

Please Consider Sea Level Rise as you Consider the Future of Conomo Point



By Liz Duff:

Education Coordinator

Mass Audubon's Salt Marsh Science Project



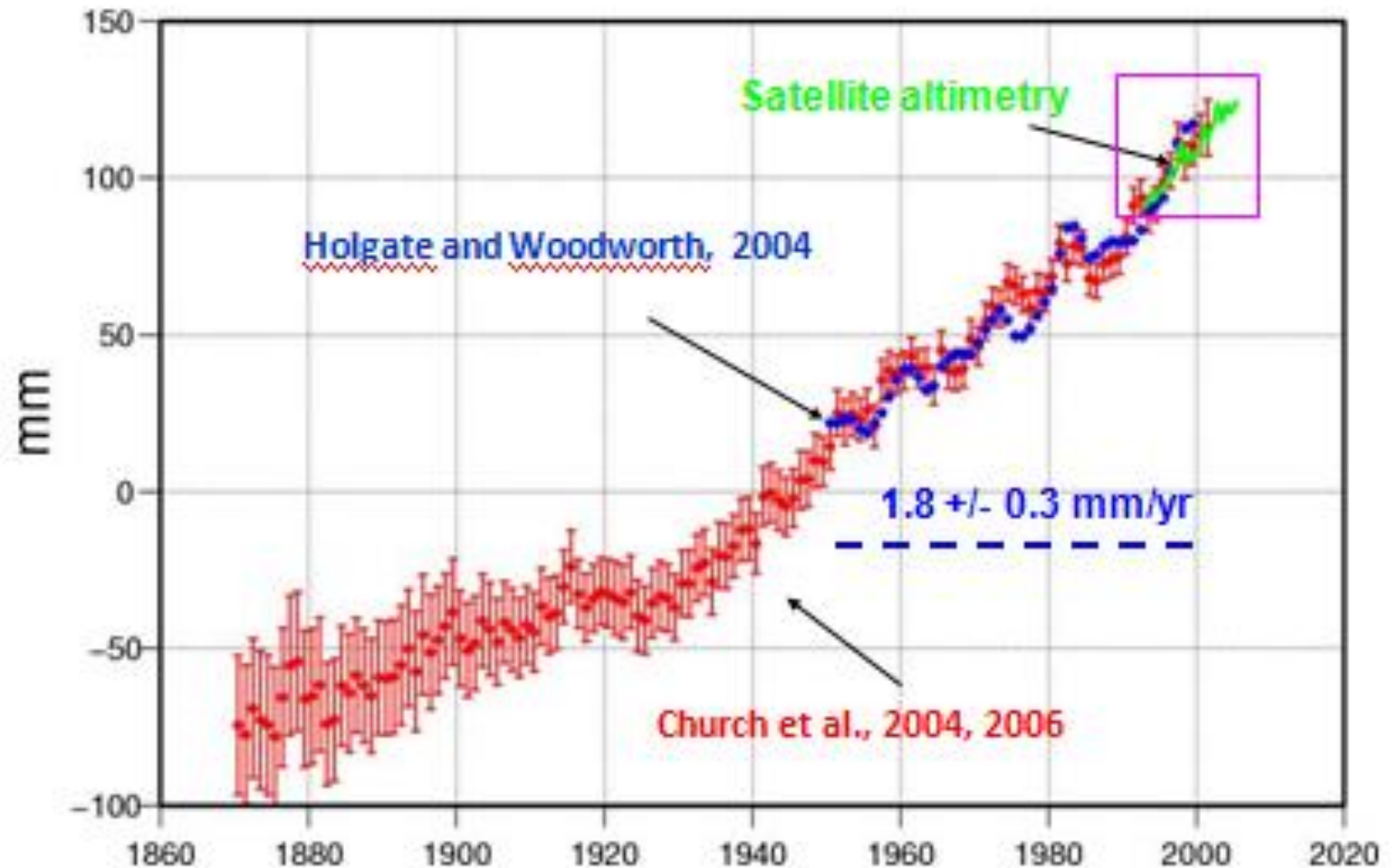
Flooding Main St. Essex,
Feb. 26, 2010

Local Businesses in Essex are
already at risk to storm surges.
Pictured: Storm of Feb. 26, 2010.



