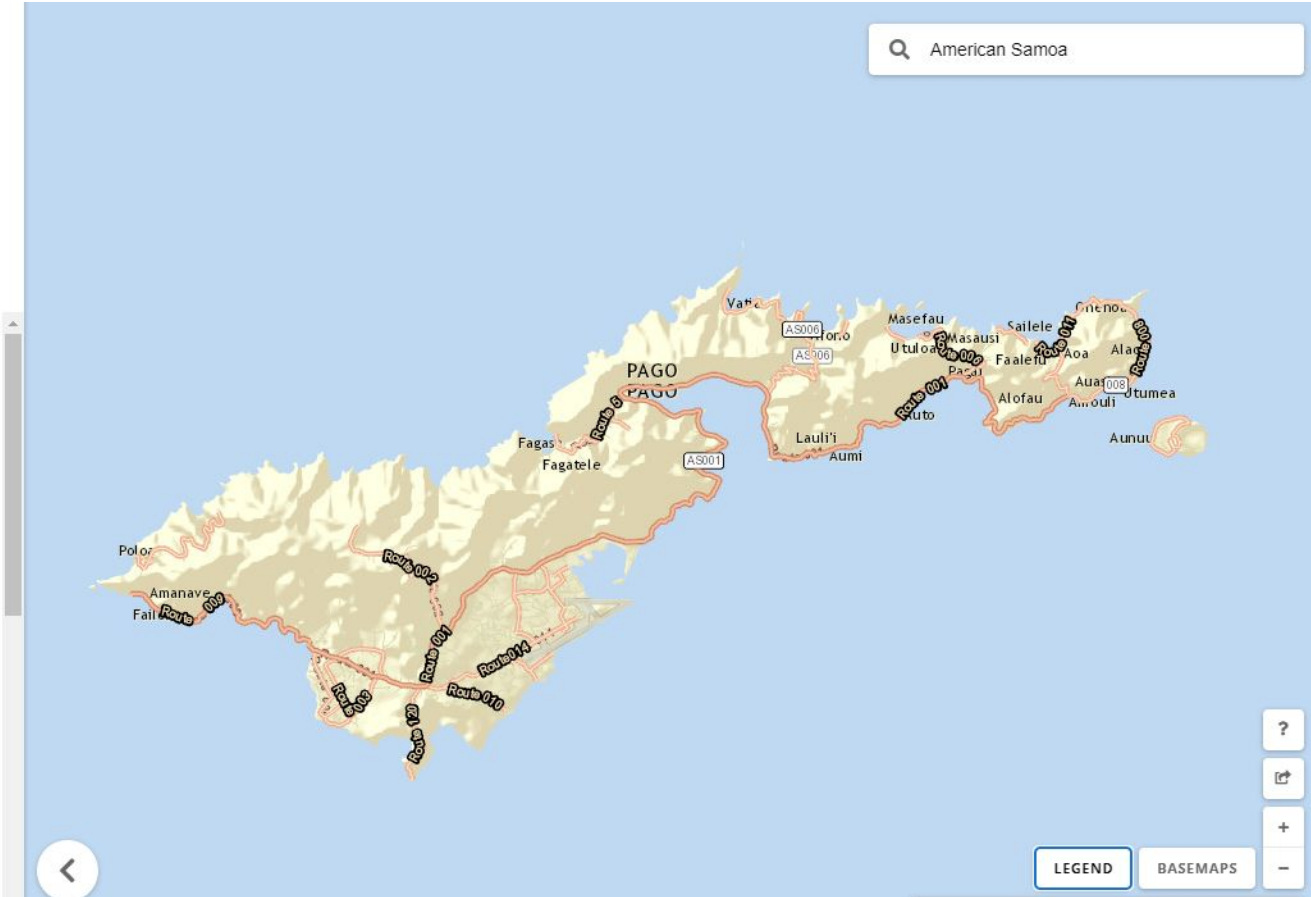
HAZARD LAYERS

- Coastal Flood Hazard Composite ⓘ ⓘ
- High Tide Flooding ⓘ ⓘ
- FEMA Flood Zones ⓘ ⓘ
- Tsunami ⓘ ⓘ
- Storm Surge ⓘ ⓘ
- Sea Level Rise ⓘ ⓘ

