



Michael Fitzgibbon, Point Blue Conservation Science
July 10, 2014



Point Blue
Conservation science
for a healthy planet.

Point Blue

Conservation science for a healthy planet.

- Founded in 1965 as Point Reyes Bird Observatory
- 140 seasonal and full time staff
- 2013 budget: \$10.3 million
- Working to reduce the impacts of environmental change and promote nature-based solutions for wildlife and people



Weather: for the lay person

7-Day Forecast for Latitud x

forecast.weather.gov/MapClick.php?CityName=Point+Reyes+Station&state=CA&site=MTR&textField1=38.0692&textField2=-12

NATIONAL WEATHER SERVICE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION


HOME FORECAST PAST WEATHER WEATHER SAFETY INFORMATION CENTER NEWS SEARCH ABOUT

Local forecast by "City, ST or ZIP code"
Enter location ...
[Location Help](#)

Severe weather possible across portions of central, northern Plains
The NWS Storm Prediction Center is forecasting a risk of severe thunderstorms Thursday afternoon and evening for two areas across the central and northern Plains: one area includes parts of northern Nebraska, western and southern South Dakota and northeastern Wyoming. The other area at risk includes parts of northern North Dakota. Damaging wind and large hail will be the primary threats.
[Read More...](#)

Current Conditions

[Share](#) [En Español](#)

 Fair
73°F
23°C










Humidity: 57%
Wind Speed: NE 6 MPH
Barometer: 29.92 in
Dewpoint: 57°F (14°C)
Visibility: 10.00 mi
Last Update on 10 Jul 1:15 pm PDT

Current conditions at:
Novato / Gnos Field (KDVO)
Lat: 38.14178°N Lon: 122.55483°W Elev: 3ft.
[More Local Wx](#) | [3 Day History](#) | [Mobile Weather](#)

Point Reyes CA

7 Day Forecast


For More Weather Information:
[San Francisco Bay Area/Monterey, CA](#)
[Local Forecast Office](#)

THIS AFTERNOON	TONIGHT	FRIDAY	FRIDAY NIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY
								
Mostly Cloudy High: 67°F	Chance Drizzle Low: 53°F	Chance Drizzle High: 67°F	Patchy Fog Low: 51°F	Patchy Fog High: 69°F	Patchy Fog Low: 51°F	Patchy Fog High: 72°F	Patchy Fog Low: 51°F	Patchy Fog High: 72°F

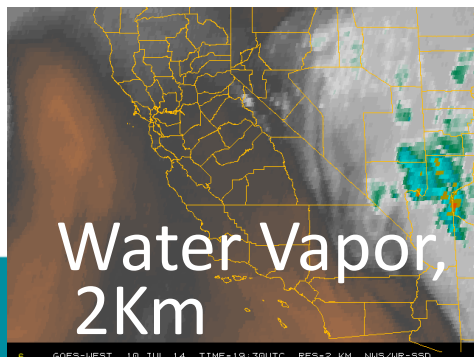
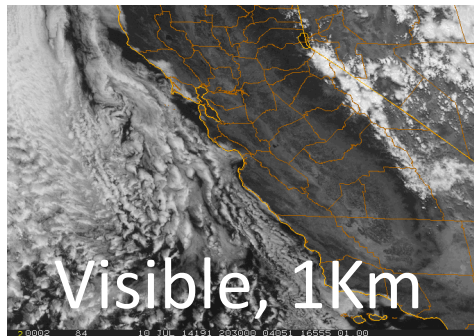
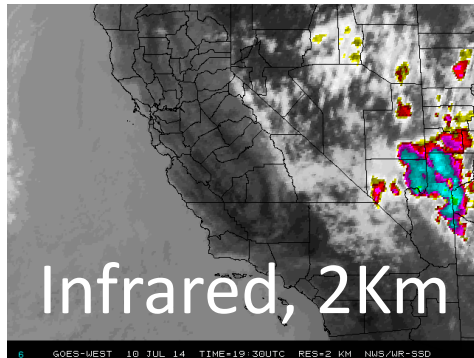
Detailed Forecast

