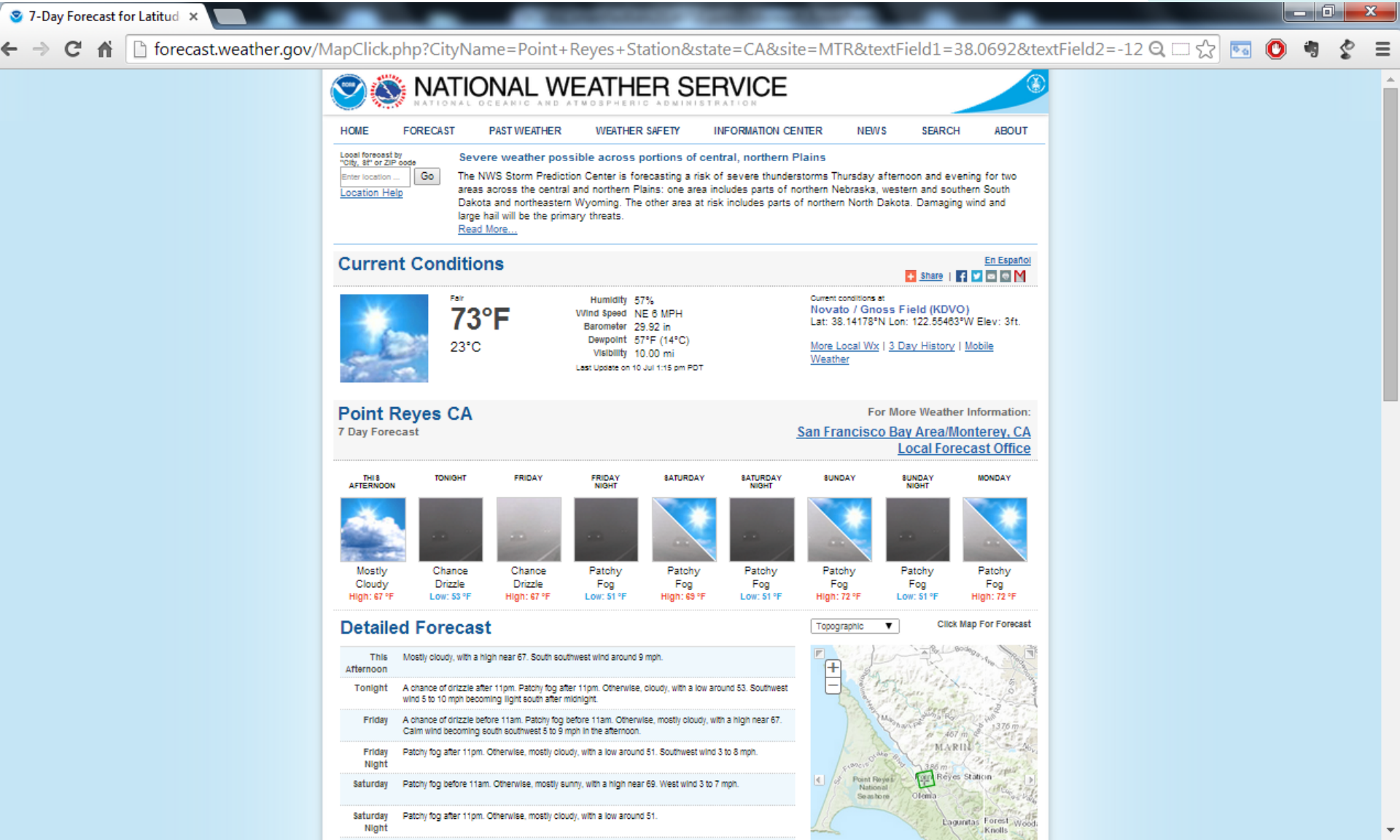
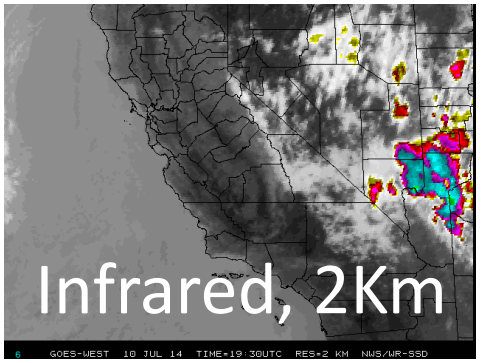
Sam Veloz, Point Blue Conservation Science
January 29, 2015

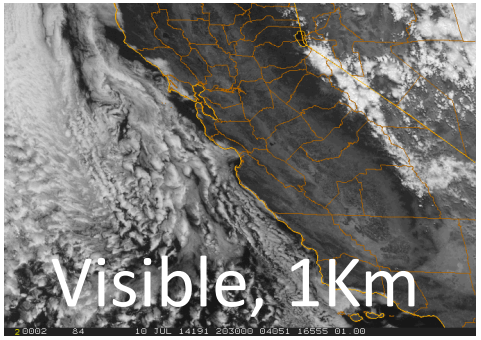
Point Blue
Conservation science
for a healthy planet.

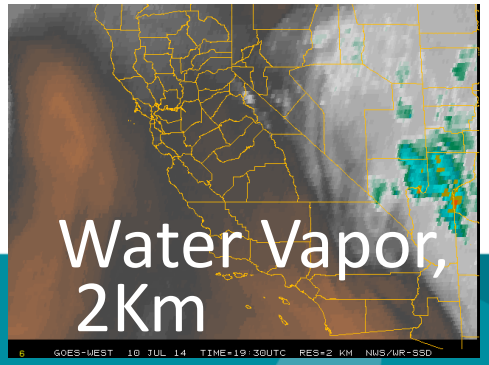
Weather: for the lay person



Weather: for the professional







AS OF 1:15 PM PDT THURSDAY...FORECAST FOCUS TODAY CONTINUED ON LOW END THUNDERSTORM CHANCES IN THE EXTREME NORTHEAST PORTIONS OF NAPA COUNTY. AS THE UPPER LOW SPINS SLOWLY TOWARDS THE COAST TONIGHT...AND IMPULSE LIFTING NORTH AROUND THE LOW WILL HELP PROVIDE SOME LIFT TO ACT ON MID LEVEL MOISTURE. MUCAPE AND TT FIELDS INDICATE AT LEAST A LOW END THREAT FOR THUNDERSTORMS ACROSS NORTHEAST NAPA COUNTY TONIGHT...PRIMARILY AFTER 09Z /2 AM PDT/. THE AREA REMAINS ON THE SOUTHERN EDGE OF A VERY TIGHT INSTABILITY GRADIENT WHICH WILL FAVOR SACRAMENTO AREA AND POINTS NORTHWARD FOR MORE SIGNIFICANT THUNDERSTORM DEVELOPMENT BUT GIVEN THE FAVORABLE PARAMETERS WILL MENTION THIS LOW END THUNDERSTORM THREAT AFTER COORDINATION WITH NEIGHBORING OFFICES. THREAT WILL END BY AROUND SUNRISE FRIDAY AND THE INSTABILITY GRADIENT LIFTS NORTH OUT OF THE AREA. THE UPPER LOW AND THE SHORTWAVE TROUGH RESPONSIBLE FOR THIS WILL THEN LIFT BACK WESTWARD ACROSS THE PACIFIC AND HEIGHTS WILL RIDGE AGAIN ACROSS THE AREA.

OCOF
OUR COAST OUR FUTURE

HOME | GET STARTED | FLOOD MAP | NEWS | EVENTS | ABOUT US | HELP

WELCOME

Our Coast, Our Future (OCOF) is a collaborative, user-driven project focused on providing San Francisco Bay Area coastal resource and land use managers and planners locally relevant, online maps and tools to help understand, visualize, and anticipate vulnerabilities to sea level rise and storms within the bay and on the outer coast from Half Moon Bay to Bodega Bay.

San Francisco Bay data available

OCOF now includes San Francisco Bay results, as well as exciting new features in the online flood map, including integration of the King Tide Project photo archive.

Ocean Beach
Learn more about our project. >>

Embarcadero
Explore the potential for flooding. >>

Rio Del Mar
Participate in OCOF events. >>

Get Started Now >>

If you are new to OCOF, check out our Get Started page to understand more about this project and how to effectively use the data and tools in your work.

Project Team

Grant Ballard, OCOF Co-PI, Tool Development

Grant Ballard is Chief Science Officer at PRBO Conservation Science. He works in both ecology and bioinformatics and currently leads several projects investigating, communicating, and mitigating the effects of large-scale environmental change on ecosystems in western North America and the Southern Ocean. Originally from St. Thomas, US Virgin Islands, he has made the Bay Area his home since 1991.

