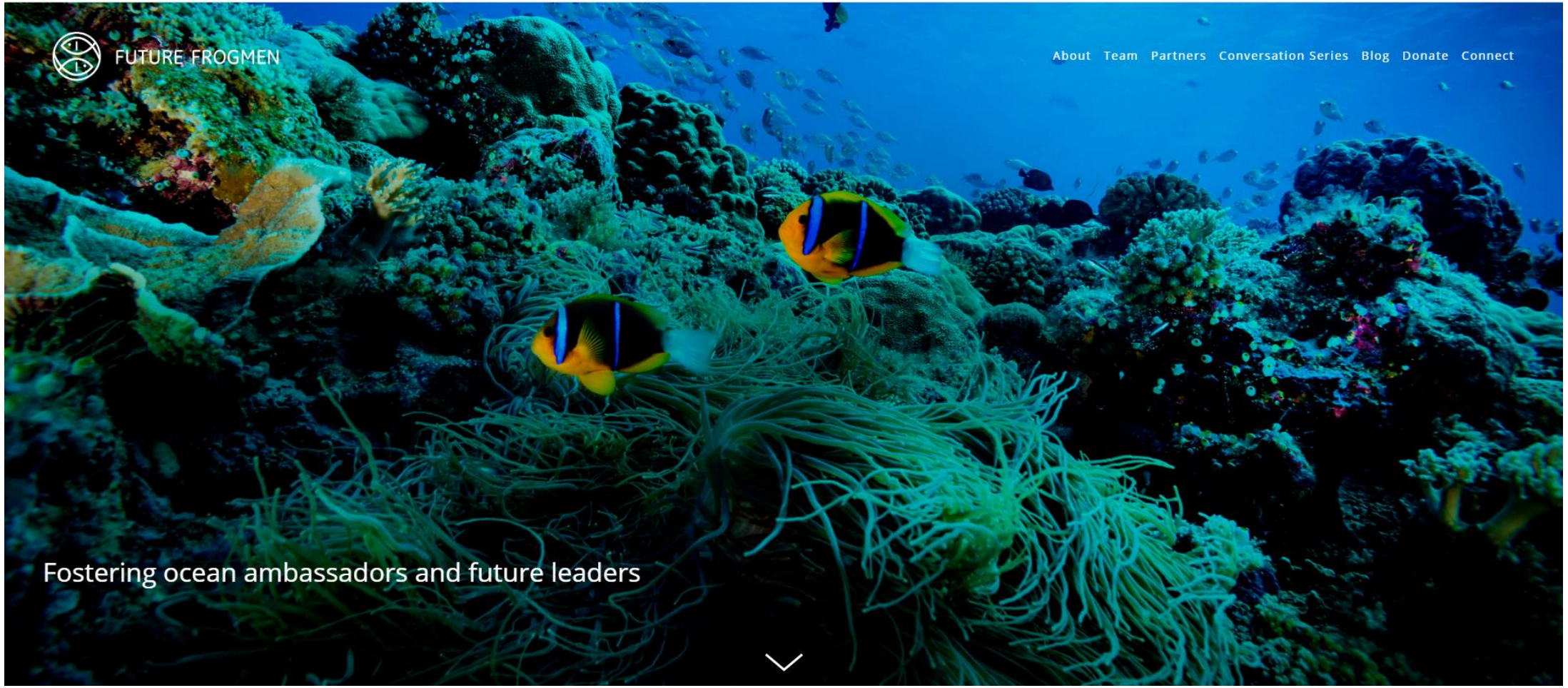
RISING WATERS
WORLD OCEANS DAY 2020
Climate Creatives
FUTURE FROGMEN
www.ClimateCreatives.com
www.futurefrogmen.org

CONABIO
RISING WATERS
Susan Israel, President & Founder
Susan@ClimateCreatives.com
Creative Engagement Exercises
Engaging people to think about sustainability…
…using art and design.
Climate Creatives
www.ClimateCreatives.com
Luis Gerardo Hernández Moreno/CONABIO

Thanks to Future Frogmen!!

https://www.futurefrogmen.org/



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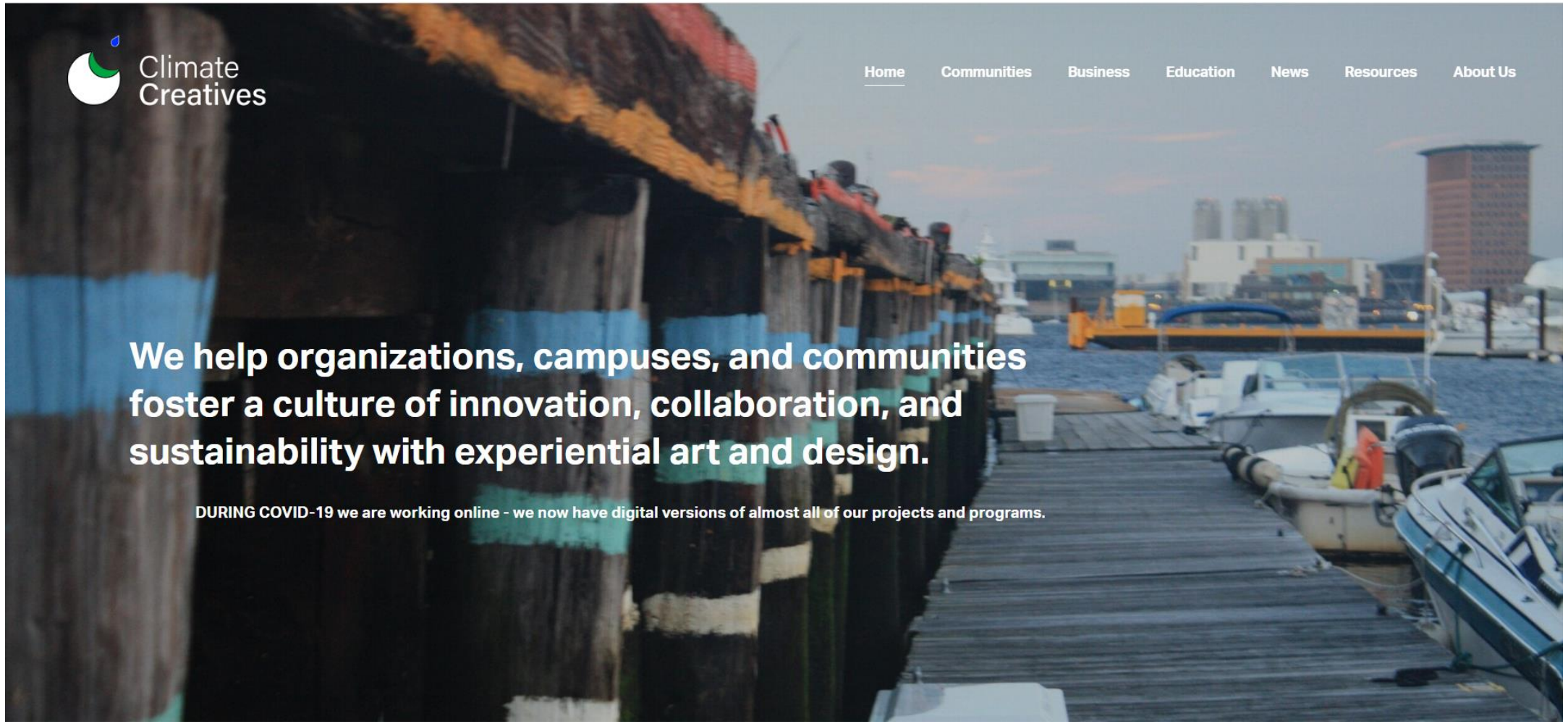
https://climatecreatives.com/



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Agenda

- Introduction – Future Frogmen and Climate Creatives
- Rising Waters overview- website - https://www.risingwaters.org/
- How to do an installation
- Selfies/digital installations
- Installation methods
- Do1Thing Pledge – action-based
- Documentation
- Sharing – upload to RisingWaters.org, social media, networks
- Q & A
- Closing remarks

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Rising Waters/Rising Tides

Boston HarborArts, 2013

First installation

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Rising Waters

- Broward County Schools MODS Jan 2020
- 30 installations in April 2020
- Hong Kong Chapter and installations 2019
- San Blas Islands, Panama installation 2017
- Photo Exhibition at United Nations and EarthdayTX (120k, Texas)
- Installed 120+ locations
- Educational materials
- Do1Thing Pledge – action-based
- Kendall, UMASS, Courthouse, World Trade Center
- Maverick Square MBTA & Health Center
- Ferry Dock, MacMillan Pier, Provincetown
- Students in public schools helped produce artwork
- Sustainable Brands, San Diego