SOCIETAL EXPOSURE

- Population Density ⓘ ⓘ
- Poverty ⓘ ⓘ
- Elderly ⓘ ⓘ

🔍 American Samoa



LEGEND BASEMAPS





CREATE

My Map

ACTIVE LAYERS

SAVED MAPS 0

Development Patterns



ECOSYSTEM EXPOSURE

Natural Areas and Open Space



Potential Pollution Sources



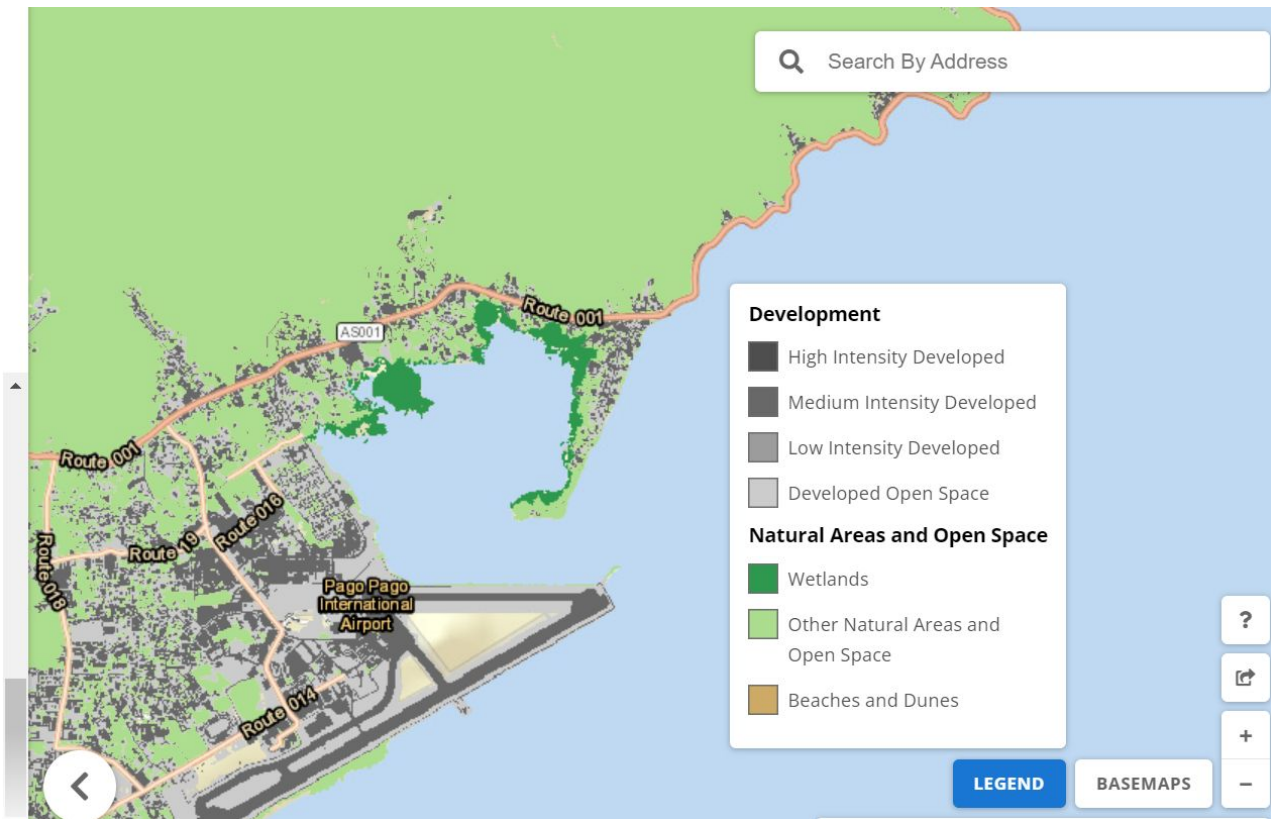
Natural Protection



Wetland Potential



SAVE MAP





CREATE

My Map

ACTIVE LAYERS

SAVED MAPS 1

HAZARD LAYERS

- Coastal Flood Hazard Composite i ▶
- High Tide Flooding i ▶
- FEMA Flood Zones i ▶
- Tsunami i ▶
- Storm Surge i ▶
- Sea Level Rise i ▶