Patrick Barnard, OCOF Co-PI, Model Development

Patrick Barnard has been a coastal geologist with the USGS Pacific Coastal and Marine Science Center in Santa Cruz since 2003. His research focuses on the dynamics and evolution of the high-energy beaches and estuaries of California, with an emphasis on storm- and climate-change related impacts. He is a member of the Bay Area Ecosystem Climate Change Consortium (BAECCC) and the West Coast Governor's Agreement (WCGA) Climate Action Team, and serves on the Editorial Board for the Journal of Coastal Research. He received a BA from Williams College, MS from University of South Florida, and PhD from UC Riverside.

Kelley Higgason, OCOF Project Coordinator

Kelley Higgason is the Ocean Climate Initiative Coordinator for NOAA's Gulf of the Farallones National Marine Sanctuary (GFNMS). Her work with the sanctuary involves addressing climate change impacts to marine ecosystems through regional partnerships, outreach, and adaptive management, and currently also oversees the GFNMS Ocean Climate Indicators project. Kelley is a member of the Office of National Marine Sanctuaries Climate Subcommittee, the West Coast Sanctuaries Ocean Acidification Task Force, and the Bay Area Ecosystems Climate Change Consortium. She participated on the writing team for the NOAA West Coast Ocean

Contacts

Kelley Higgason
Project Coordinator
kelley.higgason@noaa.gov

Marina Psaros
Collaboration Lead
mpsaros@coraval.com

Michael Fitzgibbon
Tool Development
mfitzgibbon@prbo.org

Patrick Barnard
co-Principal Investigator
pbarnard@usgs.gov

Grant Ballard
co-Principal Investigator
gballard@prbo.org

Getting Started Using Our Coast, Our Future (OCOF)

Thank you for using the Our Coast, Our Future website. The following steps will help you get started using the modeling results for sea level rise and storm surge in the San Francisco Bay area.

Create an account.

Start by registering for an account. You must create an account in order to access the interactive map. Registering allows us to notify you when data is updated and to keep you informed if any changes are made to the site.

Get familiar with the project.

If you are brand new to OCOF, we suggest you look over these resources to get a quick introduction to the project and how OCOF can benefit your work.

Overview

If you are unfamiliar with OCOF, this two-page introduction will provide an overview of the project and the tools available on this website.

How OCOF can help you.

Read about who this project was developed for, what types of planning and outreach can benefit from this information, and where OCOF fits in the climate change adaptation planning process.

Learn how to use the online tools.

OCOF provides sea level rise and storm surge scenarios for the San Francisco Bay Area. These resources will help you navigate the online tools we have available to explore these results.

Tutorials

Take a few minutes and watch the Project Overview and Flood Map tutorials. These two short videos will introduce you to the project, and

Frequently Asked Questions about OCOF

We have provided answers to frequently asked questions about the OCOF project including general information, geographic coverage, data used,

OCOF
OUR COAST OUR FUTURE

Frequently Asked Questions about Our Coast, Our Future (OCOF)

Please click on a question to reveal the answer.

GENERAL

What is OCOF?

Our Coast, Our Future (OCOF) is a collaborative, user-driven project focused on providing San Francisco Bay Area coastal resource managers and planners locally relevant, online maps and tools to help understand, visualize, and anticipate vulnerabilities to sea level rise and storms.

Project objectives include: modeling vulnerabilities from sea level rise and storm hazards, including factors such as water levels, wave heights, flooding, and erosion; using a collaborative product development process to meet stakeholders' information needs; mapping infrastructure and ecosystem vulnerabilities at scales relevant to planning and management; developing products in accessible, user-friendly formats that can be easily applied to local planning efforts; and providing training and targeted in-depth technical assistance on the use of the decision-support tools.

Final products include: Seamless Digital Elevation Model (DEM) at 2 meter horizontal resolution for the San Francisco Bay Area; suite of sea level rise projections between 0 - 2 meters, with a 5 meter extreme, plus storm scenarios using the Coastal Storm Modeling System (CoSMoS); interactive maps overlaying infrastructure and ecosystem vulnerabilities; online and downloadable data access for use in restoration, adaptation and response planning, tailored to stakeholders' information needs; and report presenting the project findings and assessing impacts.

How can the OCOF scenario models and flood map help me?

How is this tool different from other sea level rise mapping efforts?

What is the difference between the Paint Blue Future San Francisco Bay Tidal Marshes website and OCOF?

OCOF

Known Issues for Models in Our Coast, Our Future (OCOF)

Please click on a topic to reveal the information.

REGIONAL ISSUES - Outer Coast

Bodega Bay

Drakes Estero

Tomales Bay

Point Reyes Beach

Abbott Lagoon

Stinson Beach

Rodeo Lagoon

Lake Merced

Laguna Salada

Pacifica

REGIONAL ISSUES - In San Francisco Bay

South Bay

Suisun Bay

San Pablo Bay (including Napa and Petaluma Rivers)

The flooding extents in the marshes of this area are under-predicted due to dense vegetation related elevation offsets. Maximum flood potential indicates more probable flooding extents in these locations.

Multiple instances of non-progressive* flooding behavior are exhibited in this region. Areas affected included ponds and leveed marshes to the north of San Pablo Bay in vicinity Russ Island, areas surrounding Napa River, and some marshes neighboring the upper portions of Petaluma River and near Novato.

100-year storm scenario flooding extents in vicinity Petaluma River and Novato may be under-predicted, while flooding extents for the 20-year storm scenarios may be under-predicted in the upriver portions (north of China Slough) neighboring Napa River. Particularly disproportionate flooding extents have been manually adjusted to show more probable flooding behavior.