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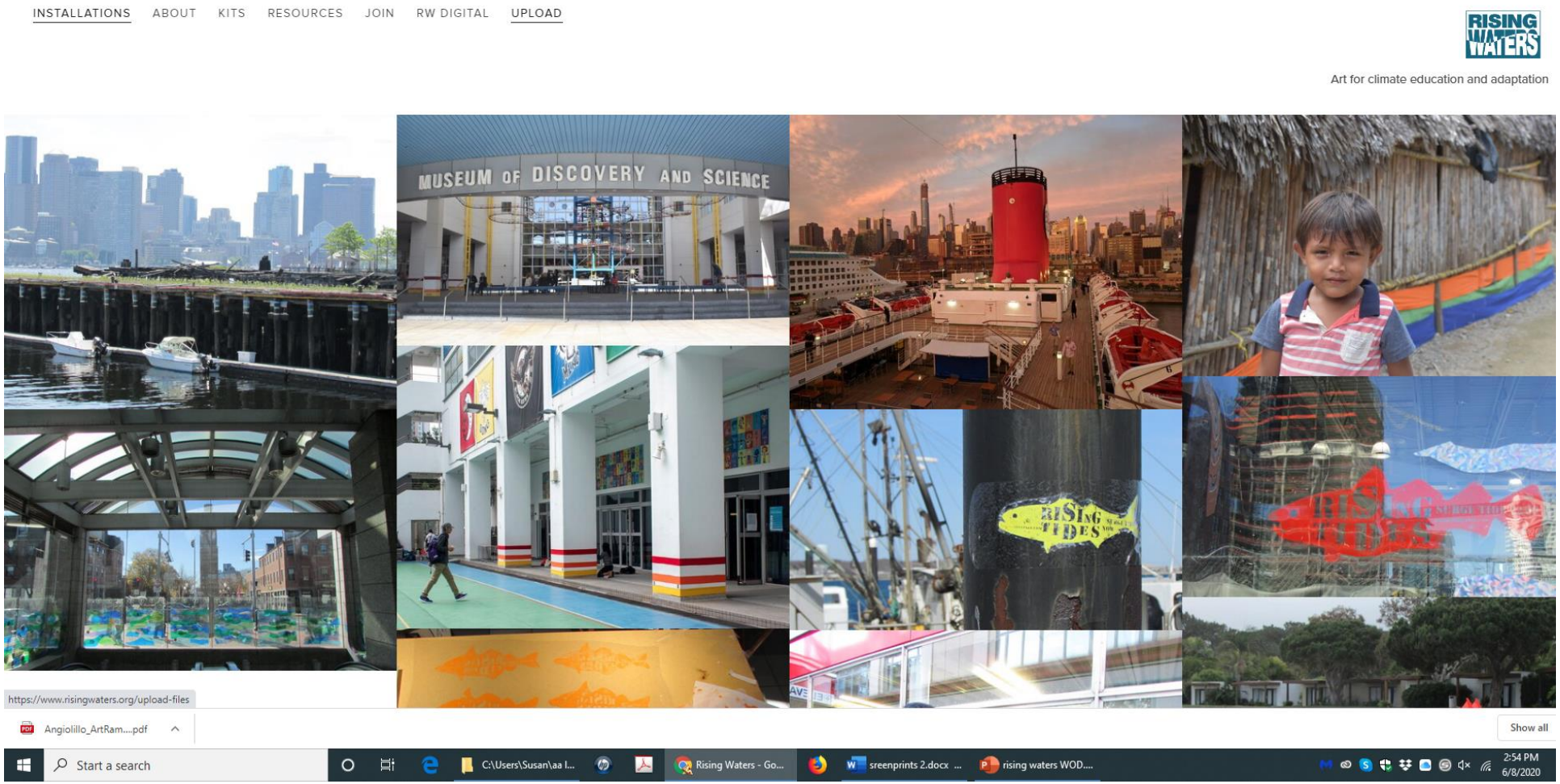
Rising Waters Installations

www.RisingWaters.org



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Rising Waters Process

- Identify your site
- Find the data
- Render the water on the building/landscape/monument
- Show the dates
- Signage- What's your message? **Credit others**
- Action items: Create an action campaign
- #Do1Thing
- Education- https://climatecreatives.com/resources
- SHARE!! Social media, blogs, write articles
- Talk about Climate Change, Oceans and human impacts
- "*Your Choices Matter*"
- *VOTE*

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Calculating Sea Level Rise & Flood Levels
Find the Data - Overview

Find the exact elevation of your site.
Find flooding from all sources. Add them up.
SUBTRACT your site elevation from the water flood elevation (If you have 10’ of flooding above Mean High High Waters, but your site is 5’ above MHHW, you have 5’ of flooding)

Adding them all up: use whichever ones apply
For coastal areas
Sea level rise + storm surge + king tide + rainfall = **total flood amount**

For riverine flooding
river flooding + rainfall = total flood amount

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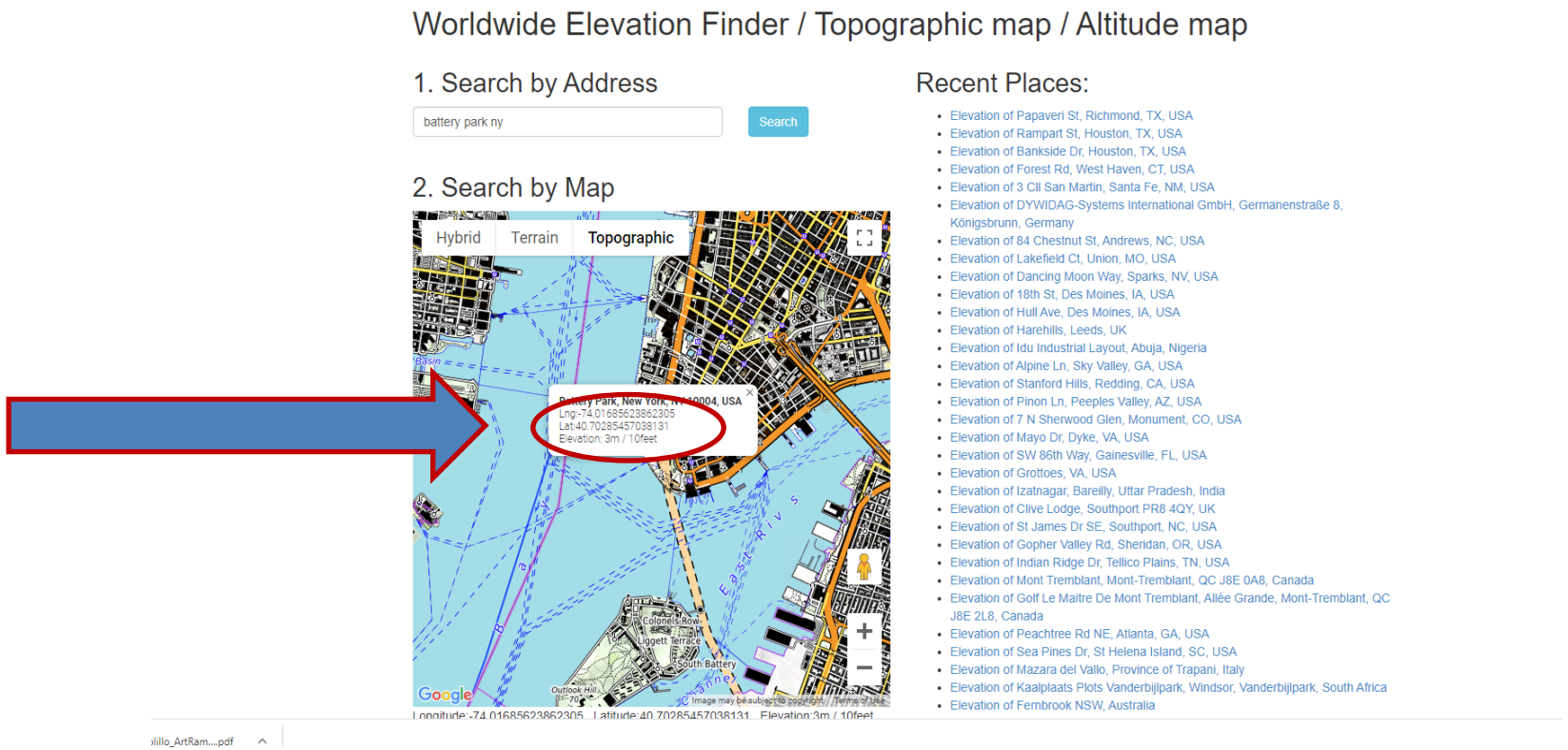
Calculating Sea Level Rise & Flood Levels
Find the Data – Elevation of your site

