



Estudio del Incremento en el Nivel del Mar en Puerto Rico: Retos y Consecuencias

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PR-CCC.ORG

Global and Regional Sea Level Rise Scenarios for the United States



On average, the U.S. will see as much **sea level rise by 2050** as seen in the last century



Sea level rise leads to **increased coastal flooding** even in the absence of rain or storms



NOAA



At least **two feet** of sea level rise is likely by 2100 and **reducing emissions now** can lower future risk



Earth monitoring systems are vital for tracking future sea level rise

NOAA

h) Caribbean Islands

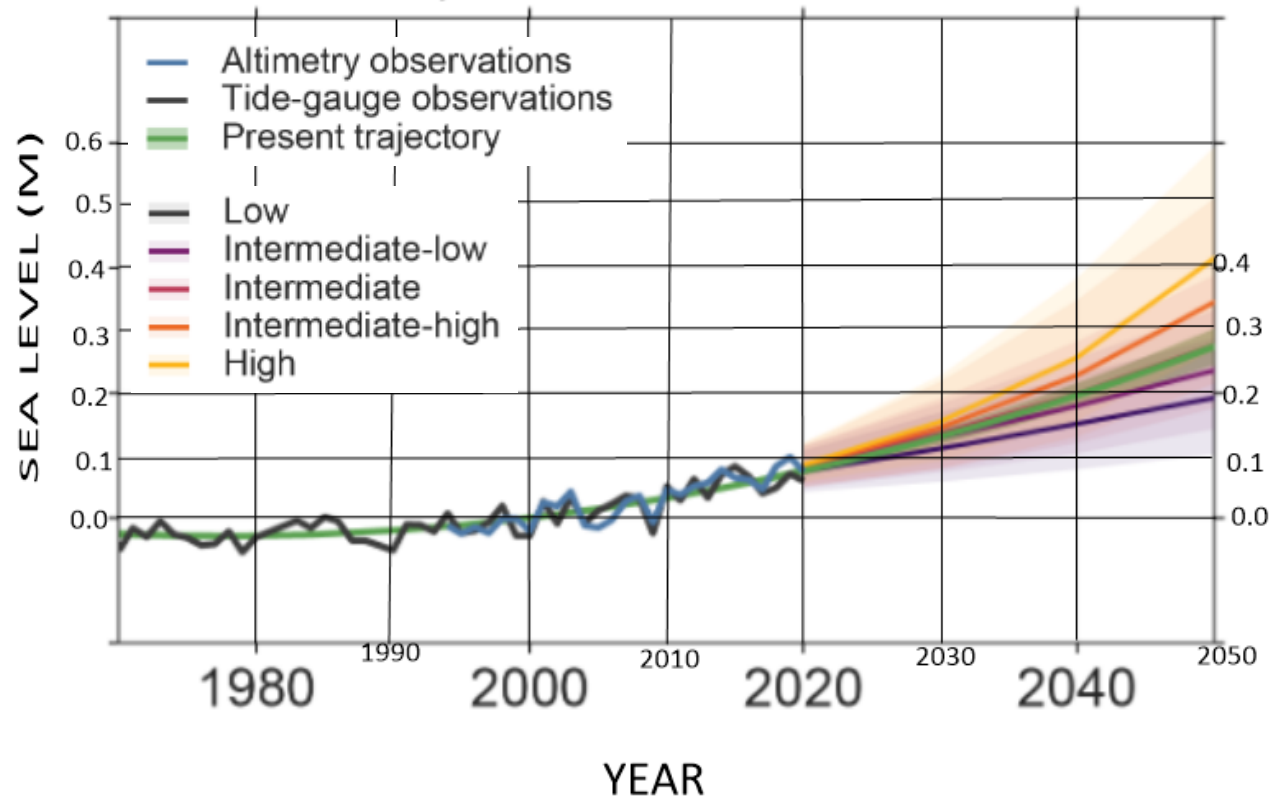


Figure 2.3: Observation-based extrapolations and five regionalized global mean sea level scenario projections, in meters, of relative sea levels for eight coastal regions around the United States from 2020 to 2050 relative to a baseline of 2000. Median values are shown by the solid lines, while the shaded regions represent the likely ranges for the observation-based extrapolations and each scenario. Tide-gauge data (1970 to 2020) are overlaid for reference, along with satellite altimetry observations, which do not include contributions from vertical land motion.