SFO and OAK airports

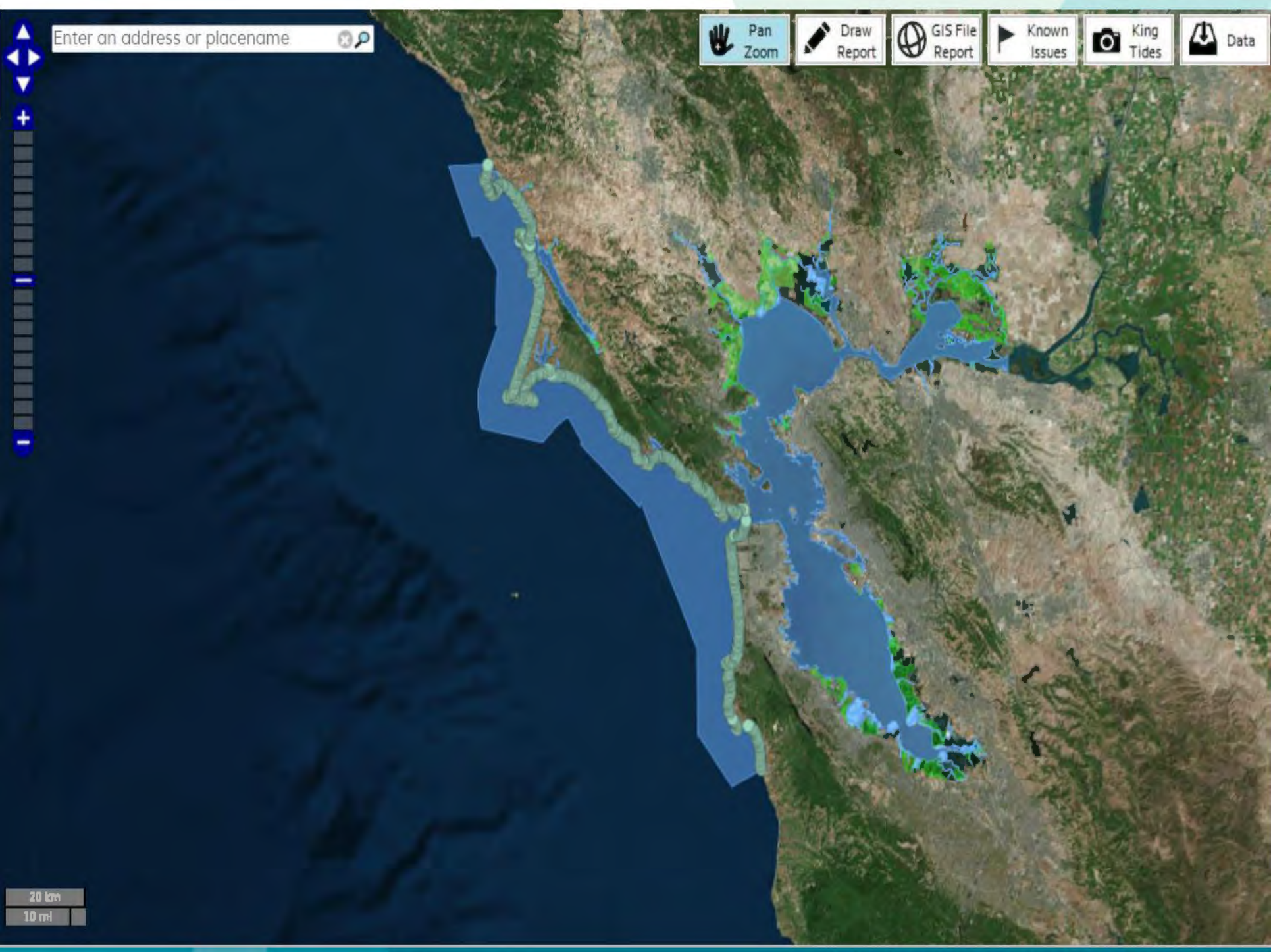
Foster City and Redwood City

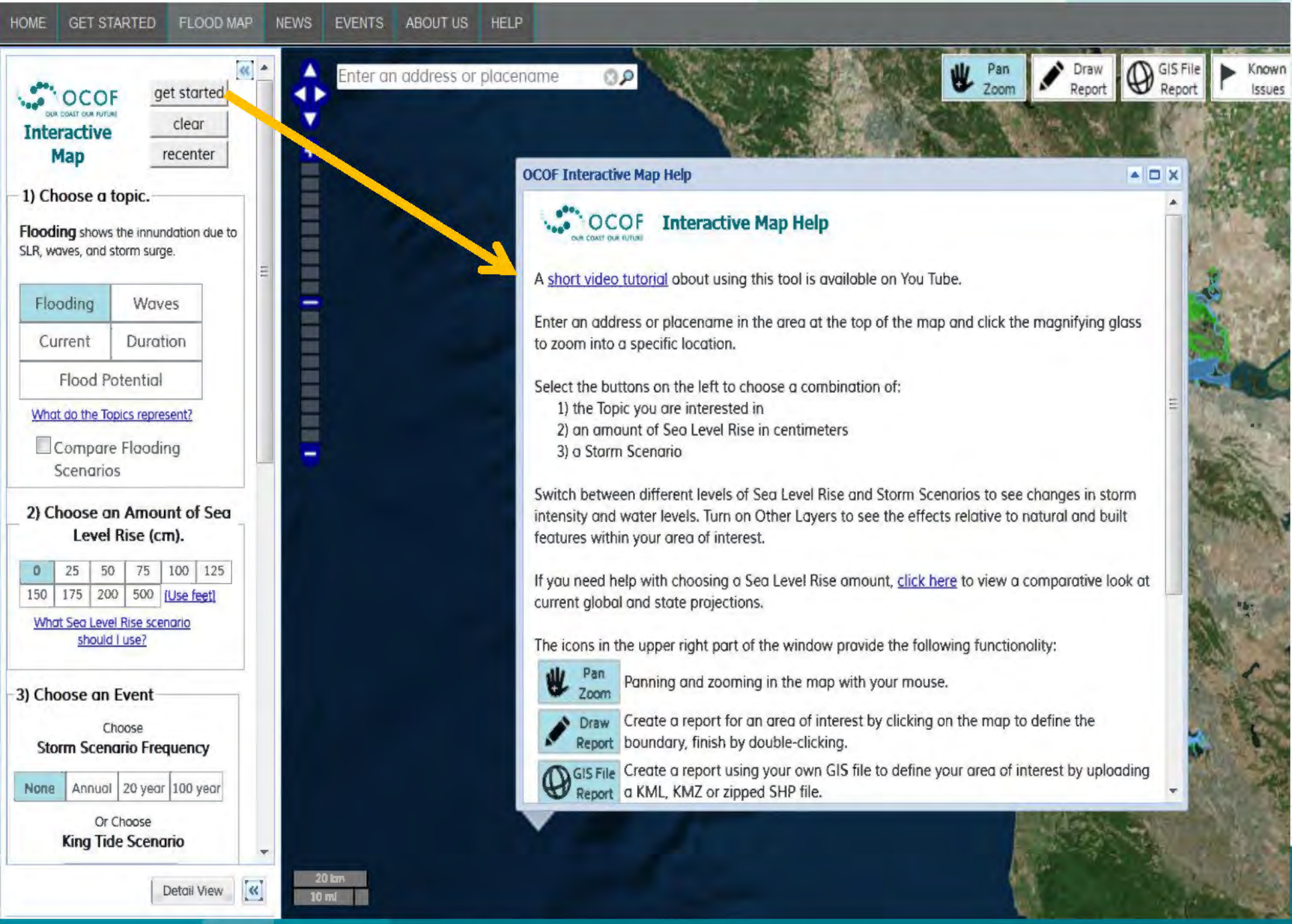
Tutorials

Click on the images below to watch some short videos that introduce you to the tools on this website. The tools are aimed at San Francisco Bay Area coastal resource and land use managers and planners

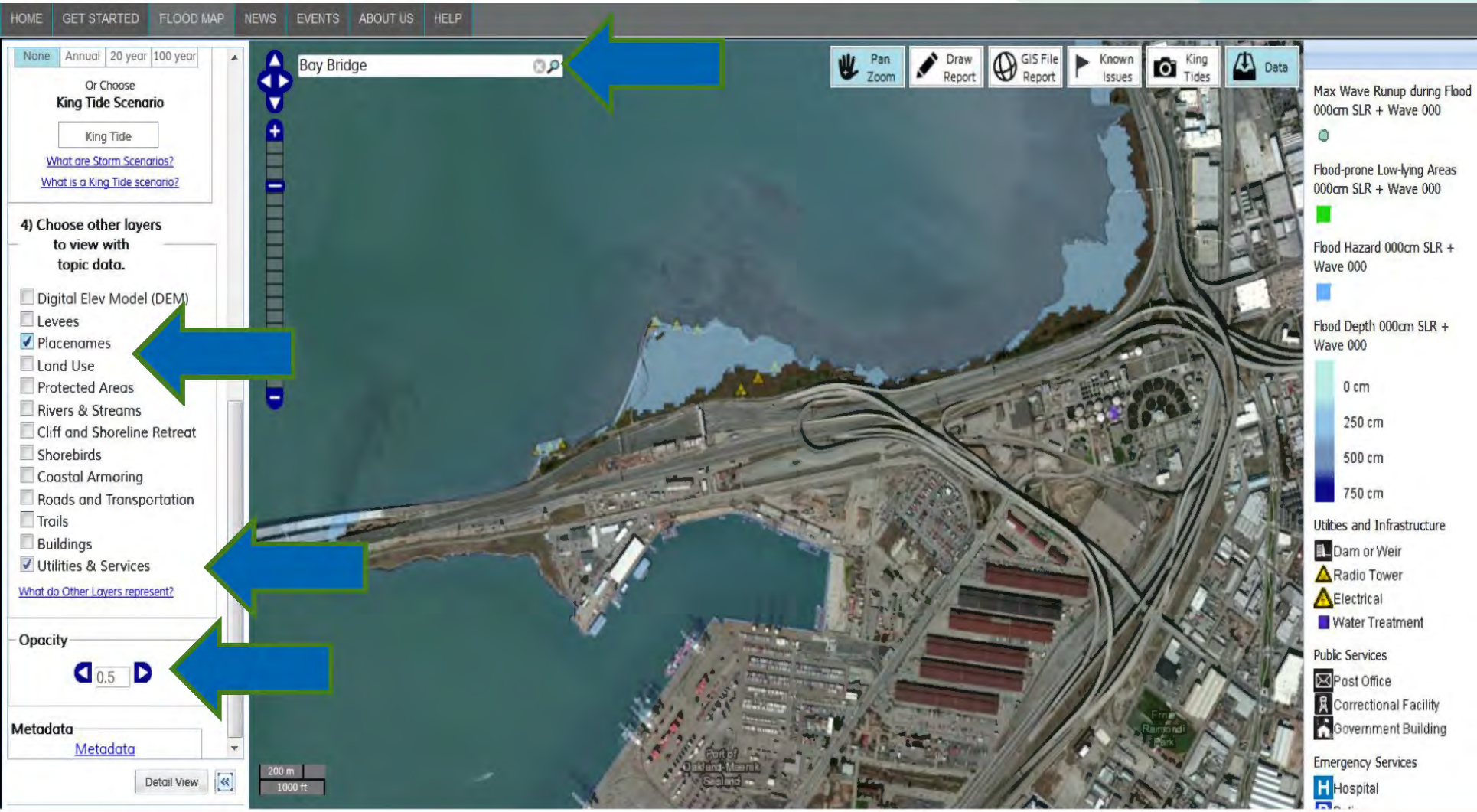
OCOF overview (2'45)

Map Tutorial (6'50)


Enter an address or placename
Pan Zoom
Draw Report
GIS File Report
Known Issues
King Tides
Data
20 km
10 mi


