

SEA-LEVEL IS RISING AND WE'RE IN THE WAY.



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Every coastal city in the USA is being impacted by sea-level rise and this will only get worse.



The Pacific coast faces different hazards as sea level rises than the Atlantic and Gulf coasts.



Until at least mid-century, it will be short-term extreme events that will present the greatest risk.



Solimar Beach
Ventura County

CAPITOLA CENTRAL CALIFORNIA COAST



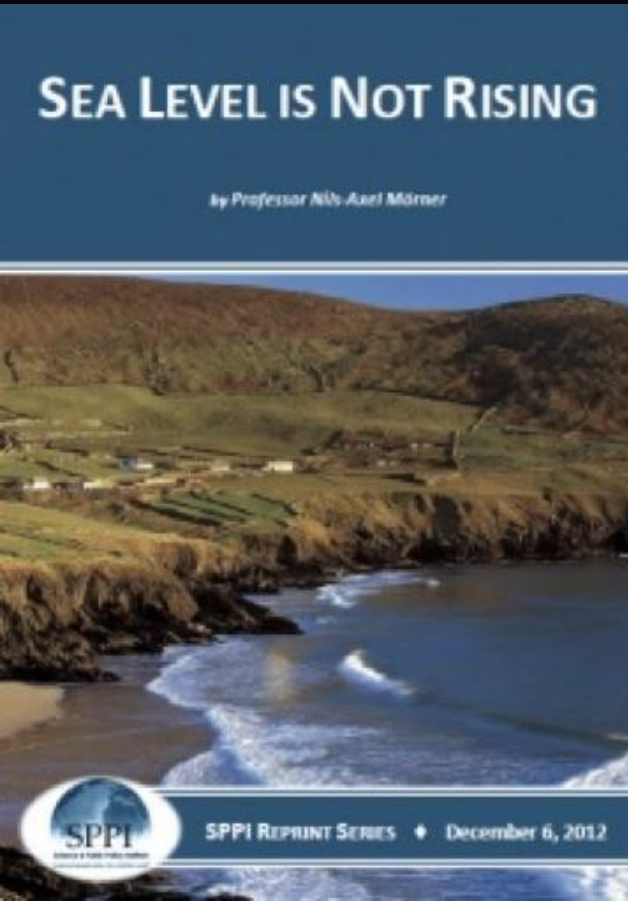
With climate change and sea-level rise, we have three options:

- Mitigation
- Adaptation
- Suffering

We are already doing some of each, the more mitigation we do, the less adaptation and suffering will be required.

ADAPTING OR RESPONDING TO SEA-LEVEL RISE AND EXTREME EVENTS

1. Ignore or deny sea-level rise



ADAPTING OR RESPONDING TO SEA-LEVEL RISE AND EXTREME EVENTS

2. Beach nourishment – sand replenishment



Beach nourishment – Very expensive and very short-lived

- Beaches from New Jersey to Florida have received about 1.4 billion cubic yards of sand since the 1930s at an inflation adjusted cost of \$11,500,000,000.
- Florida alone has benefitted from over 500 individual nourishment projects totaling 330,000,000 yds³ (33 million dump truck loads).
- Fifteen different Florida beaches have each been nourished over 15 times.
- Palm Beach has added sand 51 different times.

The U.S. Army Corps of Engineers needs to get out of the business of nourishing and renourishing beaches.

ADAPTING OR RESPONDING TO SEA-LEVEL RISE AND EXTREME EVENTS

3. Build barriers: seawalls or revetments

Very expensive and have major shoreline impacts



The Army Corps of Engineers has proposed a number of very large and costly walls to protect portions of Atlantic and Gulf Coast cities

- Charleston - \$2 billion
 - Miami-Dade - \$4.6 billion
 - Galveston – Ike Dike - \$26 billion
 - New York – New Jersey - \$119 billion
-
- Who and what will be protected by these walls?
 - How many years of protection might these barriers provide?
 - Who selects which cities or areas to protect?
 - Do people really want to live behind walls?
 - Who will pay for these barriers?
 - Would the walls encourage additional development?
 - What other long-term options should be considered?
 - What other federal or state agencies should be involved?

ADAPTING OR RESPONDING TO SEA-LEVEL RISE AND EXTREME EVENTS

In the long term there is absolutely nothing we can do to hold back the Atlantic or Pacific Ocean. There is only one long-term solution:

Adaptation – Managed retreat, realignment, community-led relocation.

Cities have never had to adjust to sea-level rise.
150 million people globally live within 3 feet of high tide.
13 million people in USA live within 6 feet of high tide.



San Francisco



Miami

Responding or adapting to sea-level rise will be the greatest challenge human civilization has ever had to deal with.

There are ~216 feet of sea-level rise equivalent contained in the planet's ice sheets and glaciers. We don't need 216 feet to create disasters along our shorelines, however.