SAVE MAP





CREATE

My Map

ACTIVE LAYERS

SAVED MAPS

2

Storm Surge



Sea Level Rise



SOCIETAL EXPOSURE

Population Density



Poverty

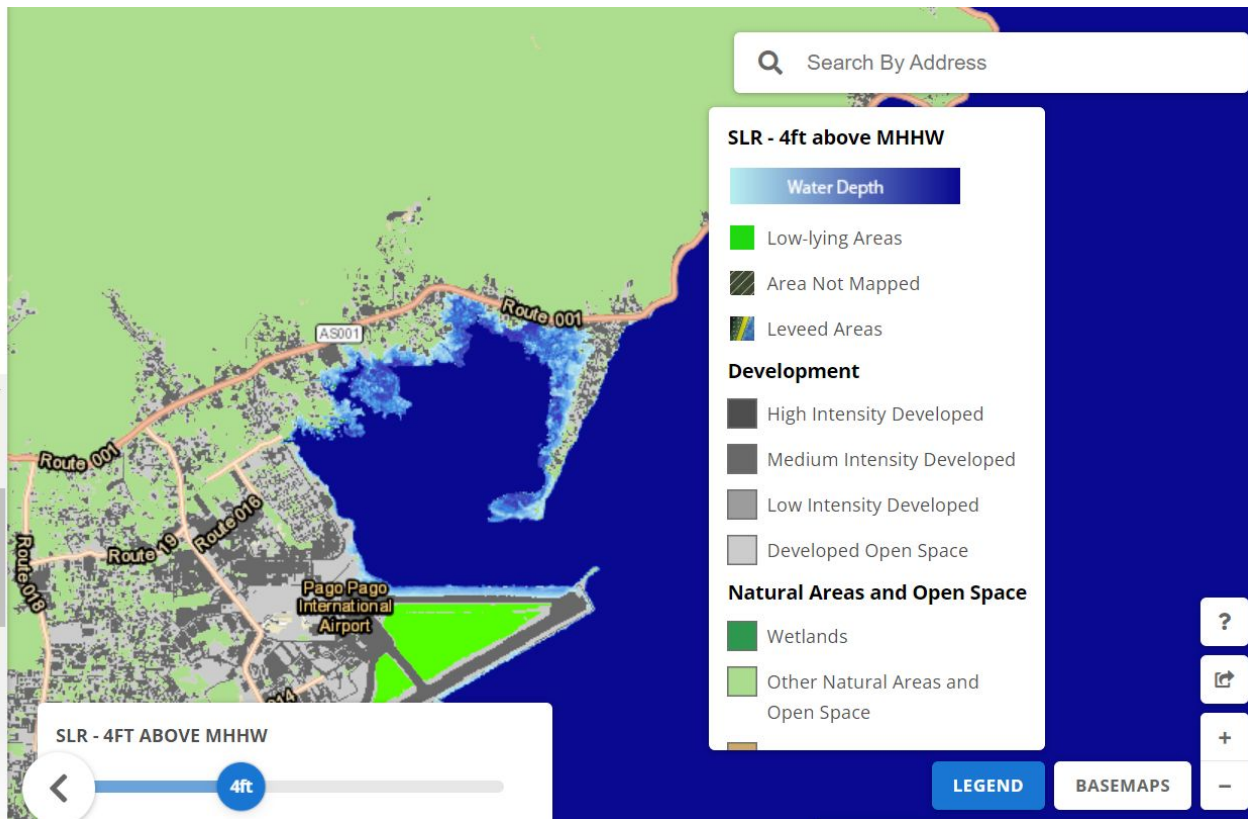


Elderly



Employees

SAVE MAP





MANAGE

Saved Maps

ACTIVE LAYERS

SAVED MAPS 2



9/13/2023

FEMA Flood Zones / Development / Natural Areas and Open Space

Click to add a custom description



SHARE COLLECTION

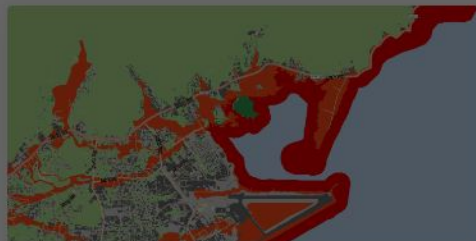




MANAGE
Saved Maps

ACTIVE LAYERS

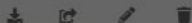
SAVED MAPS **2**



9/13/2023

**FEMA Flood Zones / Development /
Natural Areas and Open Space**

Showing urban areas that could benefit from green infrastructure to reduce flooding impacts in Pago Pago.