HOME
GET STARTED
FLOOD MAP
NEWS
EVENTS
ABOUT US
HELP
OCOF
Interactive Map
get started
clear
recenter
1) Choose a topic.
Flooding shows the innundation due to SLR, waves, and storm surge.
Flooding
Waves
Current
Duration
Flood Potential
What do the Topics represent?
Compare Flooding Scenarios
2) Choose an Amount of Sea Level Rise (cm).
0
25
50
75
100
125
150
175
200
500
[Use feet]
What Sea Level Rise scenario should I use?
3) Choose an Event
Choose
Storm Scenario Frequency
None
Annual
20 year
100 year
Or Choose
King Tide Scenario
Detail View
Enter an address or placename
Pan Zoom
Draw Report
GIS File Report
Known Issues
OCOF Interactive Map Help
OCOF Interactive Map Help
A short video tutorial about using this tool is available on You Tube.
Enter an address or placename in the area at the top of the map and click the magnifying glass to zoom into a specific location.
Select the buttons on the left to choose a combination of:
1) the Topic you are interested in
2) an amount of Sea Level Rise in centimeters
3) a Storm Scenario
Switch between different levels of Sea Level Rise and Storm Scenarios to see changes in storm intensity and water levels. Turn on Other Layers to see the effects relative to natural and built features within your area of interest.
If you need help with choosing a Sea Level Rise amount, click here to view a comparative look at current global and state projections.
The icons in the upper right part of the window provide the following functionality:
Pan Zoom
Panning and zooming in the map with your mouse.
Draw Report
Create a report for an area of interest by clicking on the map to define the boundary, finish by double-clicking.
GIS File Report
Create a report using your own GIS file to define your area of interest by uploading a KML, KMZ or zipped SHP file.
20 km
10 mi

OCOF


HOME
GET STARTED
FLOOD MAP
NEWS
EVENTS
ABOUT US
HELP
None
Annual
20 year
100 year
Or Choose
King Tide Scenario
King Tide
What are Storm Scenarios?
What is a King Tide scenario?
4) Choose other layers to view with topic data.
Digital Elev Model (DEM)
Levees
Placenames
Land Use
Protected Areas
Rivers & Streams
Cliff and Shoreline Retreat
Shorebirds
Coastal Armoring
Roads and Transportation
Trails
Buildings
Utilities & Services
What do Other Layers represent?
Opacity
0.5
Metadata
Metadata
Detail View
Bay Bridge
Pan Zoom
Draw Report
GIS File Report
Known Issues
King Tides
Data
200 m
1000 ft
Max Wave Runup during Flood 000cm SLR + Wave 000
Flood-prone Low-lying Areas 000cm SLR + Wave 000
Flood Hazard 000cm SLR + Wave 000
Flood Depth 000cm SLR + Wave 000
0 cm
250 cm
500 cm
750 cm
Utilities and Infrastructure
Dam or Weir
Radio Tower
Electrical
Water Treatment
Public Services
Post Office
Correctional Facility
Government Building
Emergency Services
Hospital


OCOF
HOME
GET STARTED
FLOOD MAP
NEWS
EVENTS
ABOUT US
HELP
OCOF
OUR COAST OUR FUTURE
Interactive Map
get started
clear
recenter
1) Choose a topic.
Flooding shows the innundation due to SLR, waves, and storm surge.
Flooding
Waves
Current
Duration
Flood Potential
What do the Topics represent?
Compare Flooding Scenarios
2) Choose an Amount of Sea Level Rise (cm).
0
25
50
75
100
125
150
175
200
500
[Use feet]
What Sea Level Rise scenario should I use?
3) Choose an Event
Choose
Storm Scenario Frequency
None
Annual
20 year
100 year
Or Choose
King Tide Scenario
Detail View
Bay Bridge
Pan Zoom
Draw Report
GIS File Report
Known Issues
King Tides
Data
Max Wave Runup during Flood 050cm SLR + Wave 100
Flood-prone Low-lying Areas 050cm SLR + Wave 100
Flood Hazard 050cm SLR + Wave 100
Flood Depth 050cm SLR + Wave 100
0 cm
250 cm
500 cm
750 cm
200 m
1000 ft

This is the sea level rise and storm scenario report for the area you selected. This report was designed to provide information to help you identify vulnerabilities to sea level rise and storm surges.

Area and Elevation Information

Area is the size of selected polygon, in square meters, acres and hectares, and Elevation is the average, minimum and maximum elevation from the Digital Elevation Model (DEM) within the polgyon.

Area:	236,464.94 m²	Elevation:	Mean - 3.52 meters
	58.43 ac		Minimum - 0.23 meters
	23.65 ha		Maximum - 5.36 meters

Projected Percent Area Flooded for the Selected Area

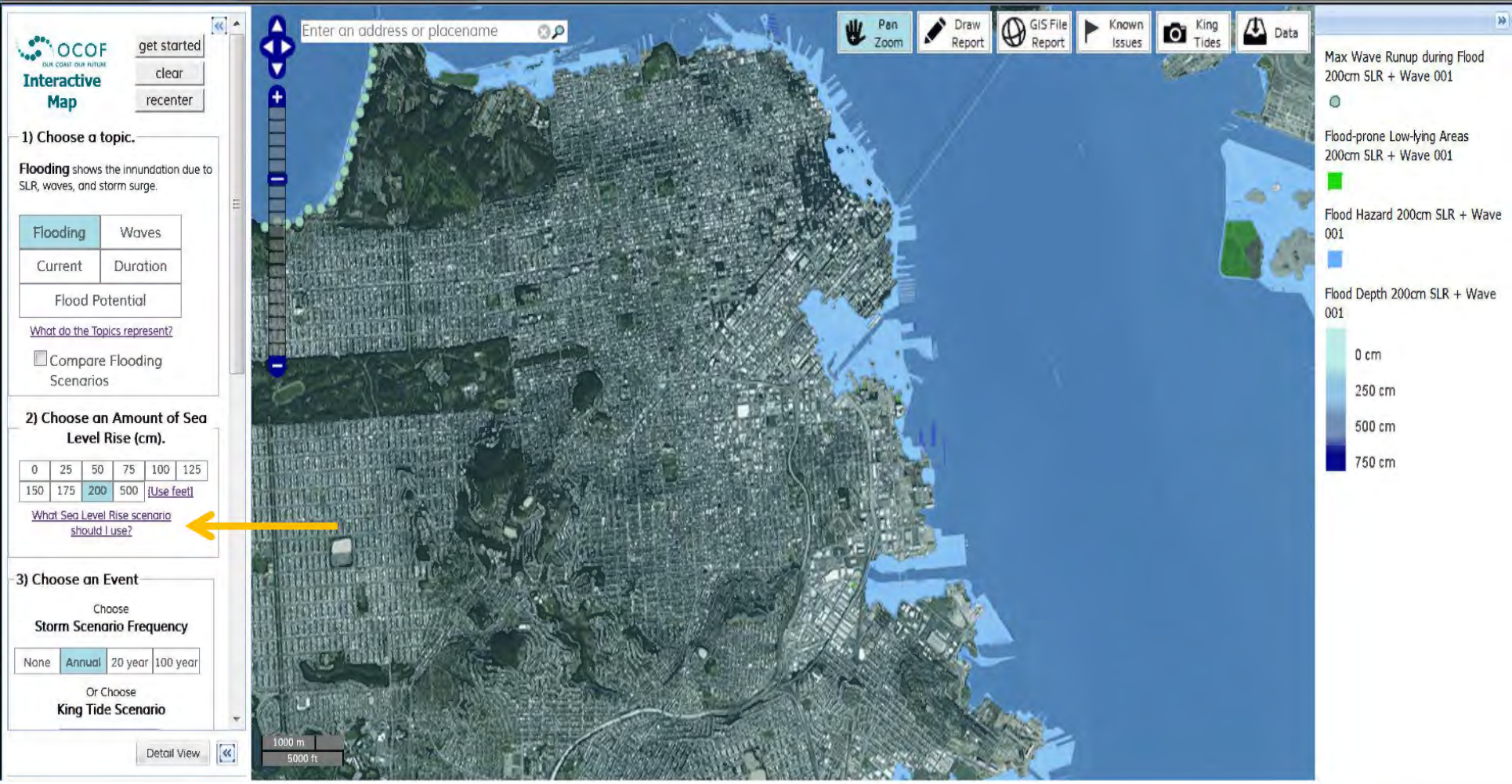
Values indicate the percentage of the selected area flooded for the Storm and Sea Level Rise Scenario combination.