Time Period	Forecast
This Afternoon	Mostly cloudy, with a high near 67. South southwest wind around 9 mph.
Tonight	A chance of drizzle after 11pm. Patchy fog after 11pm. Otherwise, cloudy, with a low around 53. Southwest wind 5 to 10 mph becoming light south after midnight.
Friday	A chance of drizzle before 11am. Patchy fog before 11am. Otherwise, mostly cloudy, with a high near 67. Calm wind becoming south southwest 5 to 8 mph in the afternoon.
Friday Night	Patchy fog after 11pm. Otherwise, mostly cloudy, with a low around 51. Southwest wind 3 to 8 mph.
Saturday	Patchy fog before 11am. Otherwise, mostly sunny, with a high near 69. West wind 3 to 7 mph.
Saturday Night	Patchy fog after 11pm. Otherwise, mostly cloudy, with a low around 51.

Topographic



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.

[HOW OCOF HELPS YOU](#)

[OCOF FAQ](#)

[CoSMoS FAQ](#)

[KNOWN ISSUES](#)

[REFERENCES](#)

[TUTORIALS](#)

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.



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.

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.

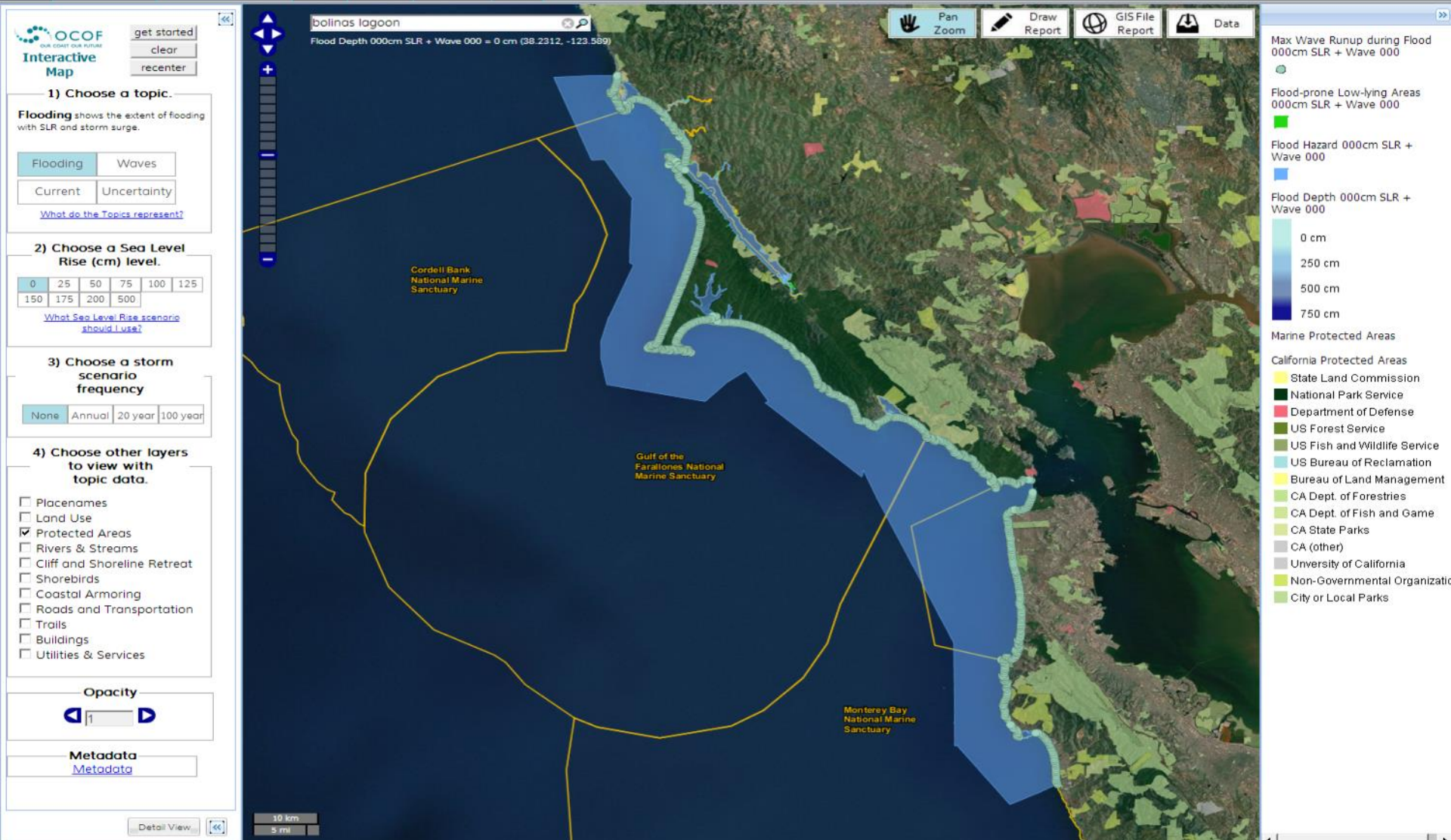
OCOF provides sea level rise and storm surge scenarios for the San Francisco Bay Area. These resources will help you navigate the online tools we have available to explore these results.