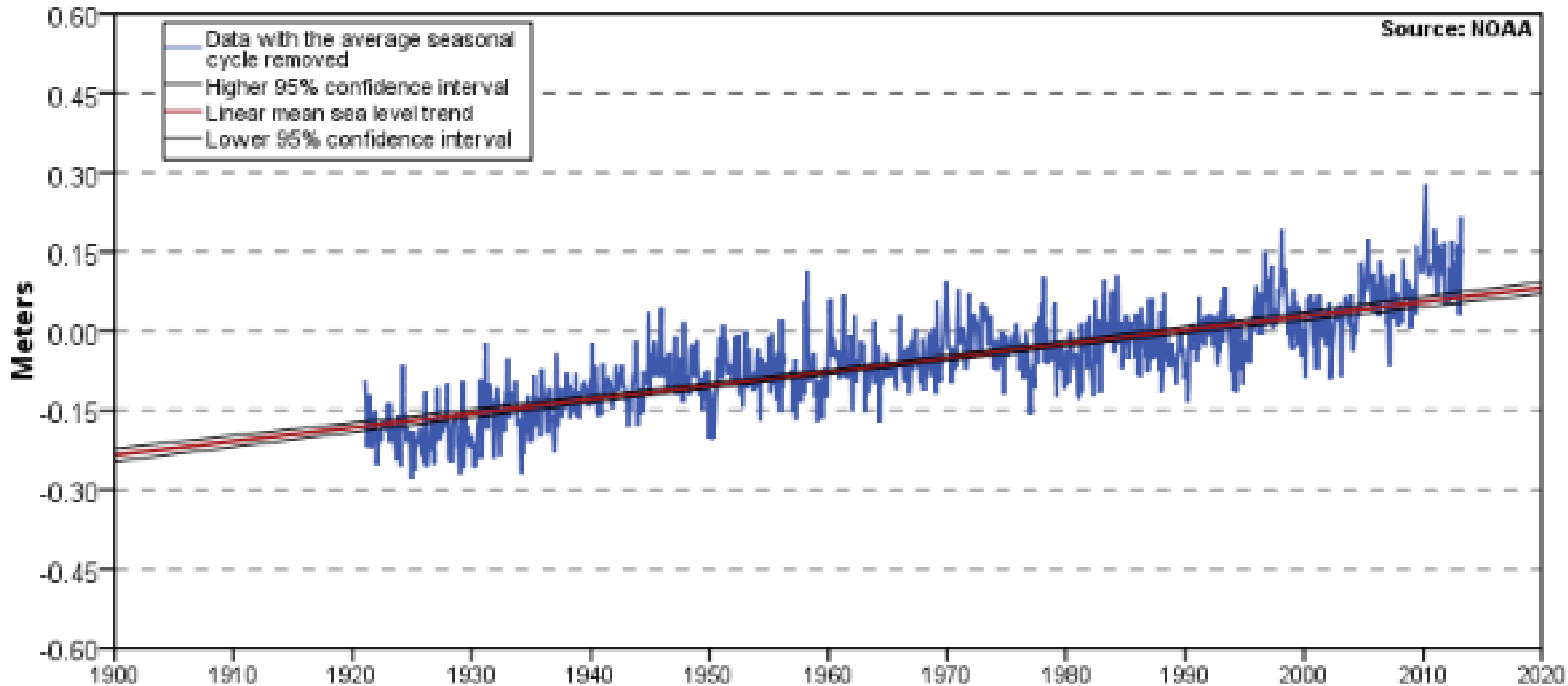


20th century sea level rise – what we know



Long-term Increase in Sea Level Boston Tide Gauge

Boston, MA 2.63 +/- 0.18 mm/yr

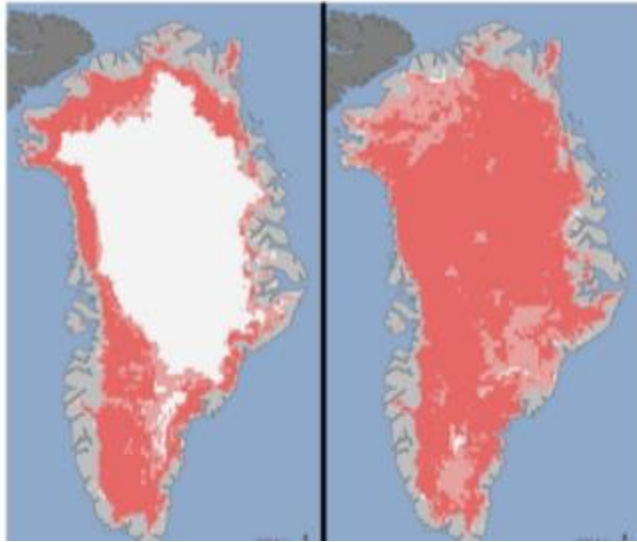


2.63 mm/y long term
average

http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8443970

Why is sea level rising?

Greenland Ice Sheet*



1. Melting land ice.
As glaciers on land melt they add to the amount of water in our oceans.
2. Thermal Expansion: As water is heated it takes up more space.

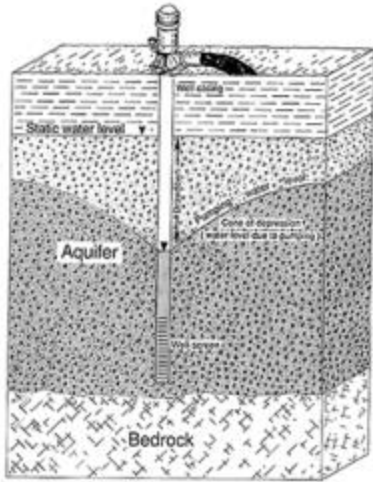
Thermal Expansion:** Things expand as they heat up.



*<http://www.motherjones.com/blue-marble/2012/07/greenland-melting-ice-sheet-record>

**http://www.watts.com/pro/divisions/watersafety_flowcontrol/learnabout/learnabout_thermexpansion.asp

Why is sea level rising?



3: Groundwater

- Pumping water from underground aquifers for irrigation and home and industrial use. Most of this water ends up in the sea!