2050

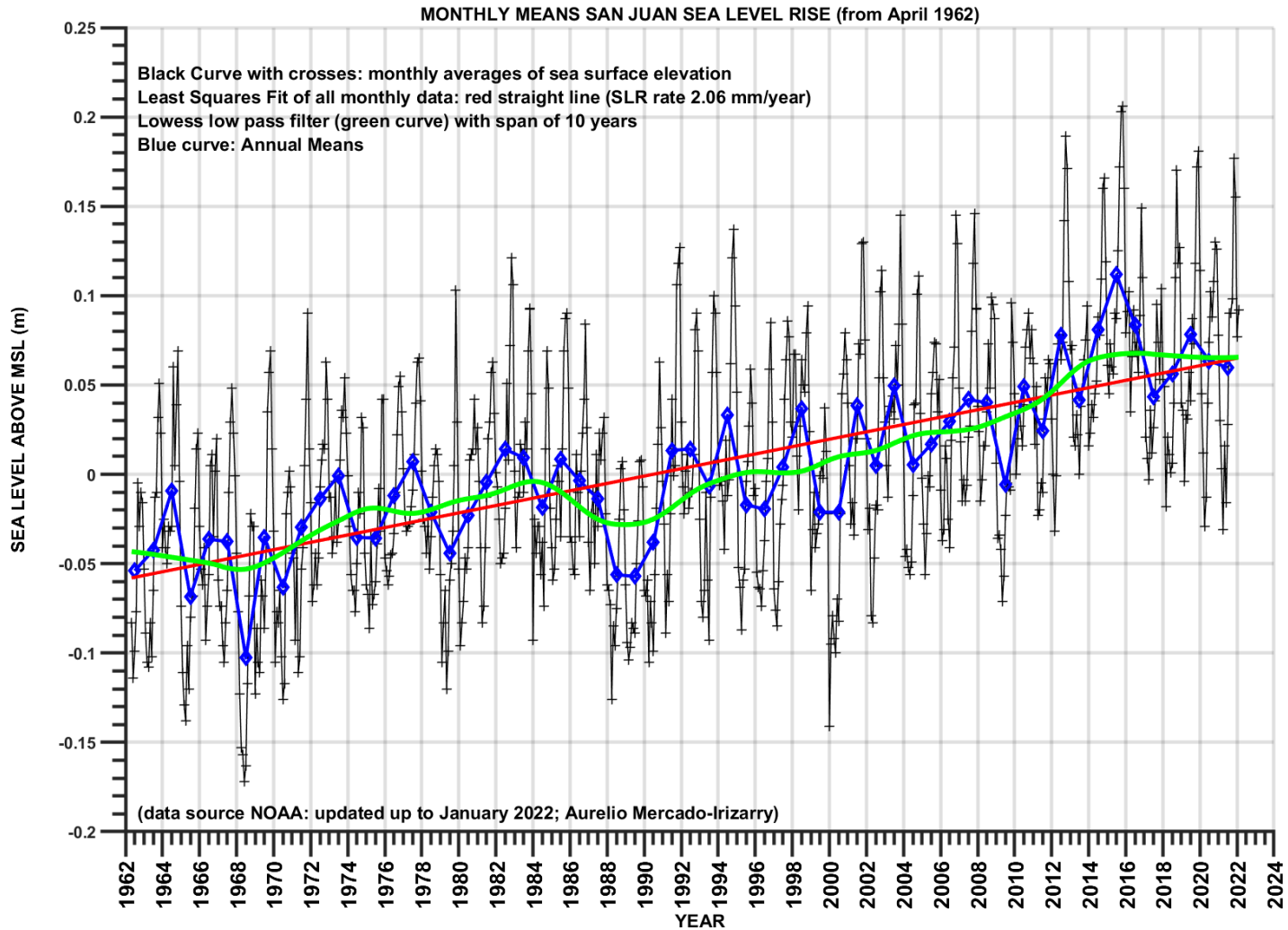
Table 2.2: Observation-based extrapolation and regionalized global mean sea level scenario–based estimates, in meters, of relative sea level in 2050 relative to a baseline of 2000 for eight coastal regions of the United States. Median [likely ranges] are shown. The two scenarios that bound the median observation-based extrapolation are also provided for each region and indicated by red dividing lines. In regions where the observation-based extrapolation is the same as a particular scenario, the scenario is indicated in red text and the bounding scenarios can be assumed to be the next higher or lower scenario (e.g., the Intermediate bounds the Northeast’s observation-based extrapolation).