Surging Seas RISK ZONE MAP

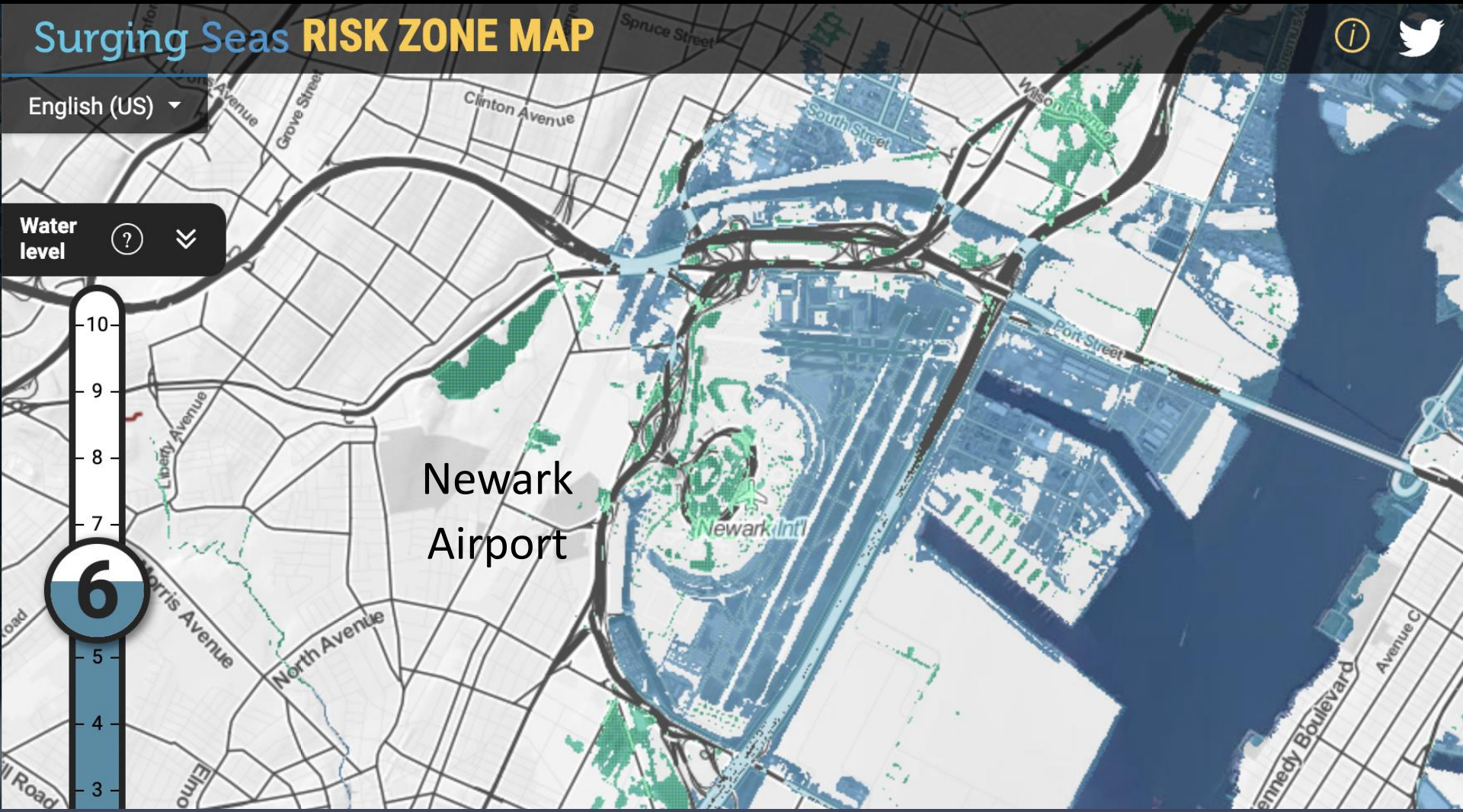


English (US) ▾

Water level ? ▾



Newark Airport



Surging Seas RISK ZONE MAP

English (US) ▾

[Download map image](#)

[New York City stats](#)

[Analysis products](#)

La Guardia Airport

Water level [?](#) ▾



Show current coast



ACCOMMODATION – MOVING BACK?



Miami

Recommendations for the role of the federal government in adapting to long-term sea-level rise and extreme events:

1. Completely restructure the federal flood insurance program so premiums reflect actual risks.
2. Get the Army Corps of Engineers out of the business of nourishing beaches.
3. Open a larger discussion between federal agencies including NOAA and the U.S. Geological Survey about the long-term wisdom of building walls around coastal cities and other options.

What is the role of the federal government in adapting to long-term sea-level rise and extreme events?

If the federal government is to get involved in assisting with community managed retreat or realignment, the most appropriate priority would be public infrastructure (airports, railways, highways, wastewater treatment facilities, electrical generating plants, and harbors).

Buying out private coastal homes (most are owned by wealthier people and/or are second homes) would entail astronomical costs in many areas.