<http://iis-db.stanford.edu/evnts/6557/Nelson.pdf>

slides 36 & 38

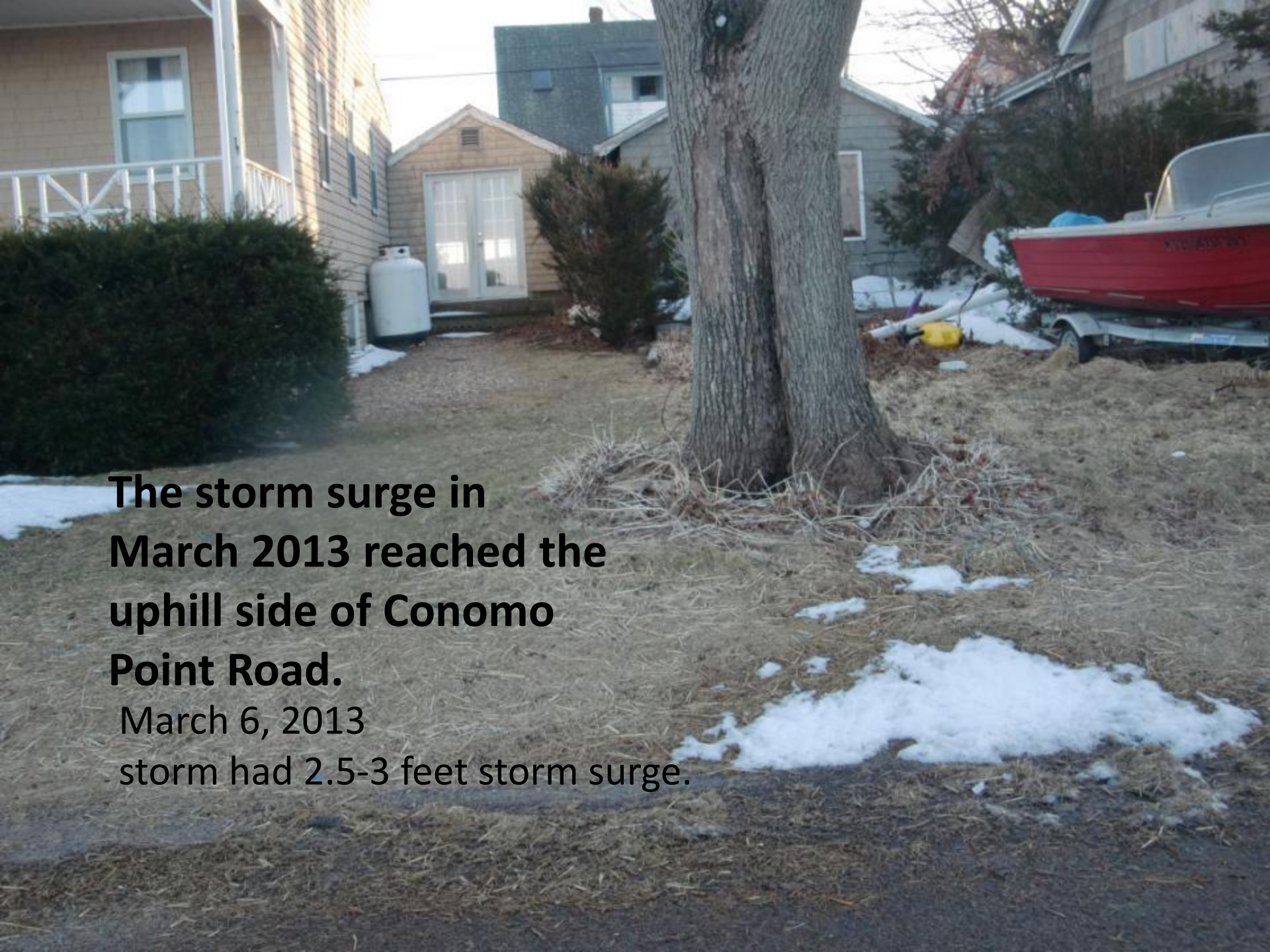
<http://www.newscientist.com/article/mg21128314.700-groundwater-greed-driving-sea-level-rises.html>



Gulf of Maine Institute
participants discuss
areas vulnerable to sea
level rise.

Wall by Clammer's Beach washed out December 2012






**The storm surge in
March 2013 reached the
uphill side of Conomo
Point Road.
March 6, 2013
storm had 2.5-3 feet storm surge.**





Conomo Point Essex



1 meter rise
(3 feet)

CONOMO POINT –RESIDENCES/BUILDINGS

At least 47 residences CPT beyond Clammer's Beach

Conomo Point Road: 19

Middle Road: 20

Conomo Lane: 8

Parking for Clammer's

2 Boat Launches

Community Building

Recreation- Future

Park

Access to

boating/moorings



Storm surges during Superstorm Sandy
reached over 14 feet (=4 meters) in
New York October 2012