SHARE COLLECTION



Share your map collection ✕



FEMA Flood Zones / Development / Natural Areas and Open Space | Showing urban areas that could benefit from green infrastructure to reduce flooding impacts in Pago Pago.
[object Response]



SLR - 4ft above MHHW / Development / Natural Areas and Open Space | Showing natural areas that should be protected to reduce impacts of sea level rise to surrounding communities in Pago Pago.
[object Response]

DOWNLOAD AS .TXT

COPY ALL

FEMA Flood Zones

- 1% Annual Chance - V Zones
- 1% Annual Chance - A Zones
- 0.2% Annual Chance
- Areas with reduced flood risk due to levee

Development

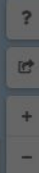
- High Intensity Developed
- Medium Intensity Developed
- Low Intensity Developed
- Developed Open Space

Natural Areas and Open Space

- Wetlands
- Other Natural Areas and Open Space

LEGEND

BASEMAPS



Overview:

- ✓ Quick background on NOAA Office for Coastal Management and the Digital Coast
- ✓ Visualizing and communicating coastal hazards
 - Learning products to implement nature-based solutions



Implementing Nature-Based Solutions to Increase Resilience

- Nature-Based Solutions for Coastal Hazards: The Basics
- Green Infrastructure Effectiveness Database
- Green infrastructure design and installation guides
- Case studies and where to find more information





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Training

The Digital Coast Academy is the go-to site for coastal management training.

Find

Search By Keyword



ON-DEMAND RESOURCES (149)



SCHEDULED TRAINING (25)



COURSE CALENDAR

Find mapping, sea level rise, etc.

Filters

Case Studies x

Guides and How Tos x

Interactive Modules x

Publications x

Quick References x

Recorded Webinars x

Videos x

[Clear All](#)

Interactive Modules

NOAA OFFICE FOR COASTAL MANAGEMENT
DIGITAL COAST

Self-paced | 3 hours | Professional Credit | 15-30 min per module

INTERACTIVE MODULES

Tutorial for Sea Level Rise Viewer: Marsh Migration

Approx. 10 min

INTERACTIVE MODULES

Risk Communication Mental Shortcuts: Why People Do What They Do

8 Minutes

INTERACTIVE MODULES

Nature-Based Solutions for Coastal Hazards: The Basics

60 minutes | Professional Credit

INTERACTIVE MODULES

QNSPECT Tutorial

INTERACTIVE MODULES

Risk Communication Essentials for More Effective Conversations

INTERACTIVE MODULES

Tutorial for Sea Level Rise Viewer: Local Scenarios

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Green Infrastructure Effectiveness Database

coast.noaa.gov/digitalcoast/training/gi-database.html

Green Infrastructure Effectiveness Database

This database is a compilation of literature resources documenting the effectiveness and economics of green infrastructure for coastal resilience.

Title: Use quotations when searching for an exact title.

Author(s): e.g. author(s), comma separated

Year published: 1980 2021

Source: e.g. journal name

Source Type: [dropdown]

Keywords: e.g. keyword(s), comma separated

Green Infrastructure Type: Coral reef

Hazards: Wave action (due to storm, hurricane winds)

Methodological Approaches: [dropdown]

Study Scale: [dropdown]

Region: [dropdown]

State: [dropdown]

[Clear form](#)

Search

DIGITAL COAST

Home / Training

Training

The Digital Coast Academy is the go-to site for coastal management training.

Find
Search By Keyword

Find mapping, sea level rise, etc.

Filters

- Case Studies
- Guides and How Tos
- Interactive Modules**
- Publications
- Quick References
- Recorded Webinars
- Videos