Pick your site on land – Find its elevation

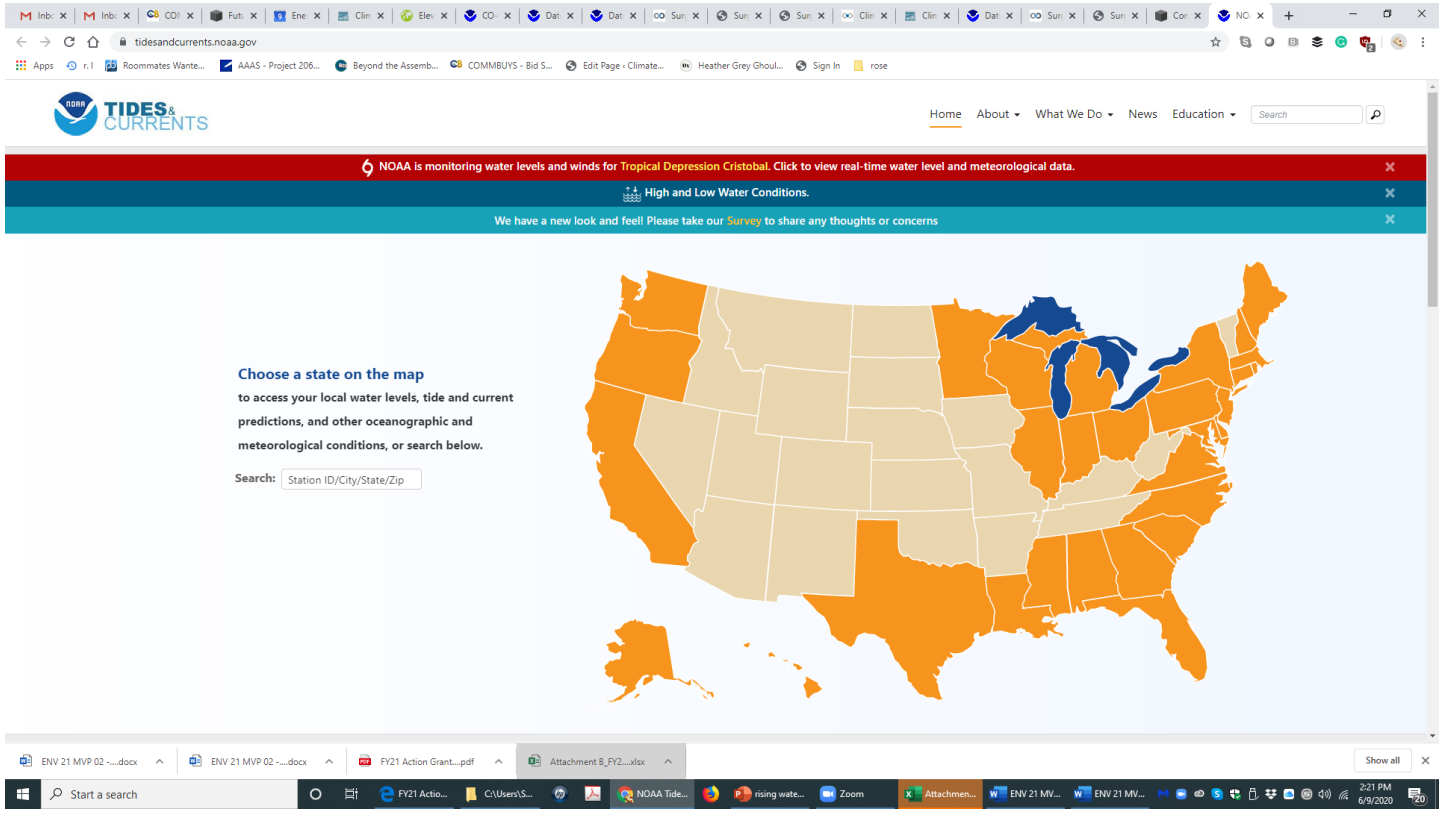
Example: Battery Park Elevation = 10’ above MSL (uses *Mean Sea Level* as the datum) https://elevation.maplogs.com/



Calculating Sea Level Rise & Flood Levels
Find the Data – Water datums at your site

Find datums: MSL and Mean Higher High Water

https://tidesandcurrents.noaa.gov/



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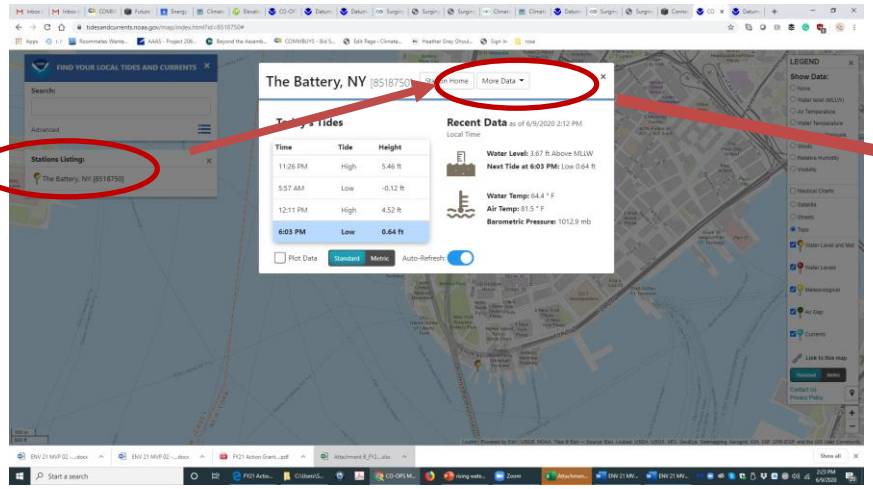
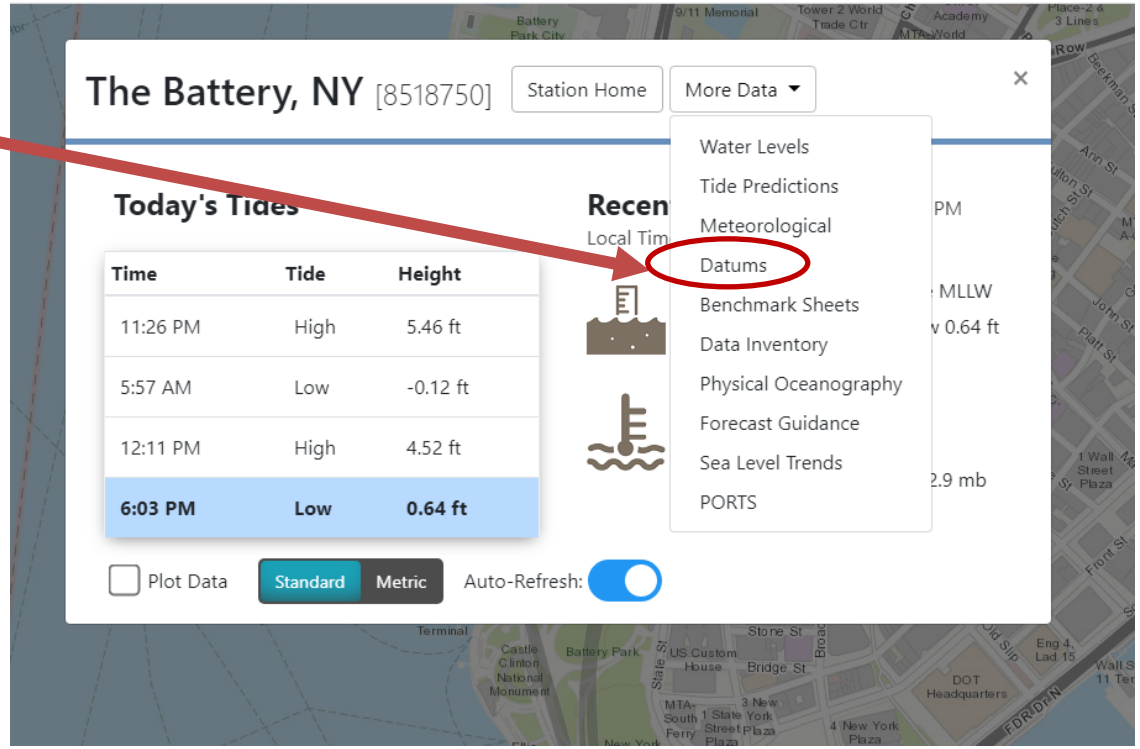
Calculating Sea Level Rise & Flood Levels
Find the Data - Water datums at your site, cont.