<http://world.time.com/timelapse/>



2 km
1 mi



2012

Slow

1984

Google

2012



Protecting

Surging Seas

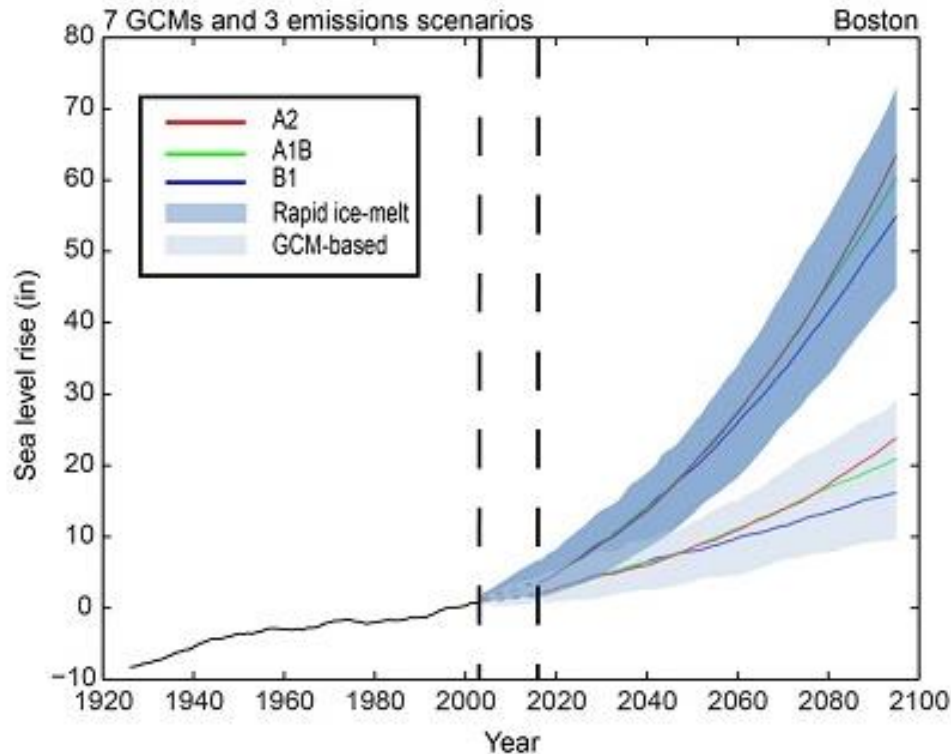
[Home](#) [Maps](#) [Basics](#) [Research](#) [Responses](#)



<http://sealevel.climatecentral.org/surgingleas/place/states/MA#show=cities¢er=8/41.838/-69.711>

Projections of sea-level for Boston as much as 6 feet by the end of the century

Sea-level rise projections for Boston



Recent data suggest that the rate of sea-level rise is increasing. Projections of sea-level rise for Boston range from 2 feet to as much as 6 feet by the end of the century, depending on how fast ice in Greenland and Antarctica melt.

Conomo Point 3 Feet SLRT

File Edit View Favorites Tools Help
Suggested Sites Web Slice Gallery Free Hotmail



Bank

Sea Level Rise and Coastal Flooding Impacts

Sea Level Rise

Confidence

Marsh

Vulnerability

Flood Frequency

Sea Level Rise ?