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 describe how to use the tools available on this website.

Frequently Asked Questions about OCOF

We have provided [answers to frequently asked questions](#) about the OCOF project including general information, geographic coverage, data used, model development, and the flood mapping tool.



1) Choose a topic.

Flooding shows the extent of flooding due to SLR, waves, and storm surge.

Flooding Waves
Current Uncertainty

[What do the Topics represent?](#)

2) Choose a Sea Level Rise (cm) level.

0	25	50	75	100	125
150	175	200	500		

[What Sea Level Rise scenario should I use?](#)

3) Choose a storm scenario frequency

None Annual 20 year 100 year

4) Choose other layers to view with topic data.

☒ Placenames
☐ Land Use

Detail View



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

Public Transportation

Ferry Landing
BART Station
Caltrans Facility
Bus Stop
Metro Stop

Public Parking

P

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150	175	200	500		

[What Sea Level Rise scenario should I use?](#)

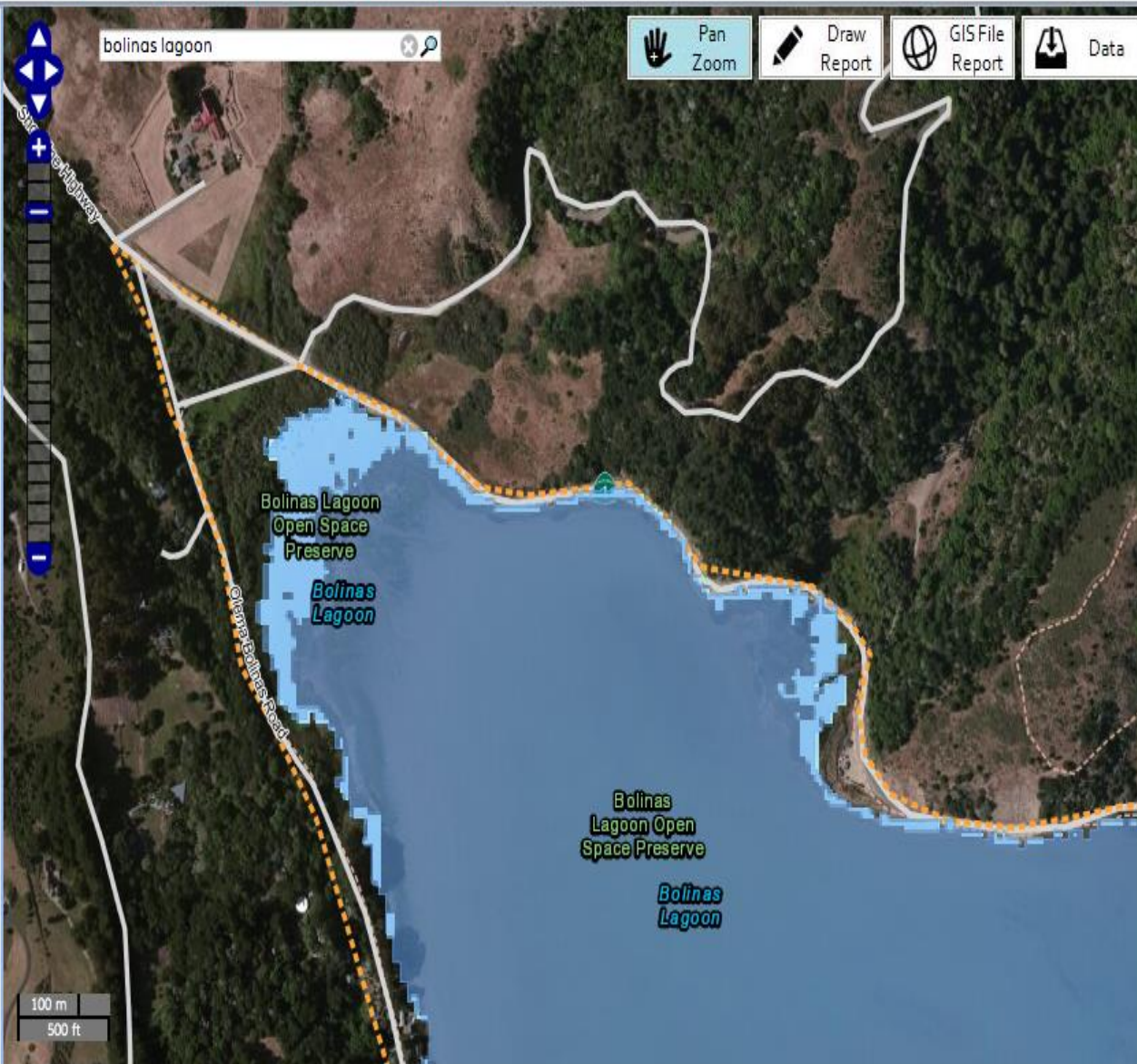
3) Choose a storm scenario frequency

None Annual 20 year 100 year

4) Choose other layers to view with topic data.

☒ Placenames
☐ Land Use