Storm Scenario							
	100 yr Storm	0	9%	43%	79%	100%	100%
	20 yr Storm	0	9%	47%	84%	100%	100%
	Annual Storm	0	0	5%	21%	77%	100%
	No Storm	0	0	2%	26%	60%	100%
		none	50 cm	100 cm	150 cm	200 cm	500 cm
		Sea Level Rise Scenario					

under 25% flooded 25-50% flooded 50-75% flooded over 75% flooded

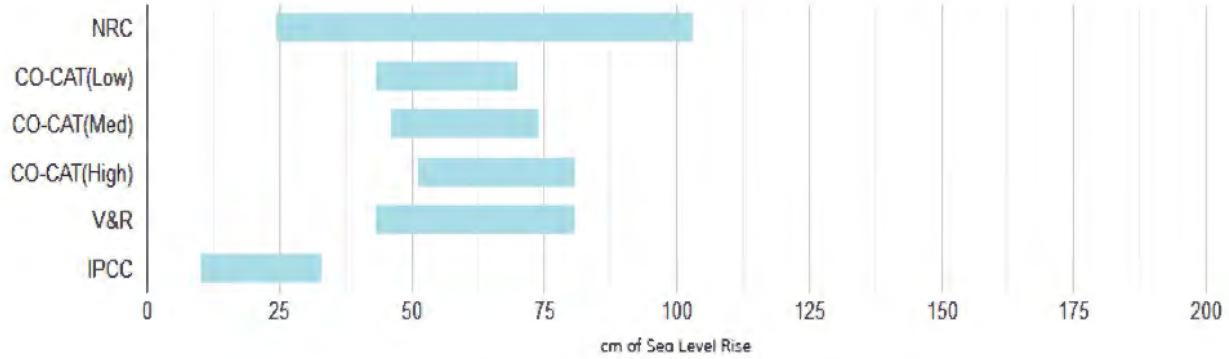
OCOF

HOME | GET STARTED | FLOOD MAP | NEWS | EVENTS | ABOUT US | HELP



What projections are likely to occur in a given year?

Move the slider control below the graph left and right to see how different climate experts projections of sea level rise compare to one another. Hold your mouse over each bar for details.

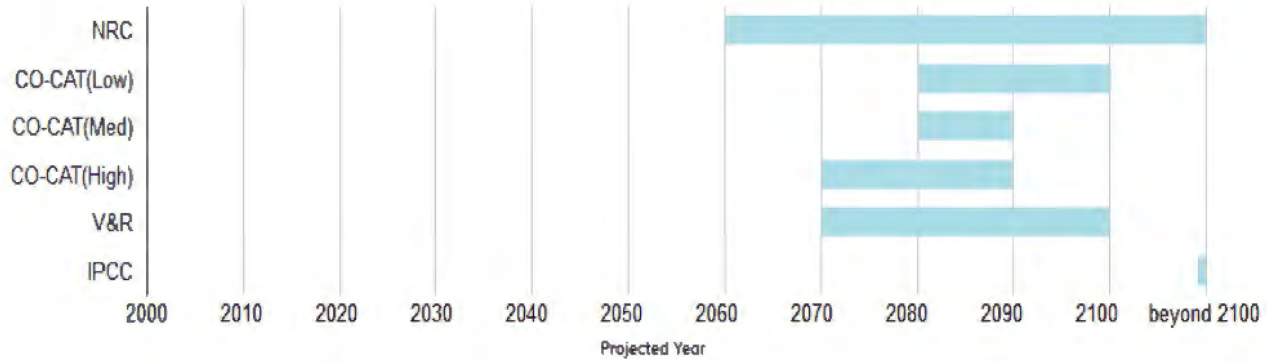


Year 2000 — 2100

2070

When is a projection likely to occur?

Move the slider control below the graph left and right to see how different climate experts projections of when sea level rise will occur compare to one another. Hold your mouse over each bar for details.