Find datums at your site: MSL and Mean Higher High Water

Type in your location, e.g; Battery, NYC, go to “More Data” box, select “Datums”
https://tidesandcurrents.noaa.gov/datums.html?id=8518750





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Calculating Sea Level Rise & Flood Levels
Find the Data – MHHW and MSL at your site

Mean Higher High Water = 5.05’ (datum used by Surging Seas)

Mean Sea Level = 2.57’ (datum for land elevation)

Site Elevation =
7.5’ above MSL
5’ above MHHW

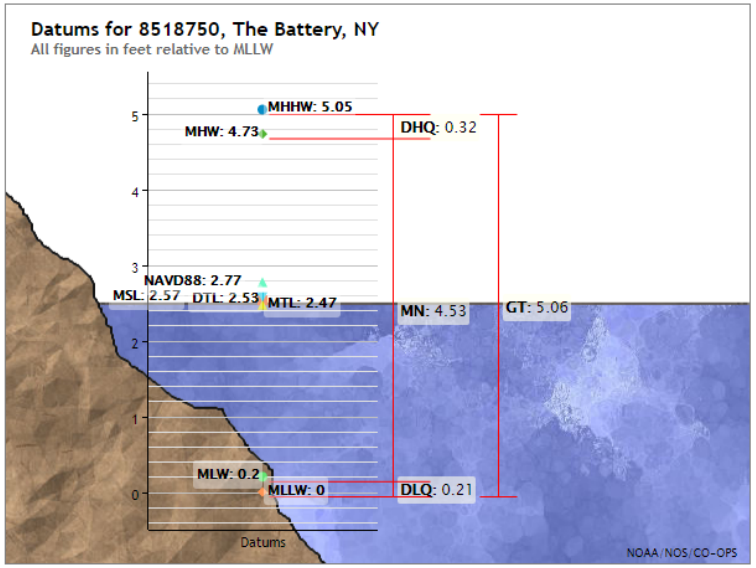
Datums for 8518750, The Battery NY

NOTICE: All data values are relative to the MLLW.

Elevations on Mean Lower Low Water

Station: 8518750, The Battery, NY
Status: Accepted (Nov 19 2012)
Units: Feet
Control Station:
T.M.: 0
Epoch: 1983-2001
Datum: MLLW

Datum	Value	Description
MHHW	5.05	Mean Higher-High Water
MHW	4.73	Mean High Water
MTL	2.47	Mean Tide Level
MSL	2.57	Mean Sea Level
DTL	2.53	Mean Diurnal Tide Level
MLW	0.20	Mean Low Water
MLLW	0.00	Mean Lower-Low Water
NAVD88	2.77	North American Vertical Datum of 1988
STND	-3.29	Station Datum
GT	5.06	Great Diurnal Range
MN	4.53	Mean Range of Tide
DHQ	0.32	Mean Diurnal High Water Inequality
DLQ	0.21	Mean Diurnal Low Water Inequality
HWI	0.84	Greenwich High Water Interval (in hours)
LWI	7.21	Greenwich Low Water Interval (in hours)
Max Tide	14.04	Highest Observed Tide
Max Tide Date & Time	10/30/2012 01:12	Highest Observed Tide Date & Time

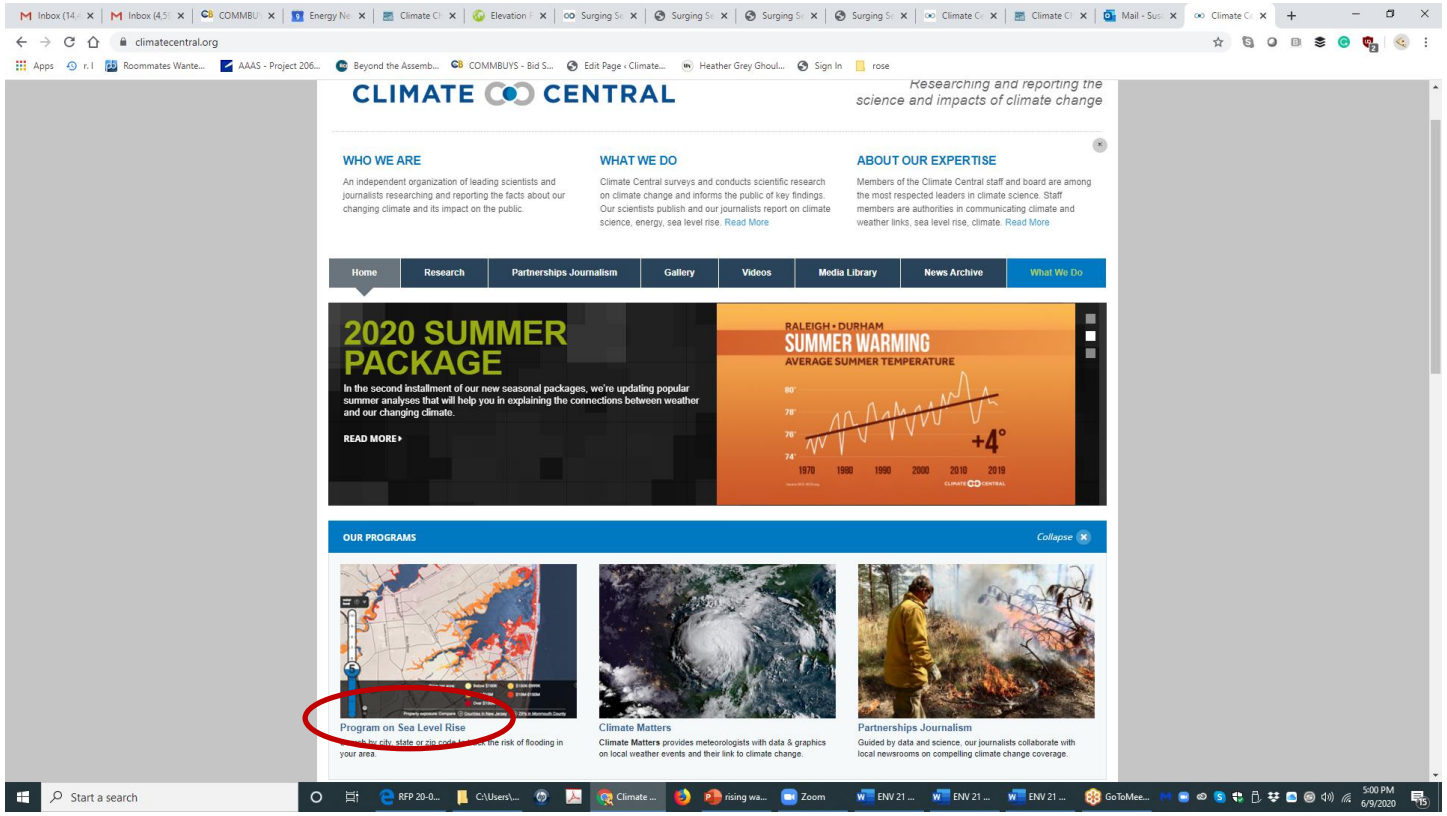


Showing datums for
8518750 The Battery, NY

Datum
MLLW

Calculating Sea Level Rise & Flood Levels
Find the Data – Find flood levels by decade

4: Find flood levels: Climate Central Surging Seas:
https://www.climatecentral.org/ select “Program on Sea Level Rise”