3 ft SLR

Legend

Water Depth

Low-lying Areas

Area Not Mapped

Visualization Location

View Levels

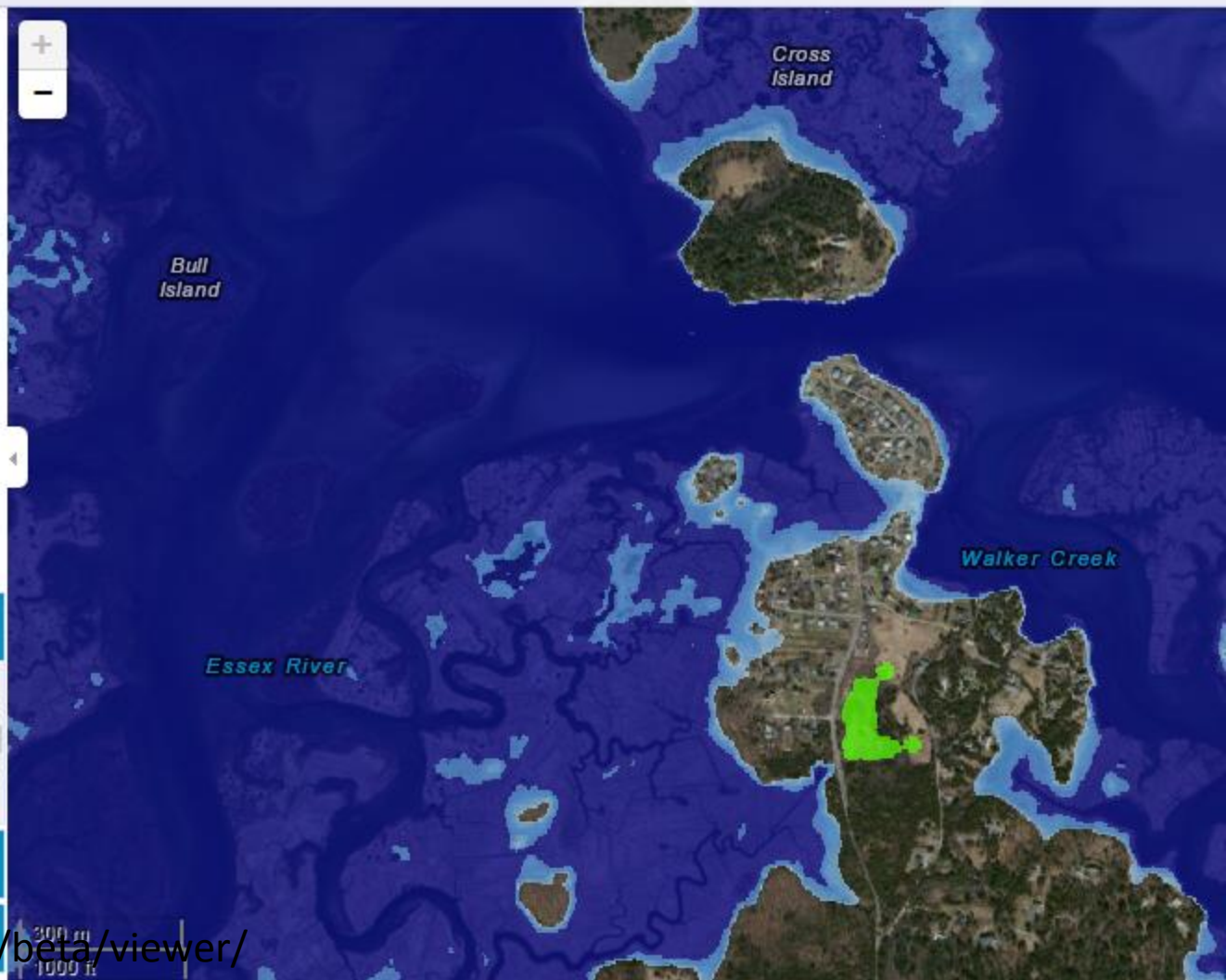
Overview

Use the slider bar above to see how various levels of sea level rise will impact this area.