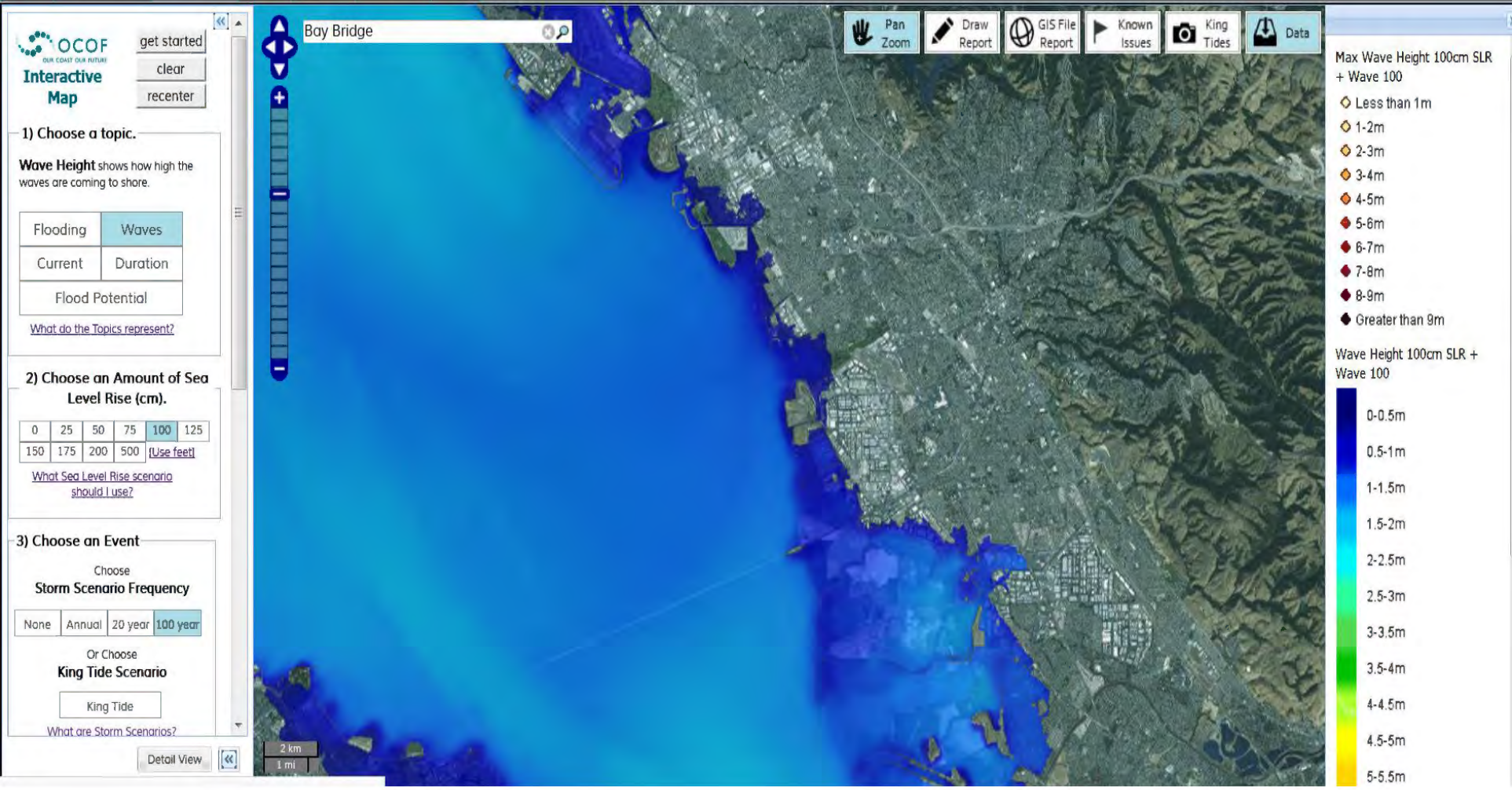
0 — 200 cm

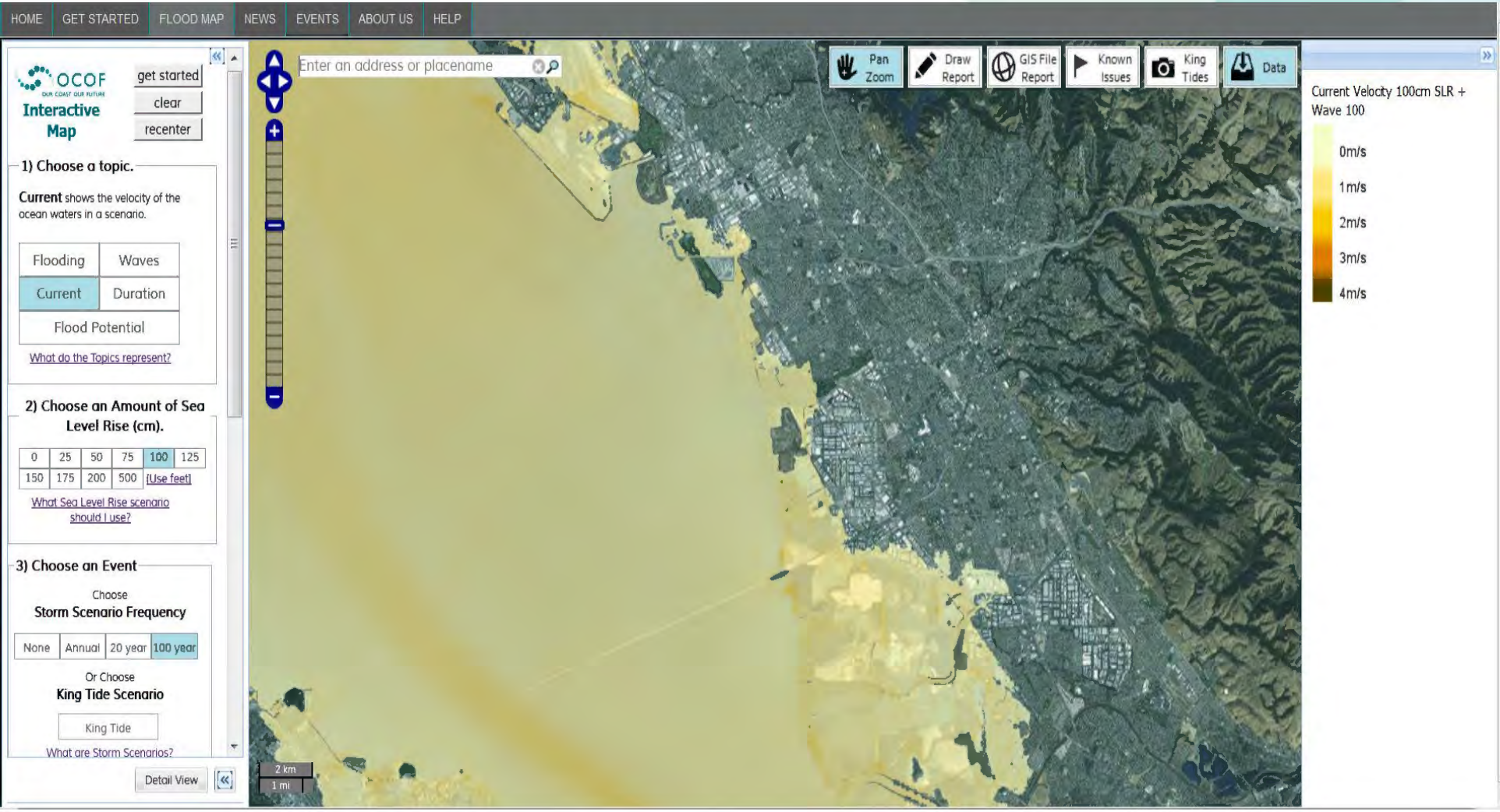
75 cm

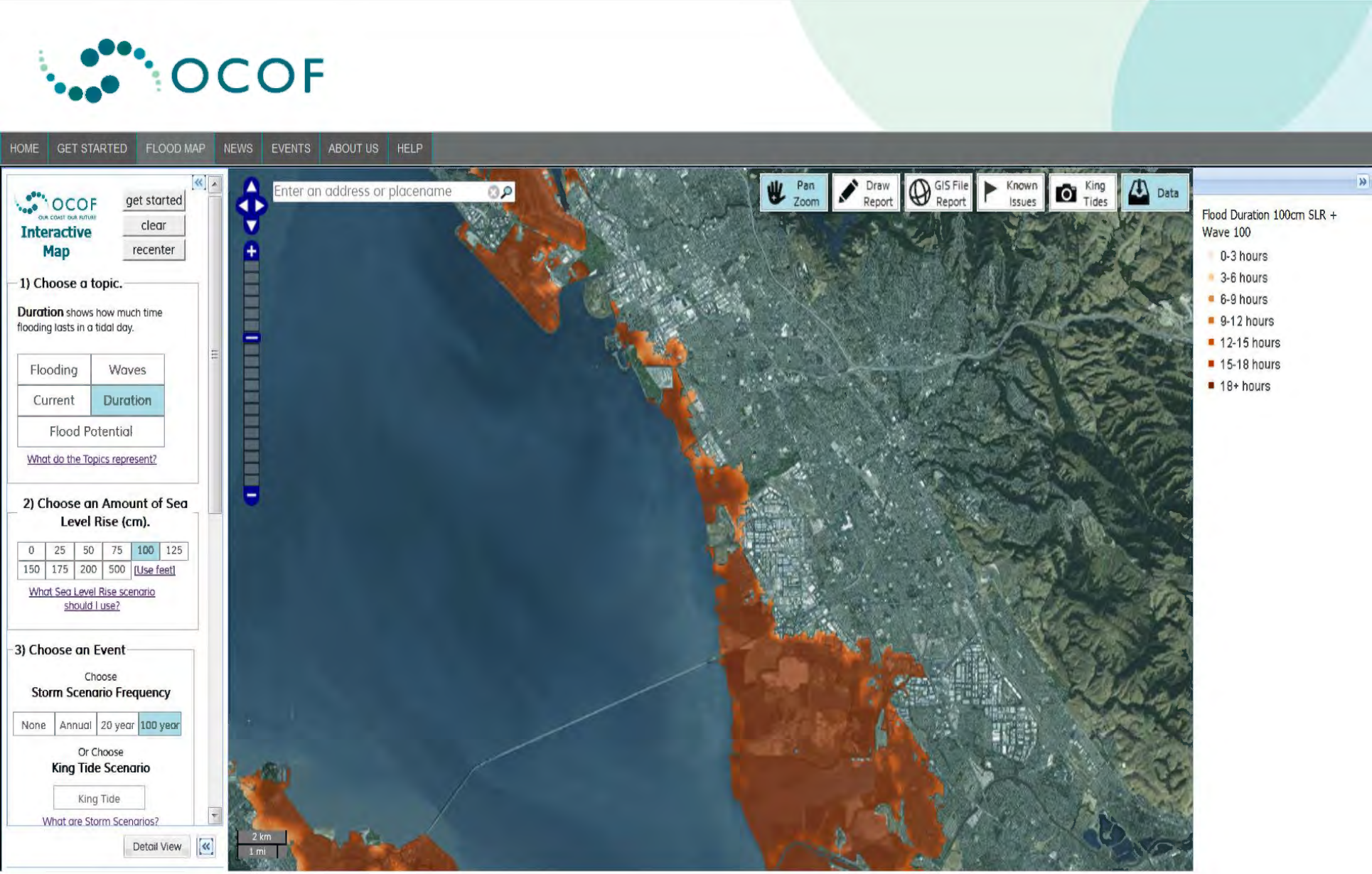
Citations

OCOF

HOME | GET STARTED | FLOOD MAP | NEWS | EVENTS | ABOUT US | HELP

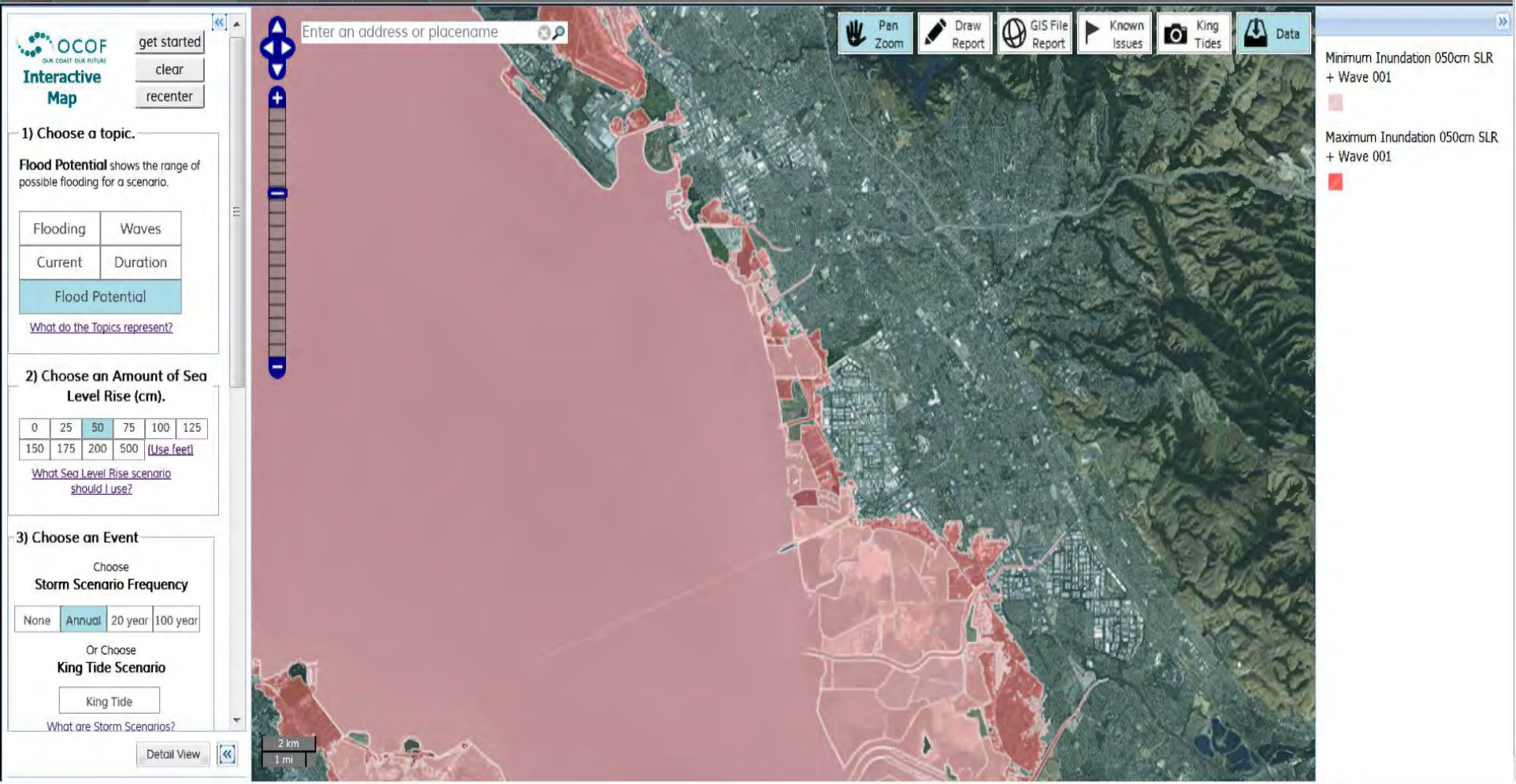



OCOF
HOME
GET STARTED
FLOOD MAP
NEWS
EVENTS
ABOUT US
HELP
OCOF
OUR COAST OUR FUTURE
Interactive Map
get started
clear
recenter
1) Choose a topic.
Current shows the velocity of the ocean waters in a scenario.
Flooding
Waves
Current
Duration
Flood Potential
What do the Topics represent?
2) Choose an Amount of Sea Level Rise (cm).
0
25
50
75
100
125
150
175
200
500
(Use feet)
What Sea Level Rise scenario should I use?
3) Choose an Event
Choose
Storm Scenario Frequency
None
Annual
20 year
100 year
Or Choose
King Tide Scenario
King Tide
What are Storm Scenarios?
Detail View
Enter an address or placename
Pan Zoom
Draw Report
GIS File Report
Known Issues