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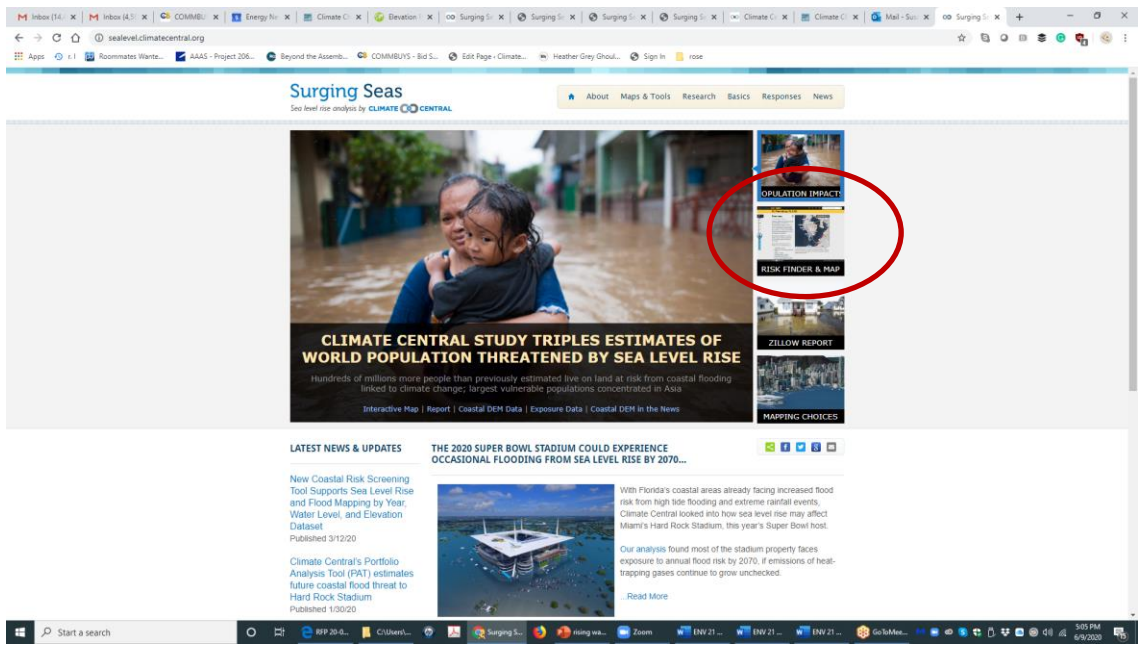
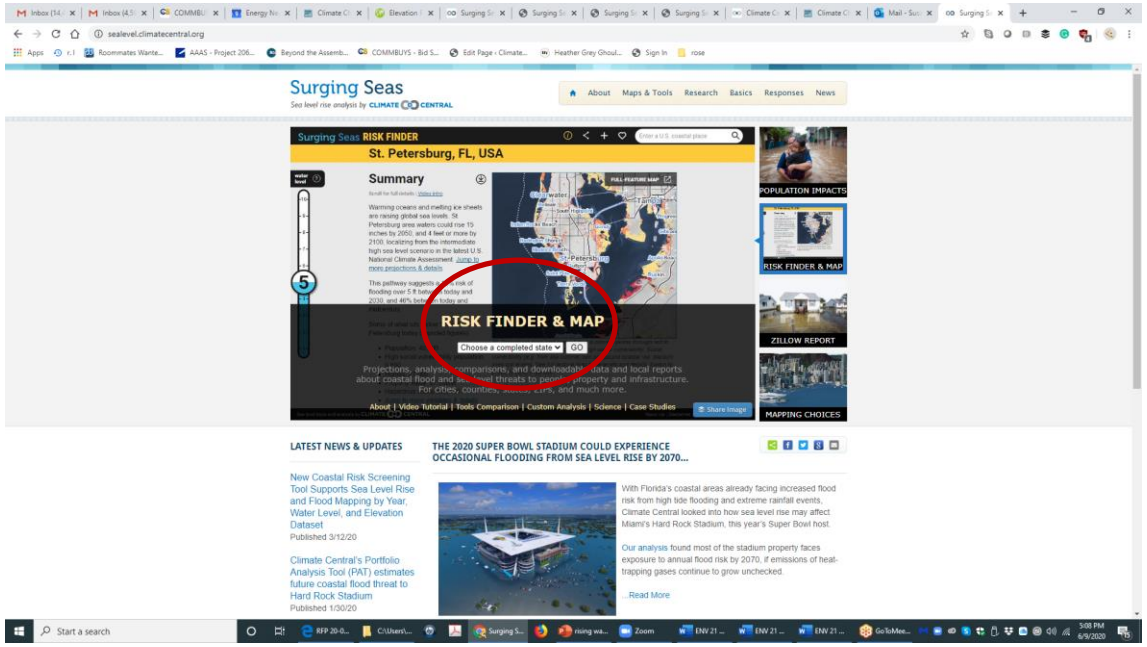
Calculating Sea Level Rise & Flood Levels
Find the Data – Find flood levels by decade

Find flood levels: Climate Central Surging Seas:
https://sealevel.climatecentral.org/ select “Risk Finder and Map”
Search for your location





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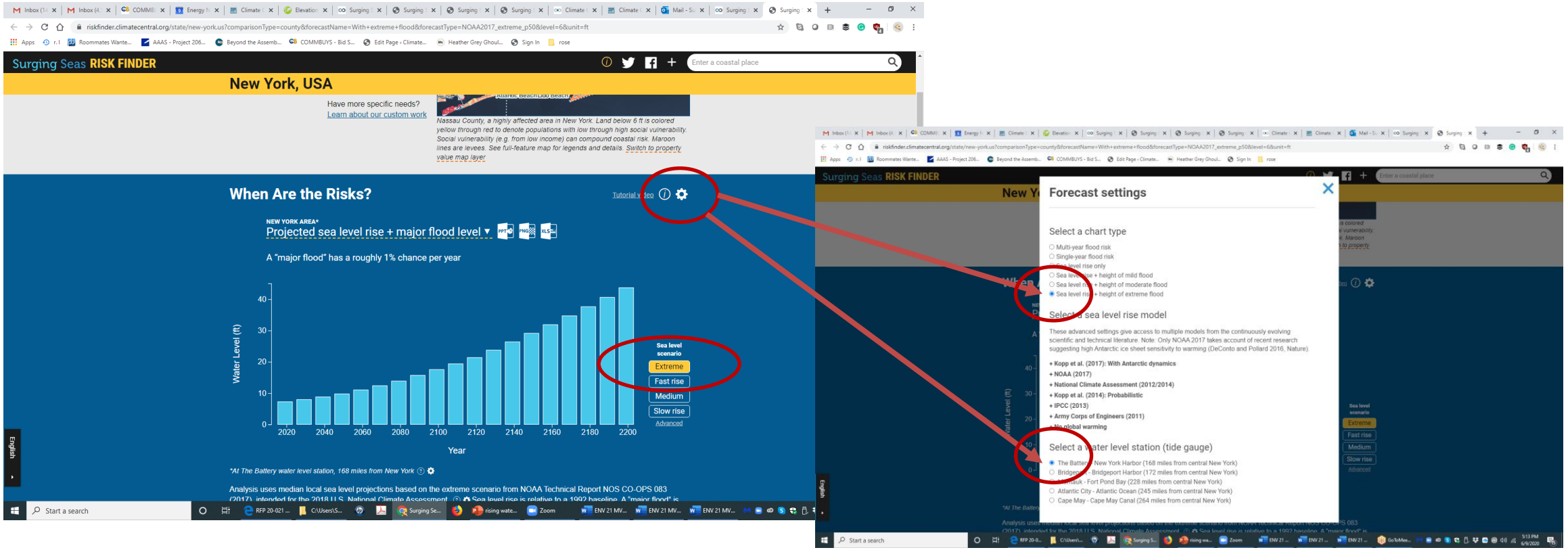
Calculating Sea Level Rise & Flood Levels

Find the Data – Find flood levels by decade

Find the bar graph (scroll down) -select your assumptions – I use “extreme” because that’s the path we are on https://riskfinder.climatecentral.org/state/new-york.us?comparisonType=county&forecastName=With+extreme+flood&forecastType=NOAA2017_extreme_p50&level=6&unit=ft



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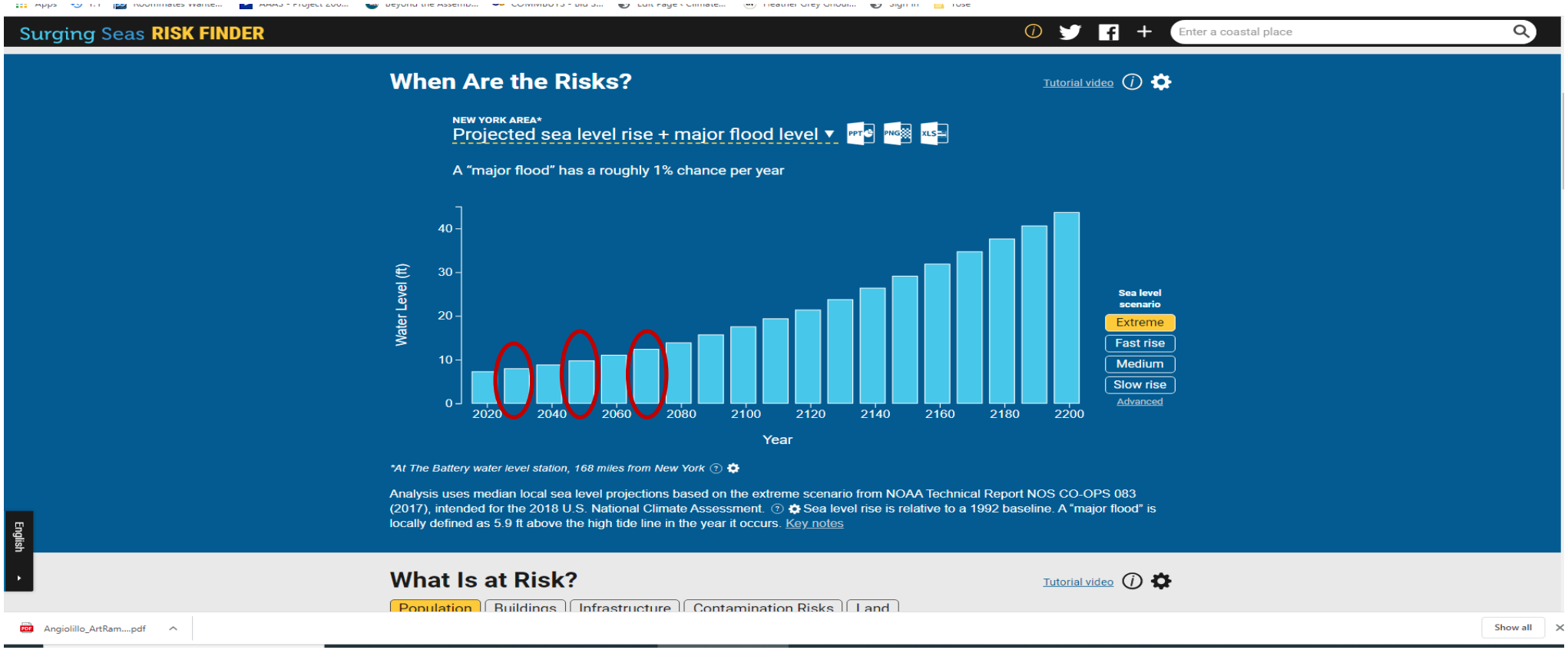
Calculating Sea Level Rise & Flood Levels