Levels represent inundation at high tide. Areas

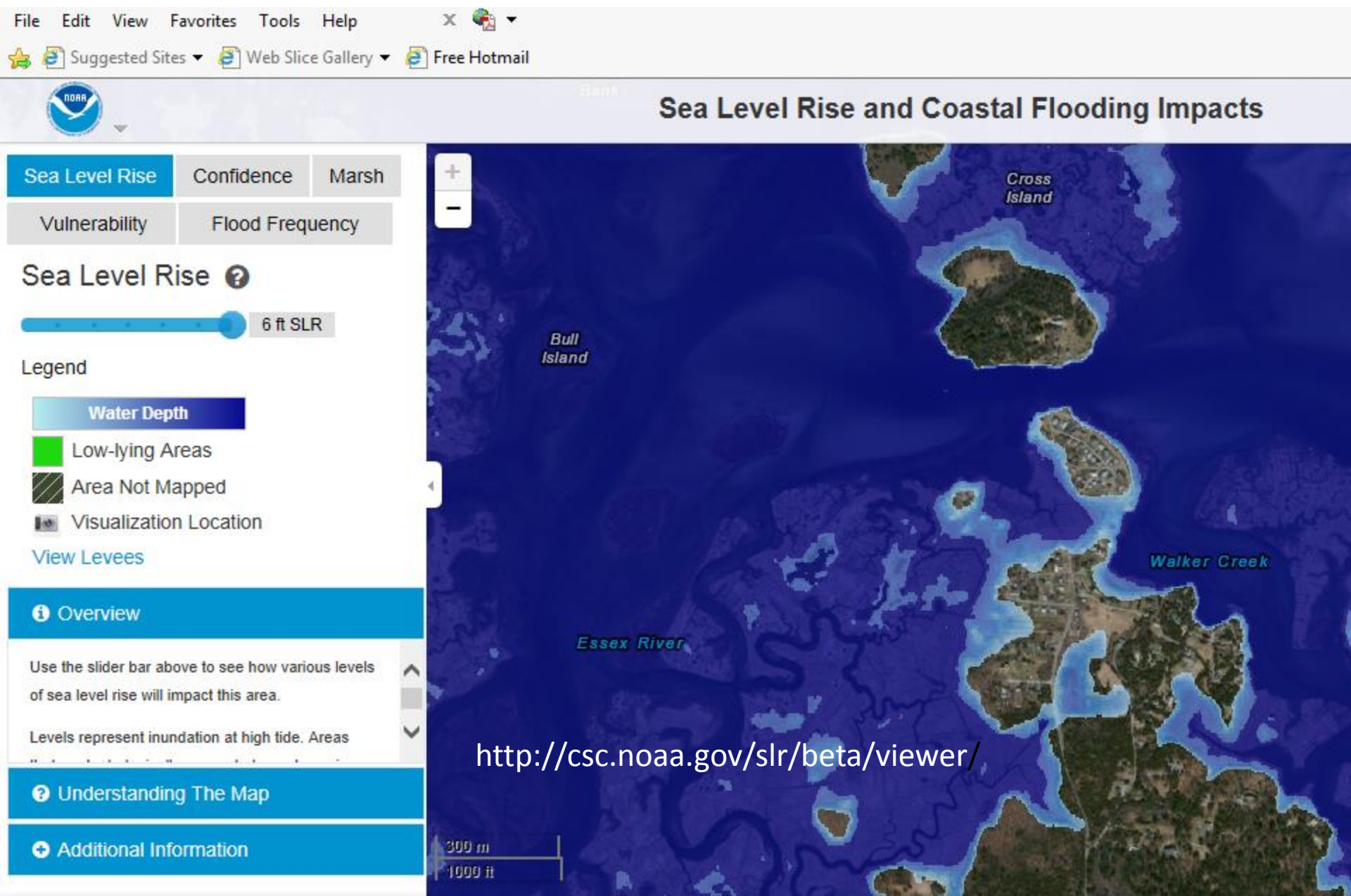
Understanding The Map

Additional Information



<http://csc.noaa.gov/slr/beta/viewer/>

Conomo Point Six Feet SLR



Sea Level Rise and Coastal Flooding Impacts

Sea Level Rise

Confidence

Marsh

Vulnerability

Flood Frequency

Sea Level Rise ?

Current MHHW

Legend

Water Depth

Low-lying Areas

Sea Level Rise

Confidence

Marsh

Vulnerability

Flood Frequency

Sea Level Rise ?