Detail View



Max Wave Runup during Flood 000cm SLR + Wave 020

Flood-prone Low-lying Areas 000cm SLR + Wave 020

Flood Hazard 000cm SLR + Wave 020

Flood Depth 000cm SLR + Wave 020

0 cm
250 cm
500 cm
750 cm

Public Transportation

Ferry Landing

BART Station

Caltrans Facility

Bus Stop

Metro Stop

Public Parking

P

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0	25	50	75	100	125
150	175	200	500		

[What Sea Level Rise scenario should I use?](#)

3) Choose a storm scenario frequency

None Annual 20 year 100 year

4) Choose other layers to view with topic data.

☒ Placenames
☐ Land Use

Detail View

bolinas lagoon

Pan
Zoom

Draw
Report

GIS File
Report

Data



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

Public Transportation



Ferry Landing



BART Station



Caltrans Facility



Bus Stop



Metro Stop

Public Parking



1) Choose a topic.

Flooding shows the extent of flooding due to SLR, waves, and storm surge.

Flooding Waves

Current Uncertainty

[What do the Topics represent?](#)

2) Choose a Sea Level Rise (cm) level.

0	25	50	75	100	125
150	175	200	500		

[What Sea Level Rise scenario should I use?](#)

3) Choose a storm scenario frequency

None Annual 20 year 100 year

4) Choose other layers to view with topic data.