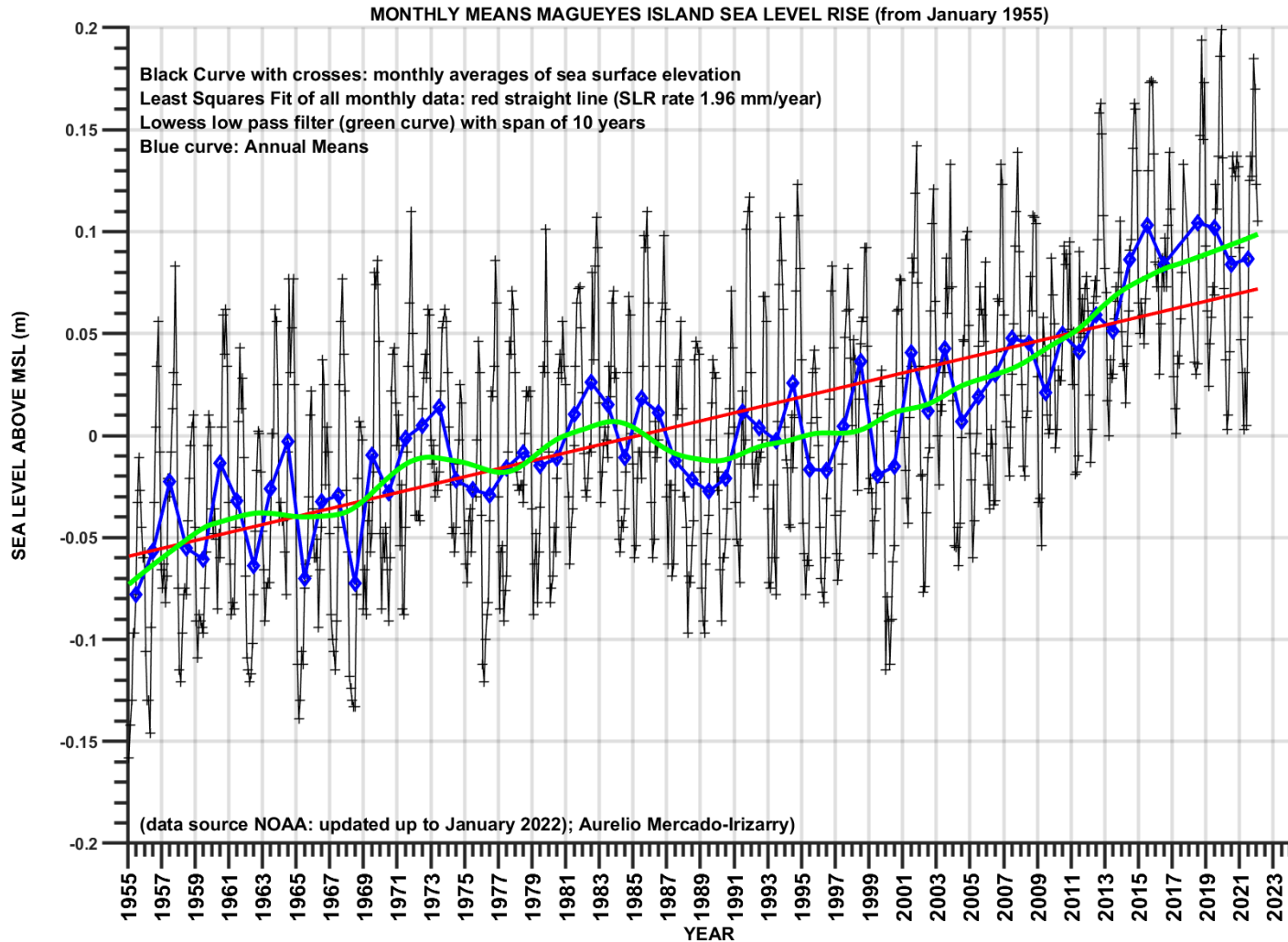
Observation Extrapolations	Low	Intermediate-Low	Intermediate	Intermediate-High	High	Median Bounding Scenarios
Caribbean						
0.28 [0.24, 0.31]	0.19 [0.10, 0.29]	0.24 [0.14, 0.33]	0.28 [0.18, 0.39]	0.35 [0.22, 0.51]	0.42 [0.27, 0.59]	Intermediate