MALIBU

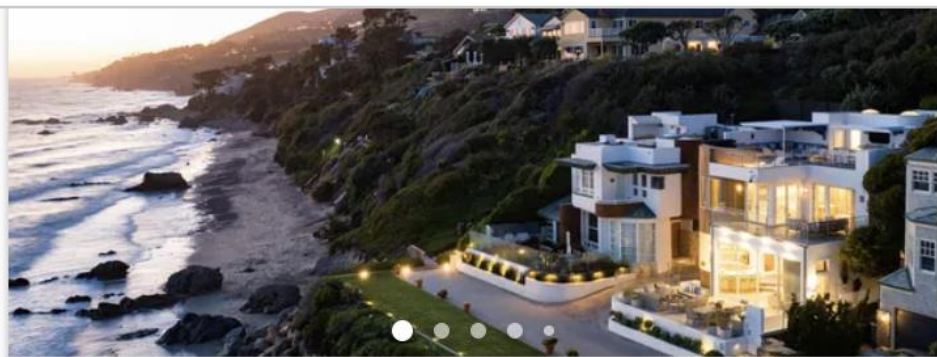


\$22,900,000

4 bds | 5 ba | 5,150 sqft - House for sale

31030 Broad Beach Rd, Malibu, CA 90265

COMPASS, Christopher Cortazzo DRE # 01190363



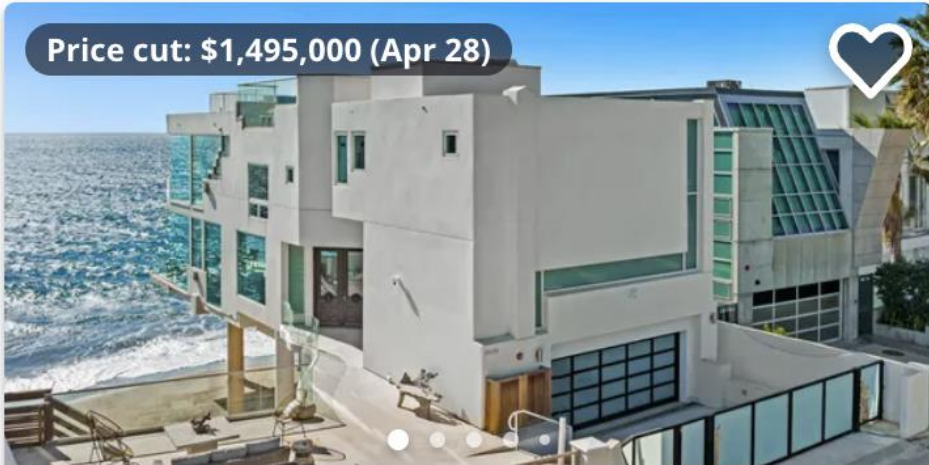
\$18,500,000

4 bds | 6 ba | 4,716 sqft - House for sale

31721 Sea Level Dr, Malibu, CA 90265

SOTHEBY'S INTERNATIONAL REALTY, Shen Schulz DRE # 01327630

Price cut: \$1,495,000 (Apr 28)



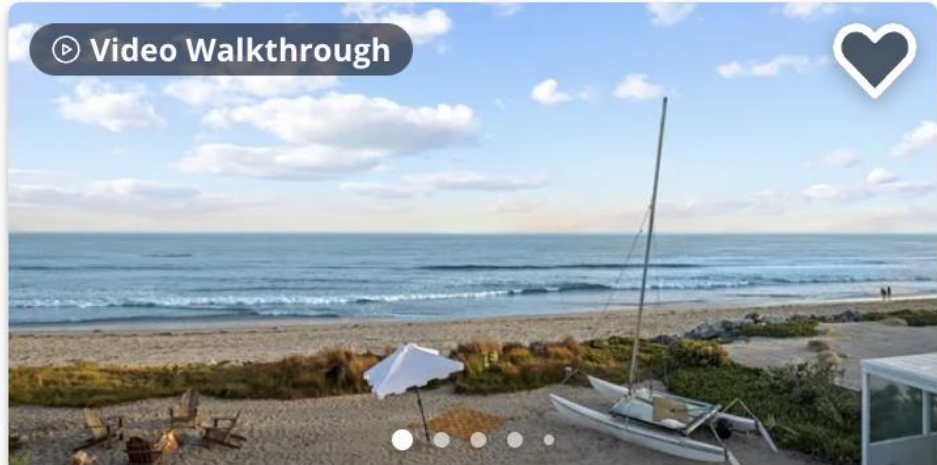
\$12,500,000

4 bds | 6 ba | 3,938 sqft - House for sale

31630 Sea Level Dr, Malibu, CA 90265

COMPASS, Christopher Cortazzo DRE # 01190363

Video Walkthrough



\$23,500,000

6 bds | 6 ba | 3,695 sqft - House for sale

31284 Broad Beach Rd, Malibu, CA 90265

SOTHEBY'S INTERNATIONAL REALTY, Gayle Pritchett DRE # 00585628

MITIGATION

WE NEED TO UNDERSTAND, HOWEVER, THAT BURNING FOSSIL FUELS, CLIMATE CHANGE AND SEA-LEVEL RISE ARE INTIMATELY CONNECTED. THE LONGER WE WAIT TO RESPOND, THE MORE DIFFICULT, DAMAGING AND EXPENSIVE IT WILL BE.