☒ Placenames
☐ Land Use

Detail View



Max Wave Runup during Flood 050cm SLR + Wave 020



Flood-prone Low-lying Areas 050cm SLR + Wave 020



Flood Hazard 050cm SLR + Wave 020



Flood Depth 050cm SLR + Wave 020

0 cm
250 cm
500 cm
750 cm

Public Transportation



Ferry Landing



BART Station



Caltrans Facility



Bus Stop



Metro Stop

Public Parking



get started

clear

recenter

1) Choose a topic.

Flooding shows the extent of flooding with SLR and storm surge.

Flooding

Waves

Current

Uncertainty

[What do the Topics represent?](#)

2) Choose a Sea Level Rise (cm) level.

0	25	50	75	100	125
150	175	200	500		

[What Sea Level Rise scenario should I use?](#)

3) Choose a storm scenario 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

Detail View

Max Wave Runup during Flood
075cm SLR + Wave 020Flood-prone Low-lying Areas
075cm SLR + Wave 020Flood Hazard 075cm SLR +
Wave 020Flood Depth 075cm SLR +
Wave 020

0 cm

250 cm

500 cm

750 cm

Rivers and Streams

Stream

Intermittent Stream

get started

clear

recenter

1) Choose a topic.

Uncertainty shows the degree of uncertainty in the scenario results.

Flooding

Waves

Current

Uncertainty

[What do the Topics represent?](#)**2) Choose a Sea Level Rise (cm) level.**

0	25	50	75	100	125
150	175	200	500		

[What Sea Level Rise scenario should I use?](#)**3) Choose a storm scenario 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

Detail View



muir beach

Maximum Inundation 075cm SLR + Wave 020 = 0 (37,8598, -122,576)

Pan
ZoomDraw
ReportGIS File
Report

Data

Minimum Inundation 075cm SLR + Wave 020



Maximum Inundation 075cm SLR + Wave 020



Rivers and Streams



Stream



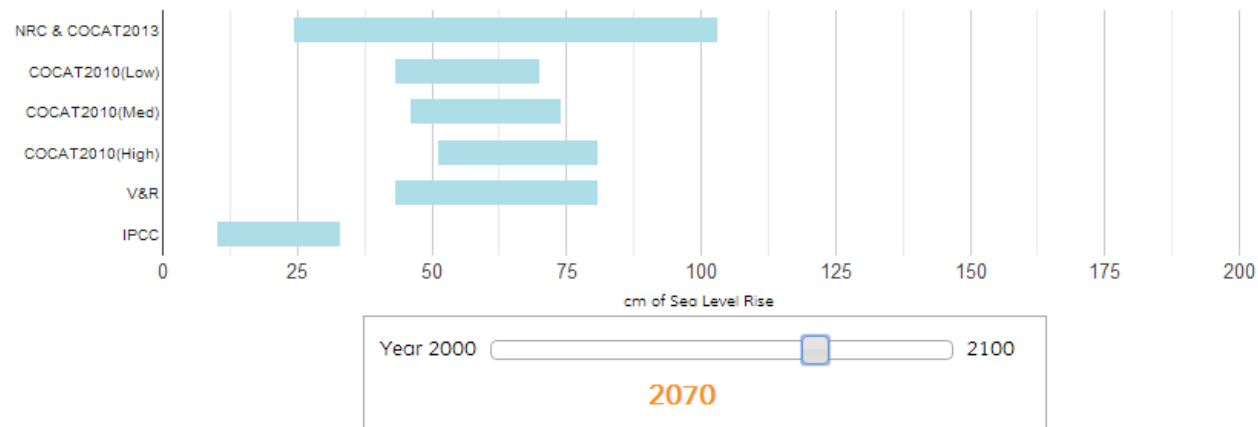
Intermittent Stream



How much SLR by 2070?