King Tides
Data
2 km
1 mi
Current Velocity 100cm SLR + Wave 100
0m/s
1m/s
2m/s
3m/s
4m/s

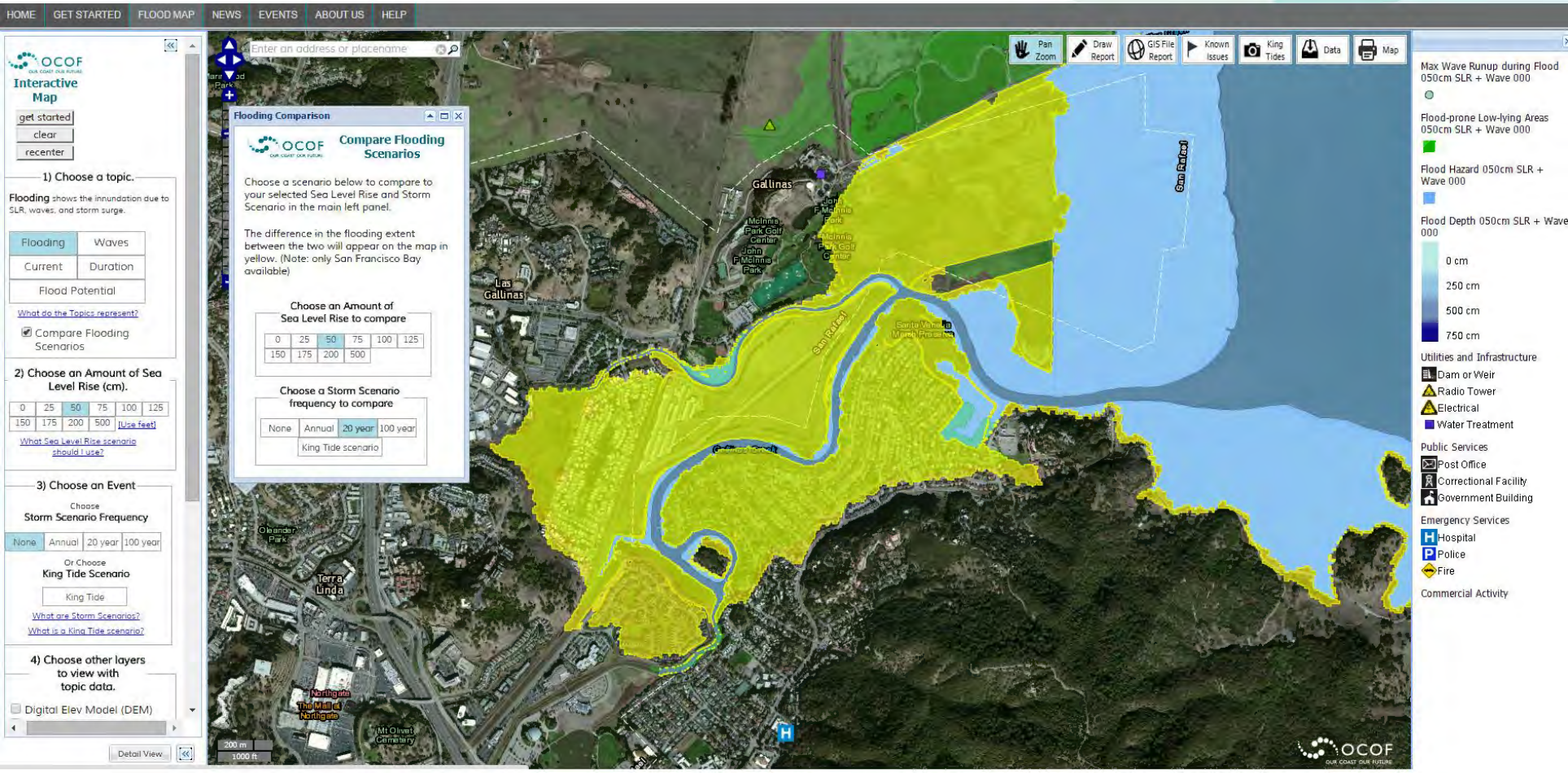

OCOF
HOME
GET STARTED
FLOOD MAP
NEWS
EVENTS
ABOUT US
HELP
OCOF
OUR COAST OUR FUTURE
Interactive Map
get started
clear
recenter
1) Choose a topic.
Duration shows how much time flooding lasts in a tidal day.
Flooding
Waves
Current
Duration
Flood Potential
What do the Topics represent?
2) Choose an Amount of Sea Level Rise (cm).
0
25
50
75
100
125
150
175
200
500
[Use feet]
What Sea Level Rise scenario should I use?
3) Choose an Event
Choose
Storm Scenario Frequency
None
Annual
20 year
100 year
Or Choose
King Tide Scenario
King Tide
What are Storm Scenarios?
Detail View
Enter an address or placename
Pan Zoom
Draw Report
GIS File Report
Known Issues
King Tides
Data
2 km
1 mi
Flood Duration 100cm SLR + Wave 100
0-3 hours
3-6 hours
6-9 hours
9-12 hours
12-15 hours
15-18 hours
18+ hours