2050 & 2150

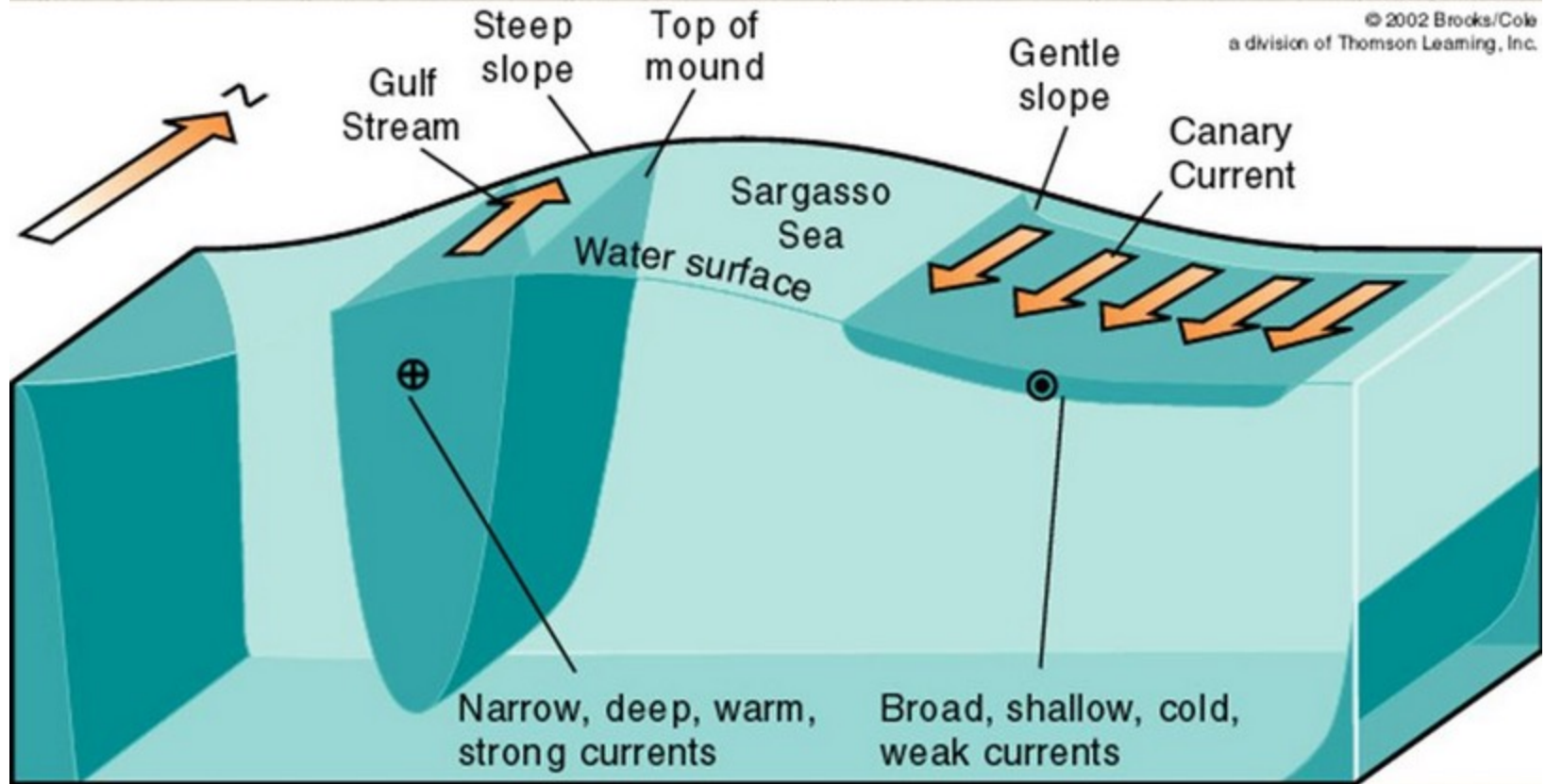
Table 2.5: Scenarios of relative sea level, in meters, for eight coastal regions of the United States in 2100 and 2150 relative to a baseline of 2000. Median values are shown.