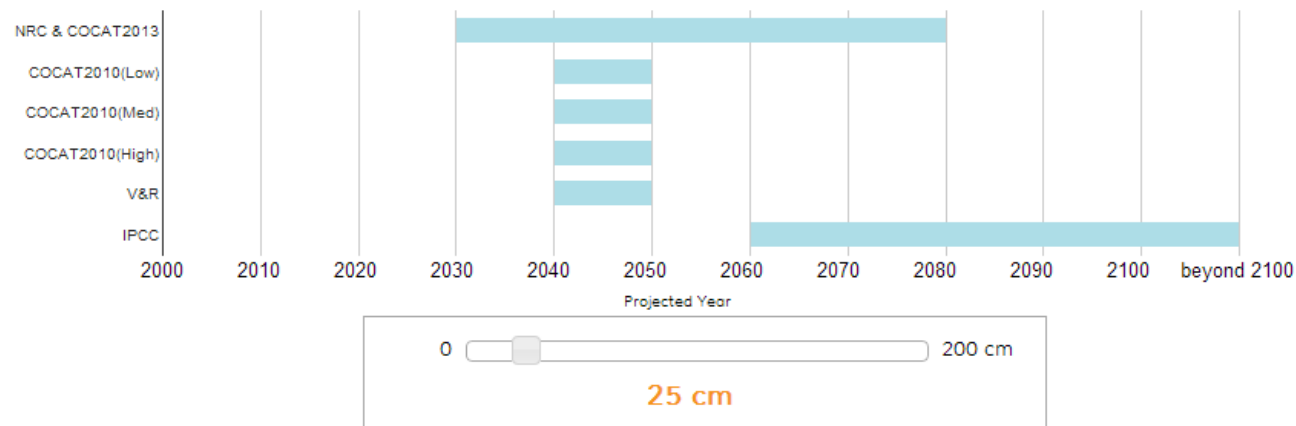
What projections are likely to occur in a given year?

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.



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.



get started
clear
recenter

1) Choose a topic.

Wave Height shows how high the waves are coming to shore.

Flooding Waves
Current Uncertainty

[What do the Topics represent?](#)

2) Choose a Sea Level Rise (cm) level.

0 25 50 75 100 125
150 175 200 500

[What Sea Level Rise scenario should I use?](#)

3) Choose a storm scenario 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

Detail View



rodeo lagoon

Wave Height 100cm SLR + Wave 100 = 3.447 m (37.8305, -122.5399)