Find the Data – Find flood levels by decade

2030 = 7.9’
2050 = 9.7’
2070= 12.4’

“Water level” means feet or meters above the local high tide line (“Mean Higher High Water”)



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Calculating Sea Level Rise & Flood Levels
Find the Data – Find the elevation above ground

Levels by decade, above MHHW
I use 2030, 2050 and 2070. 2030 is close enough for people to relate to it, and 2070 is a typical furthest out date for municipal planning.

2030 = 7.9’
2050 = 9.7’
2070= 12.4’

Site is 5’ above MHHW
2030: 7.9’ – 5.05’ = +/- 3 - 0’ above grade”
2050: 9.7’ - 5.05’ = 4.65’ = 4’- 8” above grade
2070: 12.4’ - 5.05’ = 7.35’ = 7’- 4” above grade

Can I reach this height to install it? Yes- Yay!!

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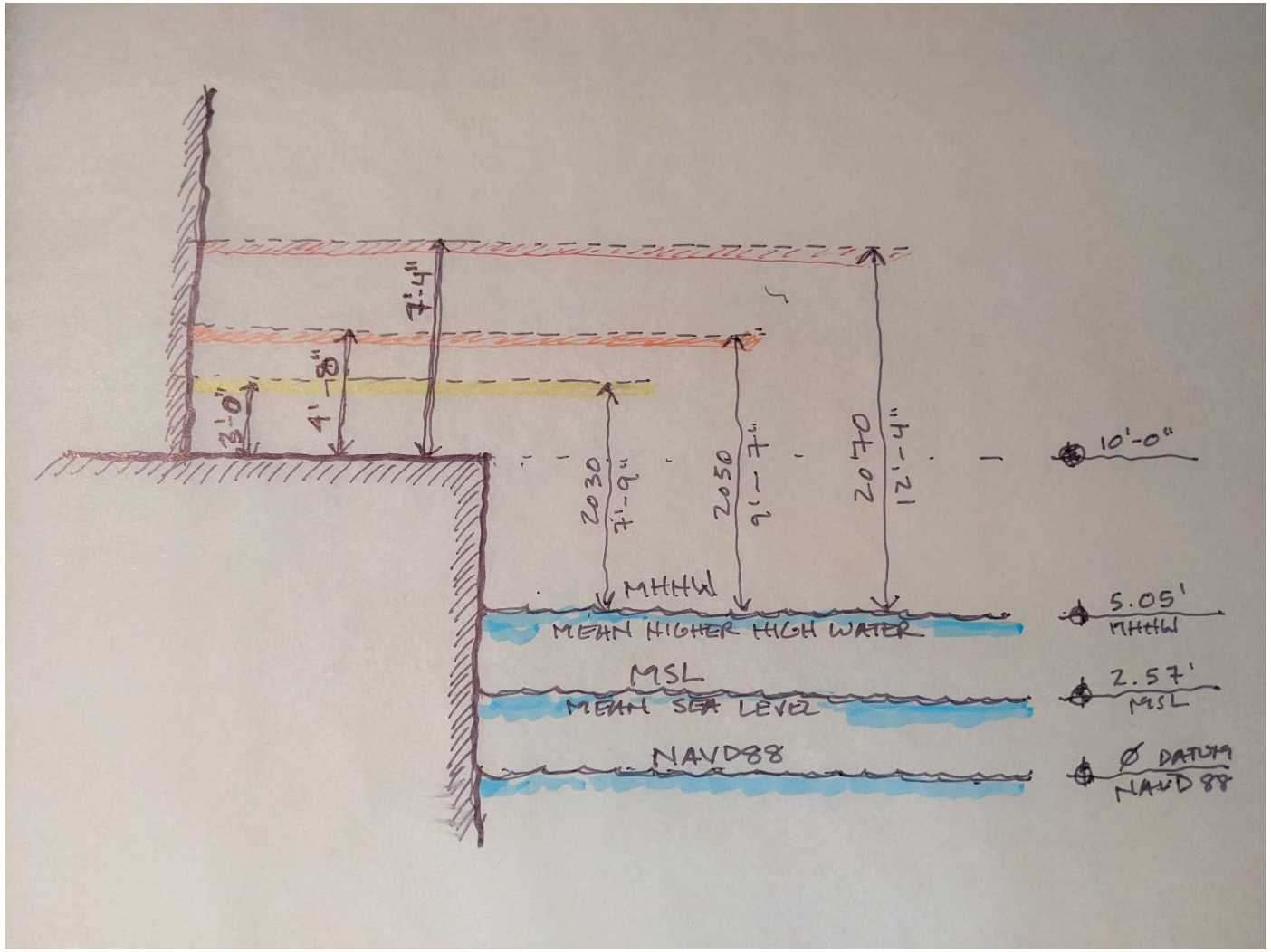
Calculating Sea Level Rise & Flood Levels

Diagramming the levels



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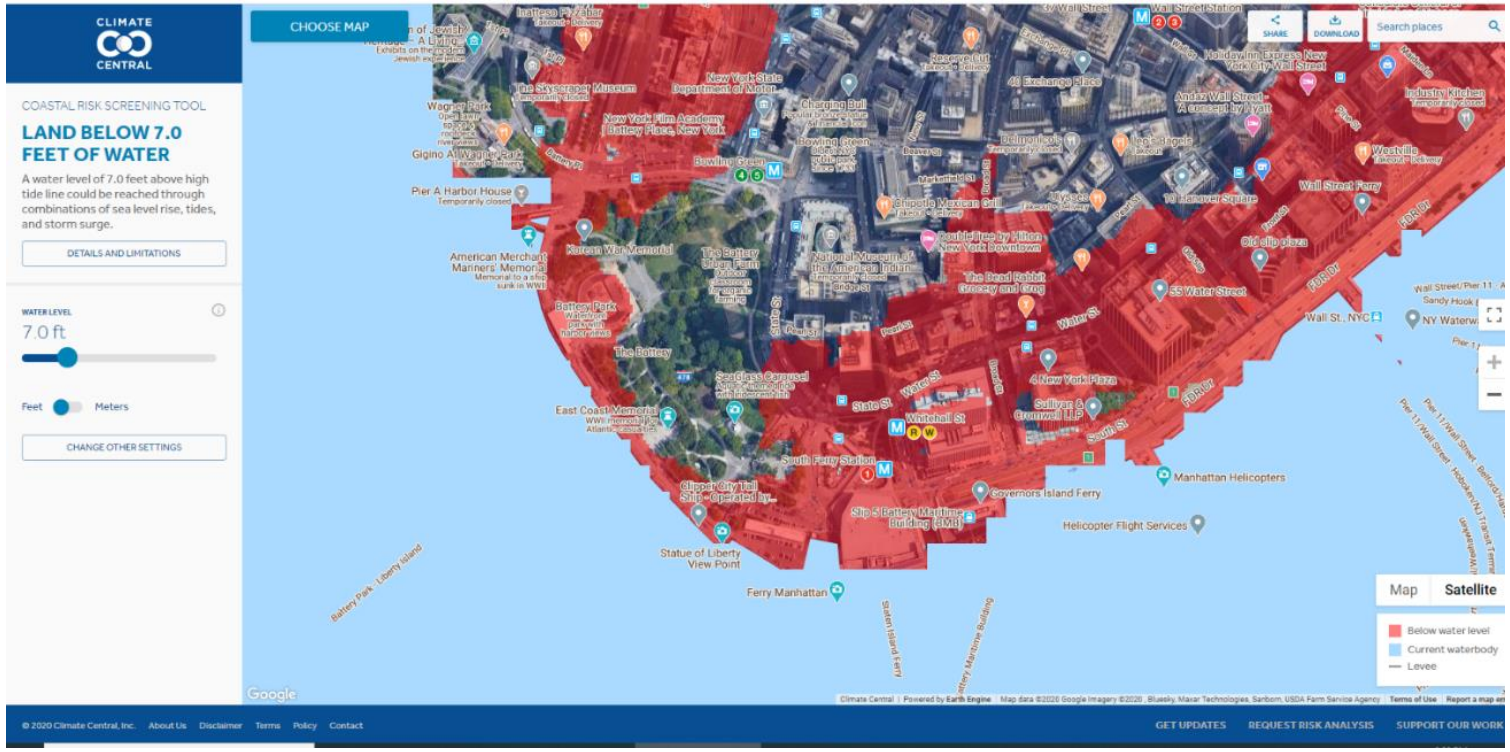
Calculating Sea Level Rise & Flood Levels
Confirm and/or select other sites with latest data

https://coastal.climatecentral.org/map/17/-74.013/40.7029/?theme=water_level&map_type=water_level_above_mhhw&contiguous=true&elevation_model=best_available&water_level=7.0&water_unit=ft