6 ft SLR

Legend

Water Depth

Low-lying Areas

Area Not Mapped

Visualization Location

View Levels

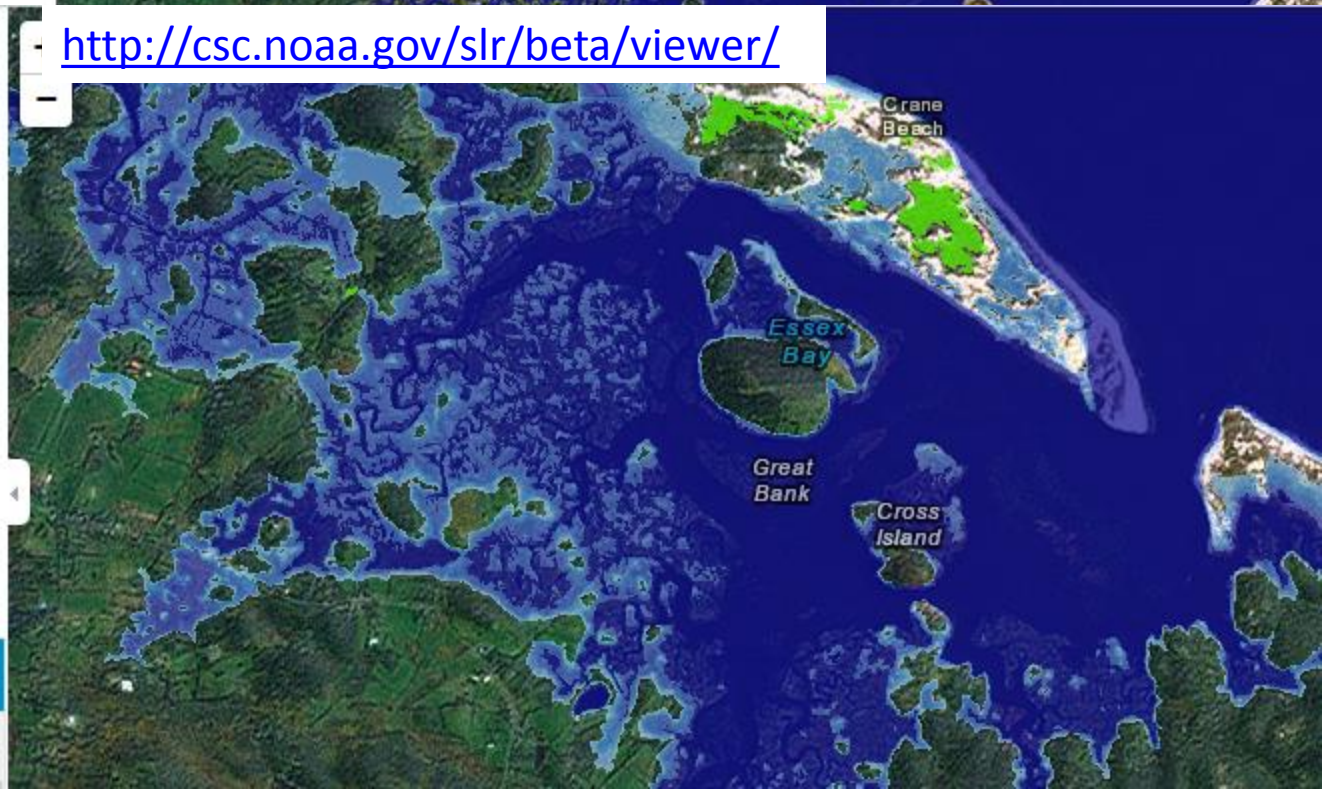
Overview

Use the slider bar above to see how various levels

of sea level rise will impact this area



<http://csc.noaa.gov/slr/beta/viewer/>





Marlaina Fulmer
Manchester Essex High School
Green Scholar 2013
Sea Level Rise Project

ESSEX SEA LEVEL RISE

These are the vulnerable places in Essex if the water rises 2 meters+

High Risk (0-2m)	<ul style="list-style-type: none">• Essex- Sewage goes to Gloucester; sewage treatment plant is in a vulnerable area.• 15+ businesses on Main St.• At least 47 residences beyond Clammer's Beach will be cut off when road floods• Main Street transportation• Marsh: Habitat and protection for the town- sediments are important.
Medium risk (3-5)	<ul style="list-style-type: none">• Community uses of Conomo Point: Parking for Clammers and other residents, 2 boat launches, future park• Eastern Ave (point near Farnham's)
Low Risk (6+)	<ul style="list-style-type: none">• 1+ residences on Main St.• Ball fields behind town hall (MERHS baseball team) and playground• Potential hazards to water quality with flooding downtown• Cultural and historical importance of Main St. and businesses there→ Fried clams and boat building

Thanks to New England Biolabs,
the Gulf of Maine Institute & the
Manchester Essex Green Team