Pan
Zoom



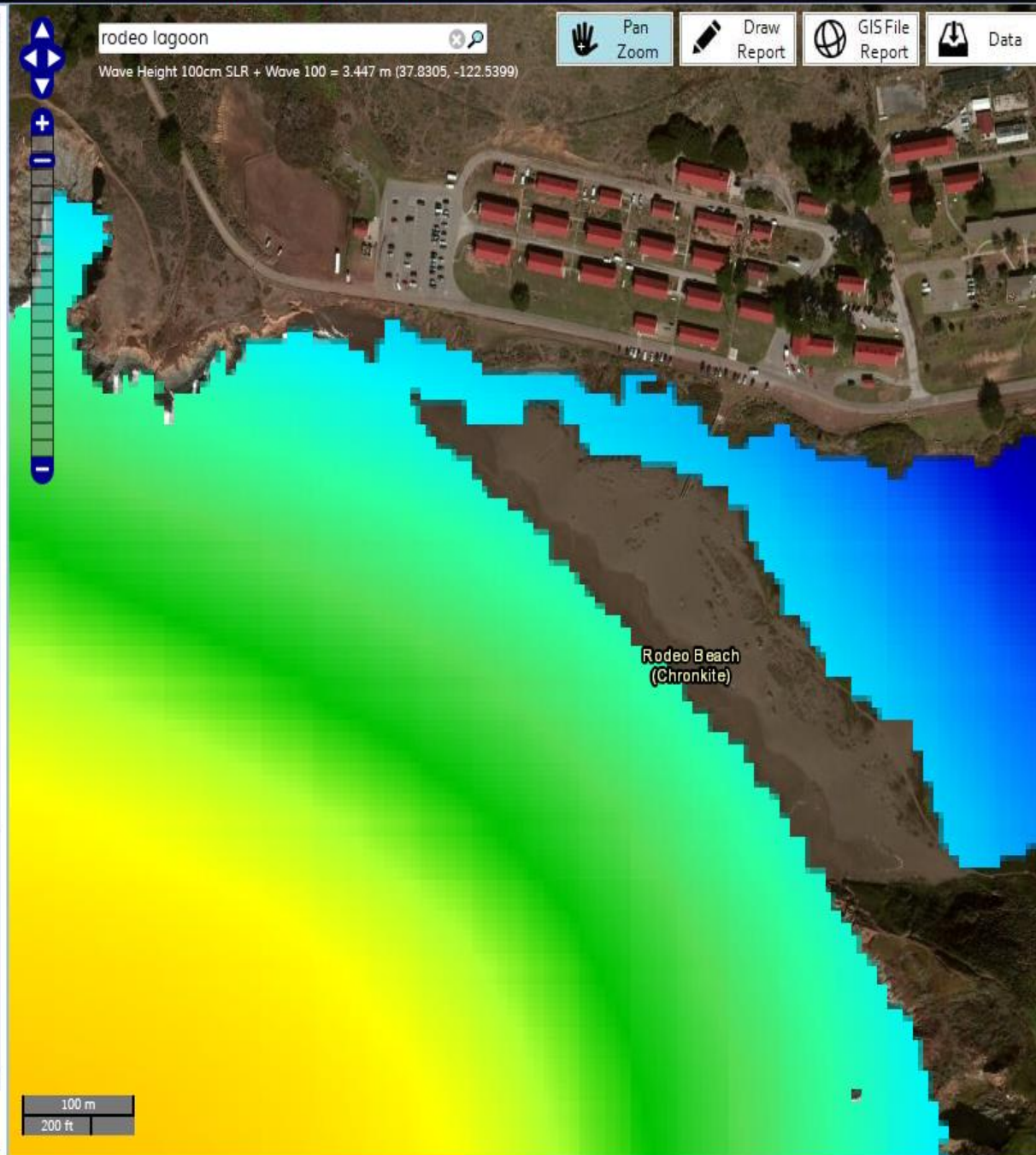
Draw
Report



GIS File
Report



Data



Max Wave Height 075cm SLR + Wave 020

- ◇ Less than 1m
- ◇ 1-2m
- ◇ 2-3m
- ◇ 3-4m
- ◇ 4-5m
- ◇ 5-6m
- ◇ 6-7m
- ◇ 7-8m
- ◇ 8-9m
- ◇ Greater than 9m

Wave Height 075cm SLR + Wave 020

0-0.5m
0.5-1m
1-1.5m
1.5-2m
2-2.5m
2.5-3m
3-3.5m
3.5-4m
4-4.5m
4.5-5m
5-5.5m
5.5-6m
6-6.5m
6.5-7m

100 m
200 ft

get started
clear
recenter

1) Choose a topic.

Current shows the velocity of the ocean waters in a scenario.

Flooding Waves
Current Uncertainty

[What do the Topics represent?](#)

2) Choose a Sea Level Rise (cm) level.

0 25 50 75 100 125
150 175 200 500

[What Sea Level Rise scenario should I use?](#)

3) Choose a storm scenario 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

Detail View

rodeo lagoon

Current Velocity 000cm SLR + Wave 000 = 0.382 m per sec (37.8288, -122.5406)

Pan
Zoom

Draw
Report

GIS File
Report

Data

Current Velocity 000cm SLR + Wave 020

0m/s
1m/s
2m/s
3m/s
4m/s

Rivers and Streams

Stream
Intermittent Stream

Rodeo Beach
(Chronkite)

100 m
200 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 polygon.