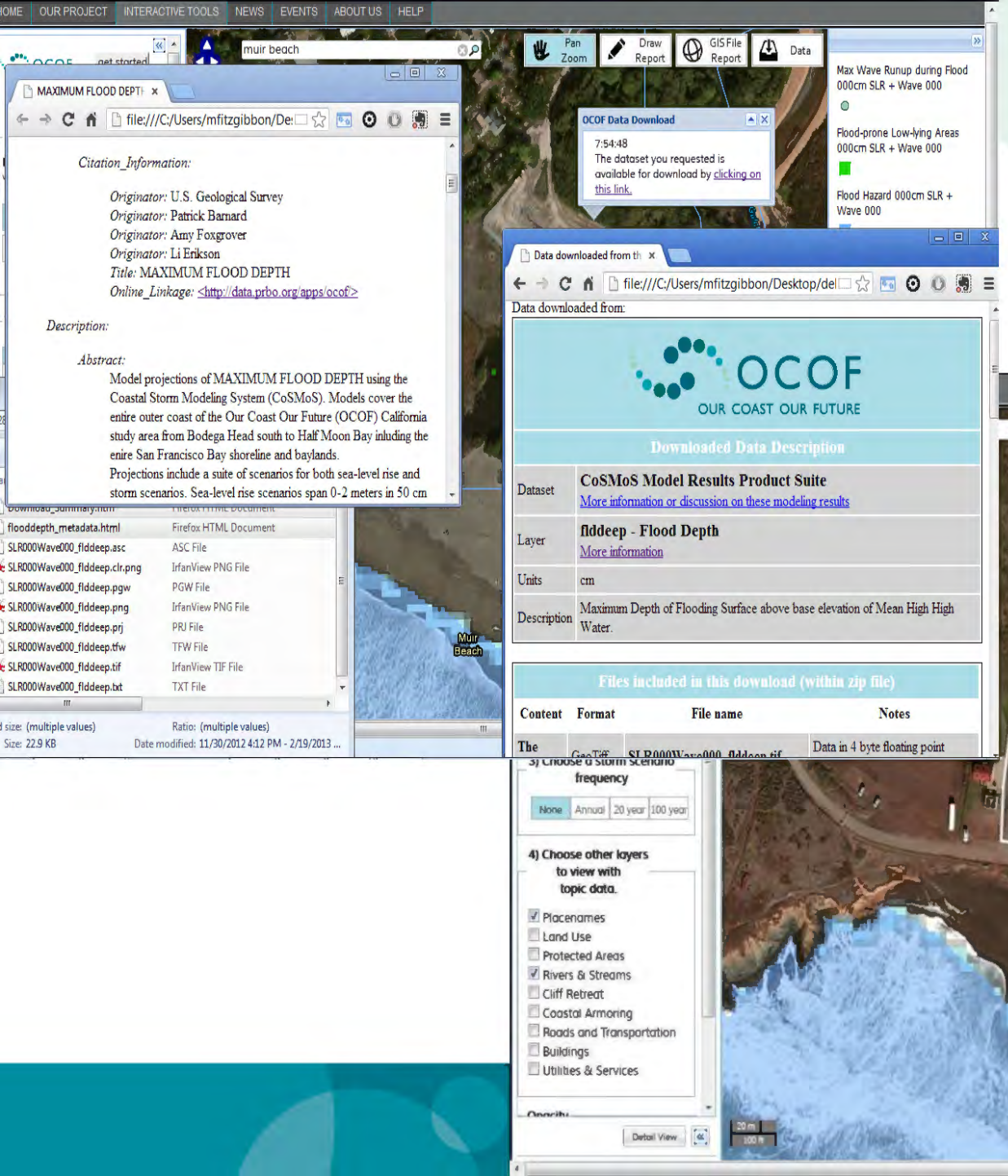
OCOF

HOME | GET STARTED | FLOOD MAP | NEWS | EVENTS | ABOUT US | HELP



OCOF


HOME
GET STARTED
FLOOD MAP
NEWS
EVENTS
ABOUT US
HELP
OCOF
Interactive Map
get started
clear
recenter
1) Choose a topic.
Flooding shows the innundation due to SLR, waves, and storm surge.
Flooding
Waves
Current
Duration
Flood Potential
What do the Topics represent?
Compare Flooding Scenarios
2) Choose an Amount of Sea Level Rise (cm).
0 25 50 75 100 125
150 175 200 500 [Use feet]
What Sea Level Rise scenario should I use?
3) Choose an Event
Choose
Storm Scenario Frequency
None Annual 20 year 100 year
Or Choose
King Tide Scenario
King Tide
What are Storm Scenarios?
What is a King Tide scenario?
4) Choose other layers to view with topic data.
Digital Elev Model (DEM)
Detail View
Enter an address or placename
Pan Zoom
Draw Report
GIS File Report
Known Issues
King Tides
Data
Map
Flooding Comparison
OCOF
Compare Flooding Scenarios
Choose a scenario below to compare to your selected Sea Level Rise and Storm Scenario in the main left panel.
The difference in the flooding extent between the two will appear on the map in yellow. (Note: only San Francisco Bay available)
Choose an Amount of Sea Level Rise to compare
0 25 50 75 100 125
150 175 200 500
Choose a Storm Scenario frequency to compare
None Annual 20 year 100 year
King Tide scenario
Gallinas
Las Gallinas
San Rafael
Oleander Park
Terra Linda
Northgate
The Mall at Northgate
Mt Olivet Cemetery
200 m
1000 ft
Max Wave Runup during Flood 050cm SLR + Wave 000
Flood-prone Low-lying Areas 050cm SLR + Wave 000
Flood Hazard 050cm SLR + Wave 000
Flood Depth 050cm SLR + Wave 000
0 cm
250 cm
500 cm
750 cm
Utilities and Infrastructure
Dam or Weir
Radio Tower
Electrical
Water Treatment
Public Services
Post Office
Correctional Facility
Government Building
Emergency Services
Hospital
Police
Fire
Commercial Activity


OUR PROJECT
INTERACTIVE TOOLS
NEWS
EVENTS
ABOUT US
HELP
muir beach
Pan Zoom
Draw Report
GIS File Report
Data
OCOF Data Download
7:54:48
The dataset you requested is available for download by clicking on this link.
Max Wave Runup during Flood 000cm SLR + Wave 000
Flood-prone Low-lying Areas 000cm SLR + Wave 000
Flood Hazard 000cm SLR + Wave 000
MAXIMUM FLOOD DEPTH
file:///C:/Users/mfitzgibbon/De
Citation_Information:
Originator: U.S. Geological Survey
Originator: Patrick Barnard
Originator: Amy Foxgrover
Originator: Li Erikson
Title: MAXIMUM FLOOD DEPTH
Online_Linkage: <http://data.prbo.org/apps/ocof>
Description:
Abstract:
Model projections of MAXIMUM FLOOD DEPTH using the Coastal Storm Modeling System (CoSMoS). Models cover the entire outer coast of the Our Coast Our Future (OCOF) California study area from Bodega Head south to Half Moon Bay inluding the enire San Francisco Bay shoreline and baylands.
Projections include a suite of scenarios for both sea-level rise and storm scenarios. Sea-level rise scenarios span 0-2 meters in 50 cm
flooddepth_metadata.html
Firefox HTML Document
SLR000Wave000_fldeep.asc
ASC File
SLR000Wave000_fldeep.clr.png
IrfanView PNG File
SLR000Wave000_fldeep.pgw
PGW File
SLR000Wave000_fldeep.png
IrfanView PNG File
SLR000Wave000_fldeep.prj
PRJ File
SLR000Wave000_fldeep.tfw
TFW File
SLR000Wave000_fldeep.tif
IrfanView TIF File
SLR000Wave000_fldeep.txt
TXT File
Size: 22.9 KB
Ratio: (multiple values)
Date modified: 11/30/2012 4:12 PM - 2/19/2013 ...
Muir Beach
Data downloaded from th
file:///C:/Users/mfitzgibbon/Desktop/del
Data downloaded from:
OCOF
OUR COAST OUR FUTURE
Downloaded Data Description
Dataset
CoSMoS Model Results Product Suite
More information or discussion on these modeling results
Layer
flddeep - Flood Depth
More information
Units
cm
Description
Maximum Depth of Flooding Surface above base elevation of Mean High High Water.
Files included in this download (within zip file)
Content
Format
File name
Notes
The
GeoTiff
SLR000Wave000_fldeep.tif
Data in 4 byte floating point
Pan Zoom
Draw Report
GIS File Report
Data
Max Wave Runup during Flood 000cm SLR + Wave 000
Flood-prone Low-lying Areas 000cm SLR + Wave 000
Flood Hazard 000cm SLR + Wave 000
Flood Depth 000cm SLR + Wave 000
0 cm
250 cm
500 cm
750 cm
Rivers and Streams
frequency
None
Annual
20 year
100 year
4) Choose other layers to view with topic data.
Placenames
Land Use
Protected Areas
Rivers & Streams
Cliff Retreat
Coastal Armoring
Roads and Transportation
Buildings
Utilities & Services
Detail View
OCOF Report from GIS Polygon
Load a GIS file
You can select and upload a KML, KMZ or zipped SHP file with polygons and select one. All uploaded files are expected to be in Latitude/Longitude WGS-84.
Browse..
Close Window
Areas in your GIS file MarinCoastalParking.kmz
Rodeo Beach Parking Lot
zoom
Choose an area...
Stinson Beach - North
Stinson Beach - Central
Stinson Beach - South
Rodeo Beach Parking Lot
Rodeo Beach Street Parking
Muir Beach Parking


OCOF
OUR COAST OUR FUTURE
Please visit us at:
http://www.pointblue.org/ocof
Point Blue
Conservation science
for a healthy planet.