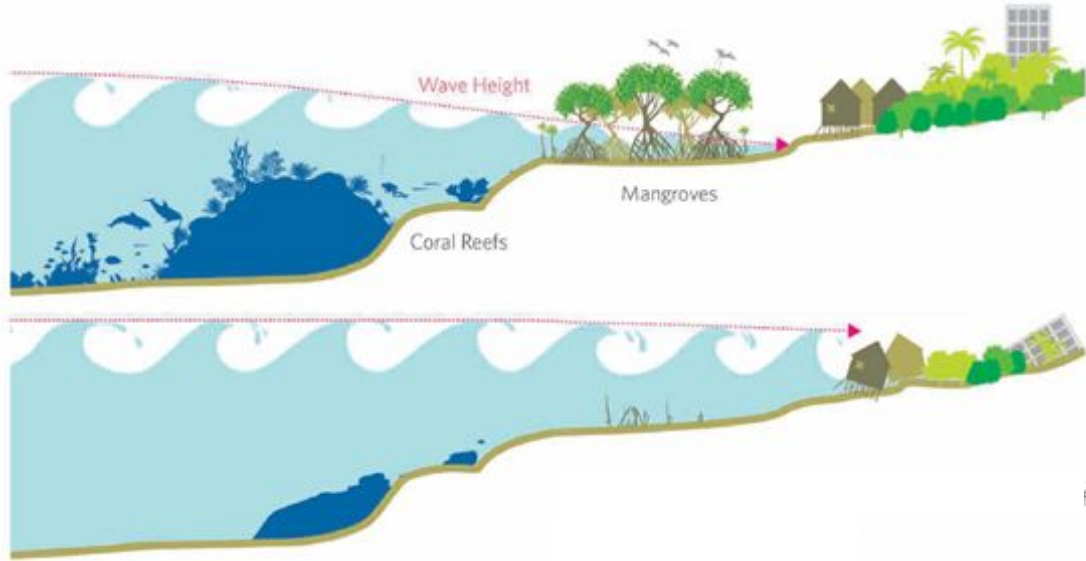
QUICK REFERENCES

- Green Infrastructure Benefits**
Self-paced
- Green Infrastructure Effectiveness Database**
Self-paced
- Green Infrastructure Mapping Guide**
Self-paced

QUICK REFERENCES

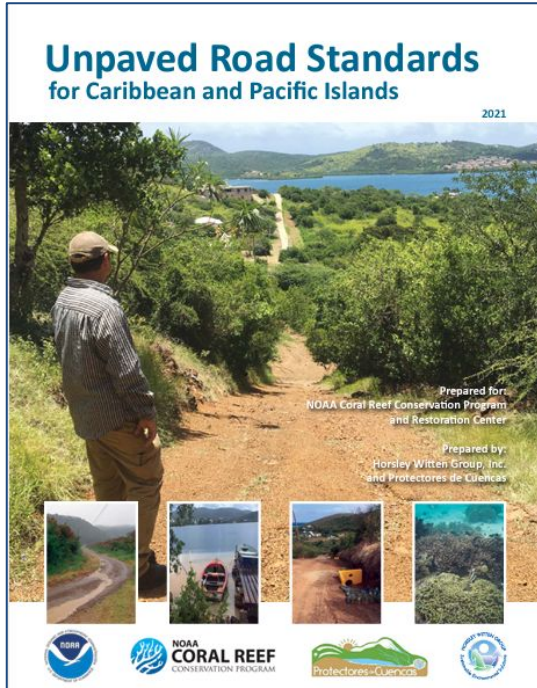
- Green Infrastructure Options to Reduce Flooding**
- Green Infrastructure Protective Services Animation**
- GUIDES AND HOW TOS**
Guide for Considering Climate Change in Coastal

Effectiveness of Coral Reefs

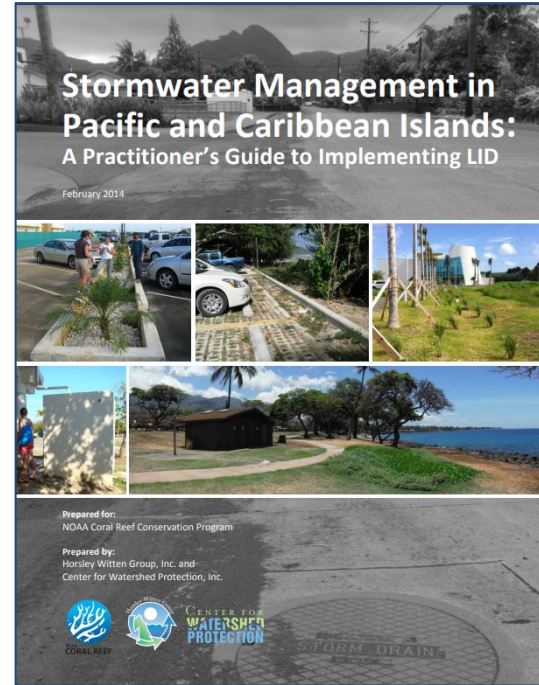


Coral reefs dampen more than 97% of waves before they reach the coastline!

Designing and Installing Nature-Based Solutions



www.coris.noaa.gov/activities/Unpaved_roads/welcome.html



coast.noaa.gov/digitalcoast/training/low-impact.html

Green Infrastructure Case Studies

coast.noaa.gov/digitalcoast/training/home.html

Implementing green infrastructure at multiple scales

Using Novel Approaches to Create Resilient Dune Systems Following Hurricane Maria

Diverse financing portfolio for innovative project

Community rain gardens as an environmental education tool



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DIGITAL COAST

Home / Topics / Natural Infrastructure

Natural Infrastructure

TOPICS

Jump to Section

- Understand the Basics
- Communicate the Issue
- Analyze the Landscape
- Prioritize Options
- Explore Economic Approaches

coast.noaa.gov/digitalcoast/topics/green-infrastructure.html



Fa'afetai!

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