Region	Low	Intermediate-Low	Intermediate	Intermediate-High	High
Caribbean					
2100	0.4	0.6	1.0	1.5	2.1
2150	0.5	0.9	2.0	2.6	3.7





Efecto dinámico de las corrientes a gran escala en el aumento del nivel del mar

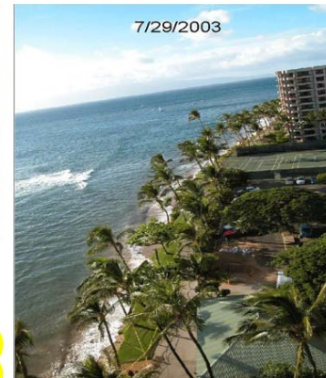


- EN ESCALA DE SEMANAS GRANDES REMOLINOS (~ CIENTOS DE KM) DE AGUA CALIENTE BAÑAN LAS COSTAS DE LAS ISLAS DE HAWAI, SUBIENDO EL NIVEL DEL MAR POR ALREDEDOR DE 15 CM (0.15 M).

It is still unclear at exactly what scale and timeframe the Hawaiian Islands will experience accelerated sea level rise. It is also difficult to predict exactly how shorelines will respond. However, there are already analogs in Hawaii for the type of erosion impacts that can be expected. On Maui, the erosion experienced in Kaanapali in the summer of 2003 is one example. That summer, short-term increases in sea level were experienced as mesoscale eddies (large



An analog on Maui for the impact of sea level rise on coastal erosion is the beach erosion that occurred at Kaanapali Beach during the summer of 2003 due to short-term elevated sea levels along with a sustained south swell. Photo credit: Hyatt Regency Maui Resort.



rotating water masses) propagated through the islands. These eddies produced tides that were 0.5 ft higher than normal. The elevated water levels, coupled with a minor south swell, resulted in enough wave energy traveling alongshore to transport massive amounts of beach sediment to the opposite end (north) of the beach system. The beach in the resort area disappeared entirely at some locations and there was high anxiety about possible infrastructure damage. Fortunately, temporary emergency protection measures were implemented and the beach recovered after a period of weeks. However, the implication is that a small increase in water level, only 0.5 ft in this case, can contribute to substantial shoreline retreat.