"Areas lower than the selected water level and with an unobstructed path to the ocean are shaded red. By default, areas below the water level but that appear to be protected by ridges (and in the U.S., levees) are not shaded."



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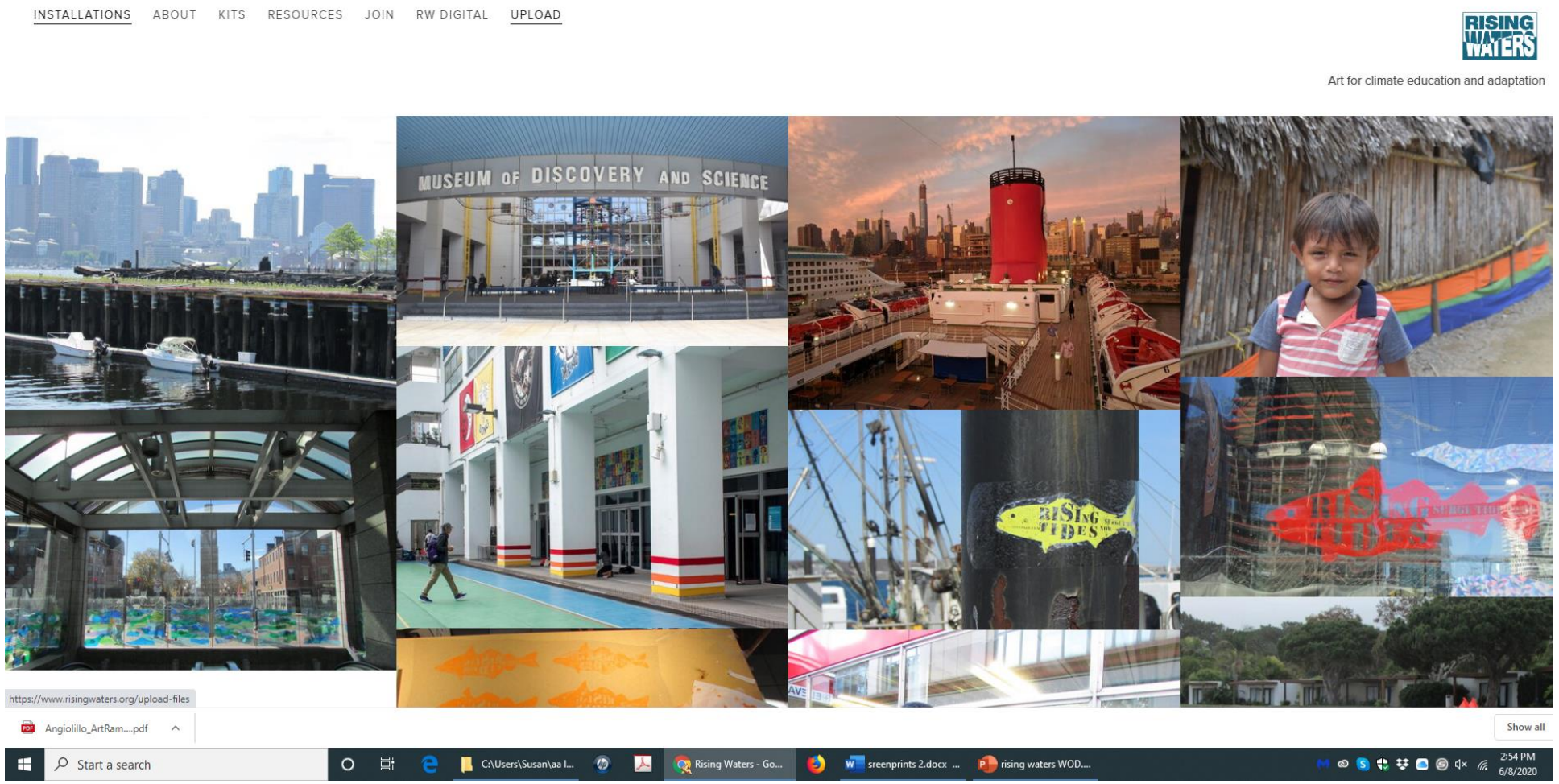
Render Installation & Upload

https://www.risingwaters.org/upload-files



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On-Site Installations
Case Study: Broward County

- Engagement
- Data Communication
- Culture Change
- Climate Adaptations: Mitigation, Resiliency, Preparedness

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Rising Waters: Broward County 2020 Installation, Training Workshops

Museum of Discovery & Science (MODS) Jan 2020
training workshops
30 school installations in April 2020

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Optional 2020 “NOW” Baseline Blue Tape

for installations that are showing *relative sea level rise*, not the *actual SLR at that site*

- **“NOW” Option:** Place a strip of 4” wide blue painters masking tape on the ground, and stencil NOW using black sharpies. The tape may not withstand rain as well as the rest of the materials. See photos of Peace Boat at right.

- This version shows tape on the floor as “1992” – the original NAVD88 datum. You can use either version, but use the correct reference datum for your location. “1992” is just an outline to indicate that it is past.

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Installing on-site Using Fabric

Confirm Heights using local data and reviewing with Rising Waters

Choose site(s)

Measure length of stripes or rows of fish flags -**Fabric:** Measure installation area – column circumference or wall surface to order correct amount of fabric, allow for at least 10% extra. Plan location(s) of dates.

Order materials

Plan signage

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Order Materials

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Stencil Dates on Fabric

Paint at least 1 day ahead so paint can dry.

- Place a protective sheet of parchment paper under the fabric to protect the surface below and keep it from sticking
- Tape your stencils to each other, covering the seams between them, and add strips of cardboard top and bottom to create a template with the entire date.
- Line up the stencil, tape it lightly to the fabric to hold it in place
- Using a sponge or stencil brush, dab acrylic paint onto the number until none of the fabric color shows through.
- Let dry overnight and remove gently from the parchment paper.

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Stencil Dates on Fabric

2030 on yellow, 2050 on orange, 2070 on red

These dates are printed approximately 2 feet apart, but you can decide how many dates you want to show on each strip. Just one in a visible place is ok. More dates mean more people can help.

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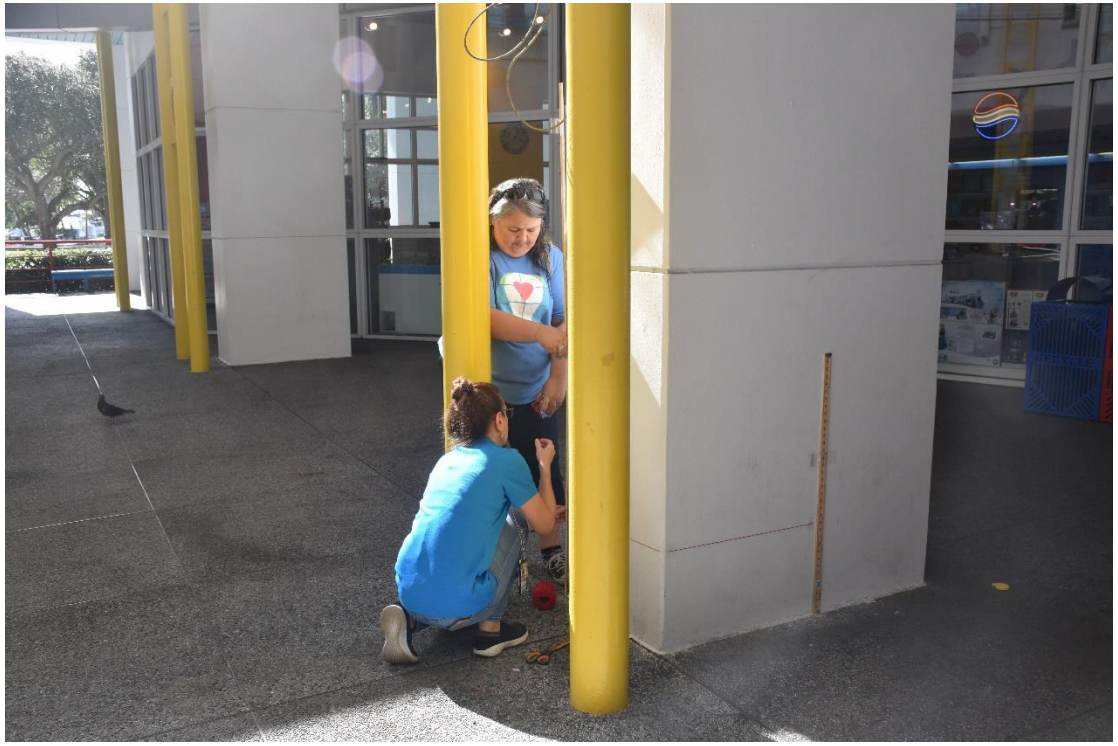
Measure and Mark Heights