Area: 576,111.45 m²
142.36 ac
57.61 ha

Elevation: Mean - 4.39 meters
Minimum - 0.29 meters
Maximum - 51.37 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	8%	16%	17%	19%	24%	28%
	20 yr Storm	7%	15%	17%	21%	24%	28%
	Annual Storm	6%	14%	17%	20%	23%	28%
	No Storm	4%	9%	15%	18%	21%	28%
	none	50 cm	100 cm	150 cm	200 cm	500 cm	
Sea Level Rise Scenario							
<div> <div>under 25% flooded</div> <div>25-50% flooded</div> <div>50-75% flooded</div> <div>over 75% flooded</div> </div>							

Projected Average Flood Depth for the Selected Area

Values indicate the average flood depth (in feet and centimeters) over the Mean Higher High Water (MHHW) within the selected area for each Storm and Sea Level Rise Scenario combination. Values include modeling uncertainty bracket of +/- 40 cm.

Storm Scenario	100 yr Storm	30 - 110 cm 1 - 3.6 ft	50 - 130 cm 1.6 - 4.3 ft	90 - 170 cm 3 - 5.6 ft	130 - 210 cm 4.3 - 6.9 ft	160 - 240 cm 5.2 - 7.9 ft	405 - 485 cm 13.3 - 15.9 ft
	20 yr Storm	25 - 105 cm 0.8 - 3.4 ft	50 - 130 cm 1.6 - 4.3 ft	90 - 170 cm 3 - 5.6 ft	115 - 195 cm 3.8 - 6.4 ft	160 - 240 cm 5.2 - 7.9 ft	415 - 495 cm 13.6 - 16.2 ft
	Annual Storm	15 - 95 cm 0.5 - 3.1 ft	35 - 115 cm 1.1 - 3.8 ft	70 - 150 cm 2.3 - 4.9 ft	105 - 185 cm 3.4 - 6.1 ft	130 - 210 cm 4.3 - 6.9 ft	410 - 490 cm 13.5 - 16.1 ft
	No Storm	0 - 60 cm 0 - 2 ft	15 - 95 cm 0.5 - 3.1 ft	45 - 125 cm 1.5 - 4.1 ft	85 - 165 cm 2.8 - 5.4 ft	115 - 195 cm 3.8 - 6.4 ft	360 - 440 cm 11.8 - 14.4 ft
	none	50 cm	100 cm	150 cm	200 cm	500 cm	
Sea Level Rise Scenario							
<div> <div>average less than 1 ft</div> <div>1 to 3 ft</div> <div>3 to 5 ft</div> <div>over 5 ft</div> </div>							

Map of Area



OUR PROJECT INTERACTIVE STUDIES ABOUT US HELP

net started

muir beach

MAXIMUM FLOOD DEPTH

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 including the entire 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

Download Summary

File Name	File Type
flooddepth_metadata.html	Firefox HTML Document
SLR000Wave000_fiddeep.asc	ASC File
SLR000Wave000_fiddeep.clr.png	IrfanView PNG File
SLR000Wave000_fiddeep.pgww	PGW File
SLR000Wave000_fiddeep.png	IrfanView PNG File
SLR000Wave000_fiddeep.prj	PRJ File
SLR000Wave000_fiddeep.tfw	TFW File
SLR000Wave000_fiddeep.tif	IrfanView TIF File
SLR000Wave000_fiddeep.txt	TXT File

Size: (multiple values)
Size: 22.9 KB

Ratio: (multiple values)
Date modified: 11/30/2012 4:12 PM - 2/19/2013 ...

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

Data downloaded from th

file:///C:/Users/mfztgibbon/Desktop/de

Data downloaded from:

OCOF OUR COAST OUR FUTURE

Downloaded Data Description

Dataset	CoSMoS Model Results Product Suite
Layer	fiddeep - 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_fiddeep.tif	Data in 4 byte floating point

3) Choose a storm scenario 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

Open

Detail View



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

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...

- Sinon Beach - North
- Sinon Beach - Central
- Sinon Beach - South
- Rodeo Beach Parking Lot
- Rodeo Beach Street Parking
- Muir Beach Parking



Please visit us at:

<http://www.pointblue.org/ocof>