EN ESCALA
DE POCAS
SEMANAS EL
MAR SE
TRAGA UNA
PLAYA

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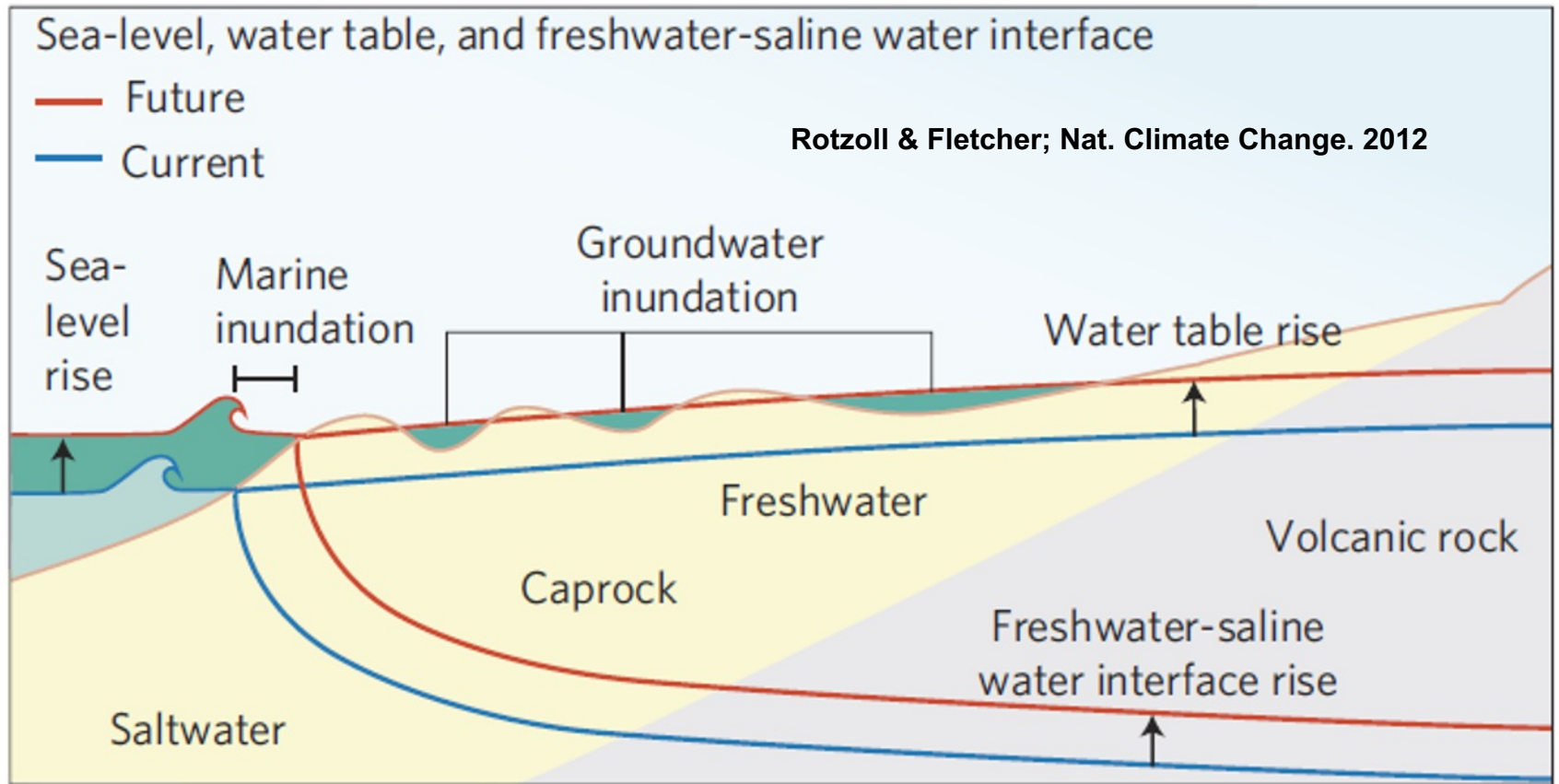





Figure 1 | Conceptual diagram of a freshwater lens, and marine and groundwater inundation under SLR in the southern Oahu aquifer.

Sea-level rise drives wastewater leakage to coastal waters and storm drains

Limnology and Oceanography Letters 2021

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Scientific Significance Statement

Recent modeling studies show groundwater inundation (GWI) of coastal wastewater infrastructure (e.g., sewer lines, cesspools) with sea-level rise. Still, this process has not been empirically demonstrated prior to this study. Here, we use geochemical tracers to demonstrate that tidally driven GWI of wastewater infrastructure is occurring today leading to wastewater discharge to the coast and storm drains in urban Honolulu, Hawai'i. The results of this study indicate that higher ocean water levels are leading to negative impacts to coastal water quality, biogeochemical cycling, and ecological health.