- Tape measuring sticks to your columns or wall
- Find the height for the top of each stripe
- Tape a string to mark the correct heights for the tops of the lines
- Stretch it taught to the next mark
- Continue until the lines mark all of the stripe tops



0029

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Lay out the stripes, Tack into place

Plan where the stripes will begin, staggering the numbers vertically

Lightly tape stripes into place without taping over the string

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Anchor end of fabric

Tape the ends of the fabric to the wall using gaffer tape

Leaving the end taped into place, carefully remove the fabric (video)

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Place gaffer tape and double-stick tape

Place lines of gaffer tape just under the string all along the stripes (video).

Place double-stick tape onto the gaffer tape.

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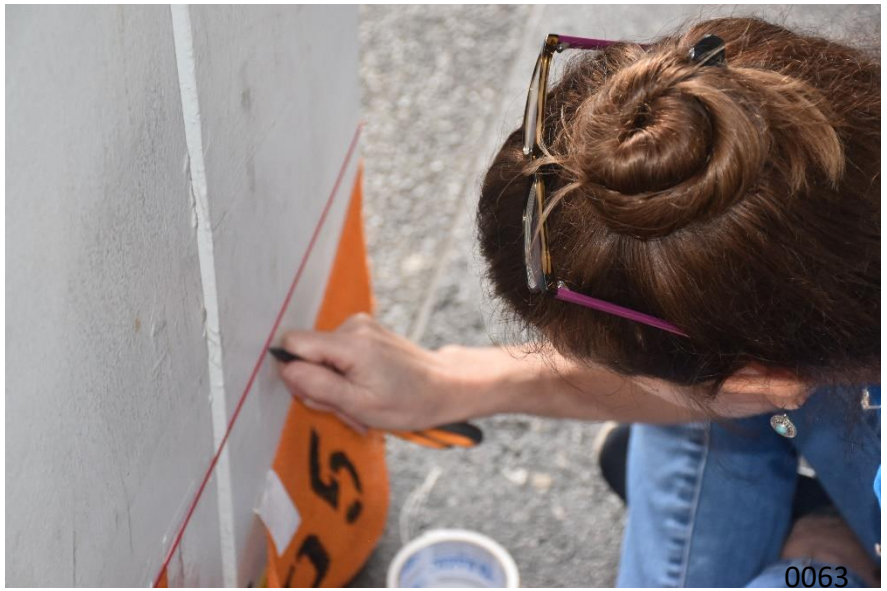
Lay out the stripes, Tack into place

Peel one side of the double-stick tape, place it onto the gaffer tape

Burnish the tape so it stays well – wall surfaces vary



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Tape end of stripes

Place 2 strips of the gaffer tape and double stick along the starting edge of the stripes.

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Keep fabric taught, burnish the tape

Keeping the fabric taught,
tape the stripes into place.

0100

Rub hard where there is tape.

0073

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Finish the end with tapes

Overlap the final end, cut a clean edge, and tape it with 2 layers of the duck-tape that matches that color

0122

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Signage

These red, orange, and yellow lines show predicted flood levels here
from sea level rise, storm surge, and rain due to climate change.
We can reduce dangerous changes to our climate and oceans
by reducing greenhouse gasses and waste.

Your choices matter!

Our data comes from NOAA and the Southeast Florida Regional Climate
Compact's Unified Sea Level Rise projection (2019)

This installation was made in collaboration with the School Board of Broward County
The Broward County Environmental Planning & Community Resilience Division
Susan Israel of Climate Creatives & www.RisingWaters.org

BROWARD COUNTY FLORIDA

RISING WATERS

Established 1915 BROWARD County Public Schools

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Document, Share & Enjoy!

Document your process in photographs and video & share!

Send to RisingWaters.org

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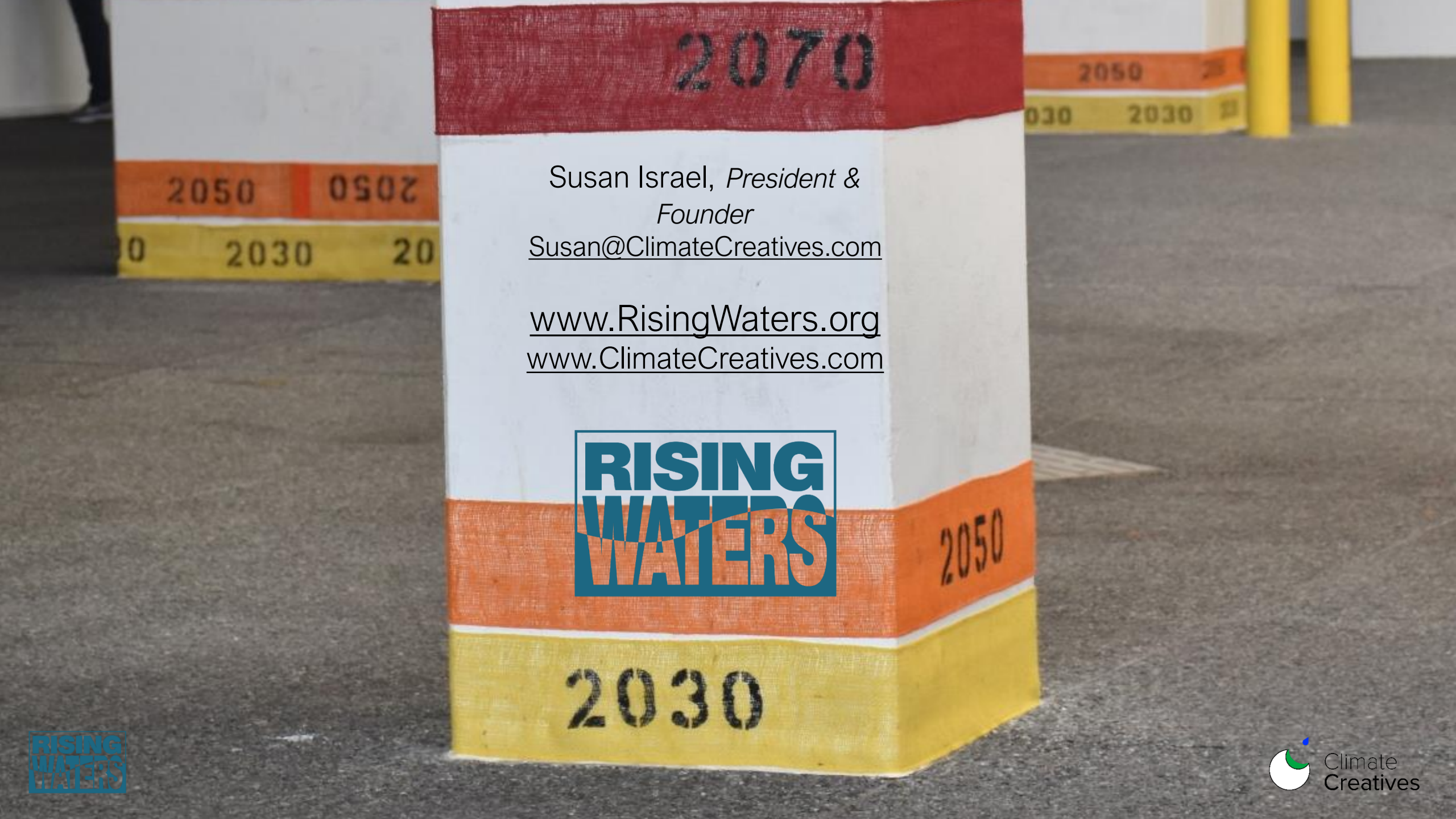

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