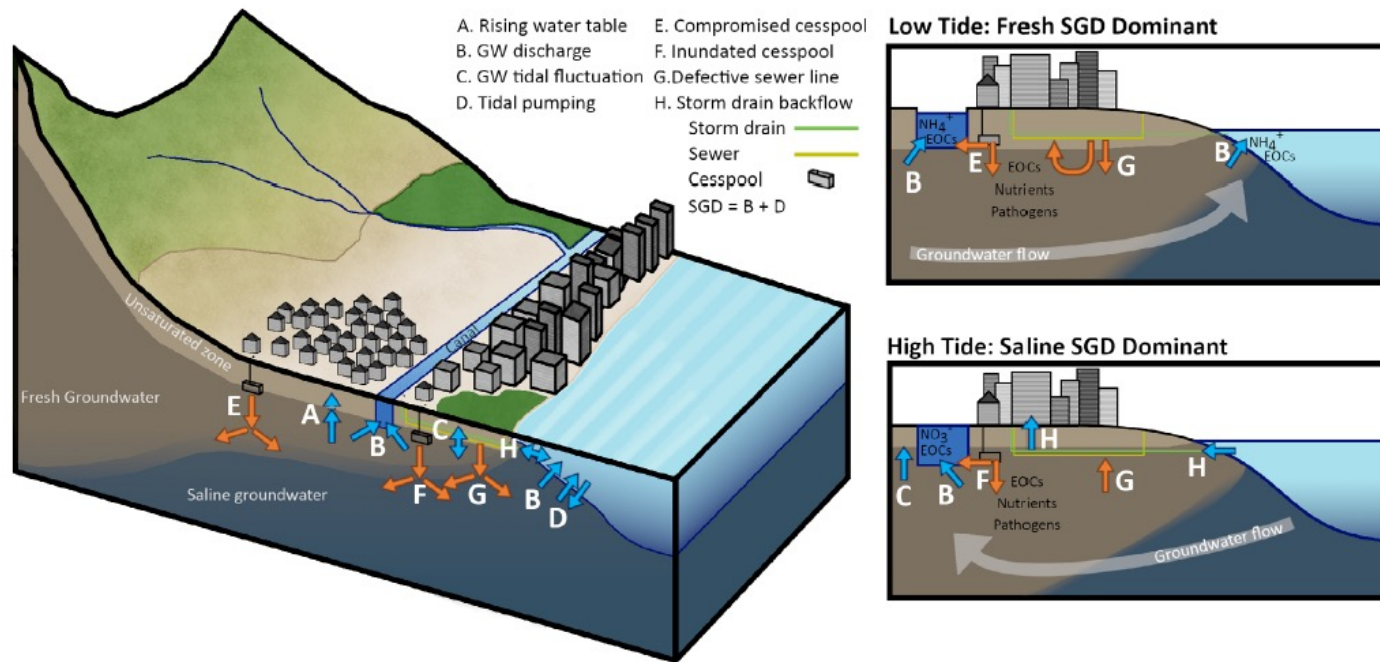


Fig 1. Connection between groundwater, surface water, storm drains, and WIS. Wastewater flow is indicated by orange arrows and groundwater flow by blue arrows. At low tide, SGD is primarily driven by the hydraulic gradient compared to high tide, where SGD is dominated by saline SGD. Under current conditions, rising groundwater levels fluctuate with the tide as shown in C, but under future sea levels, the water table is expected to rise permanently, as shown in (A). This study aims to investigate how groundwater and wastewater flow are linked to one another at higher water levels during spring tides.

ESTA ES LA DISCUSION QUE SE ESTA LLEVANDO A CABO EN TODO EL

1/23/2019

Rebuilding a Puerto Rico Barrio: 'Dead Is the Only Way They'll Ever Get Me to Leave' - The New York Times

U.S.

The New York Times

OPINION'S NOTEBOOK

Rebuilding a Puerto Rico Barrio: 'Dead Is the Only Way They'll Ever Get Me to Leave'

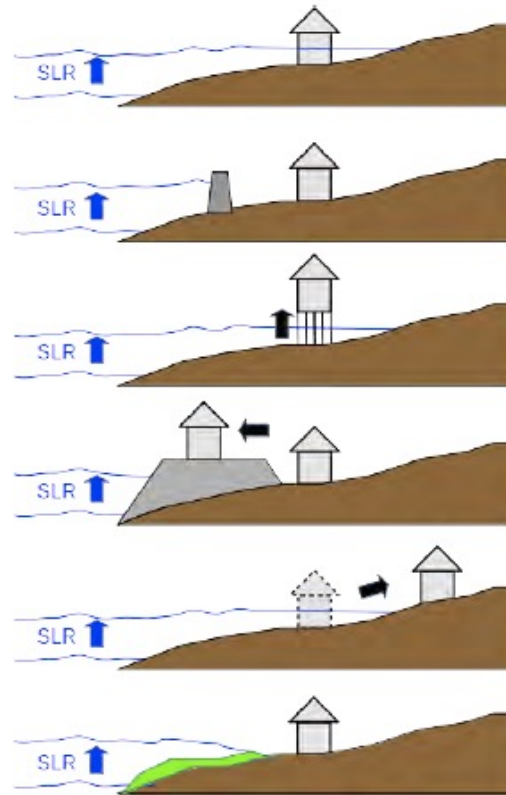
Hurricane Maria led to a host of new plans to fix island barrios plagued by chronic flooding. A look at the Vietnam neighborhood shows why they may never be achieved.

By Michael Slezacek Photographs by Christopher Gregory

Jan. 20, 2019



Victor Manuel Torres has lived for more than half a century in a barrio called Vietnam.



No response

Protect

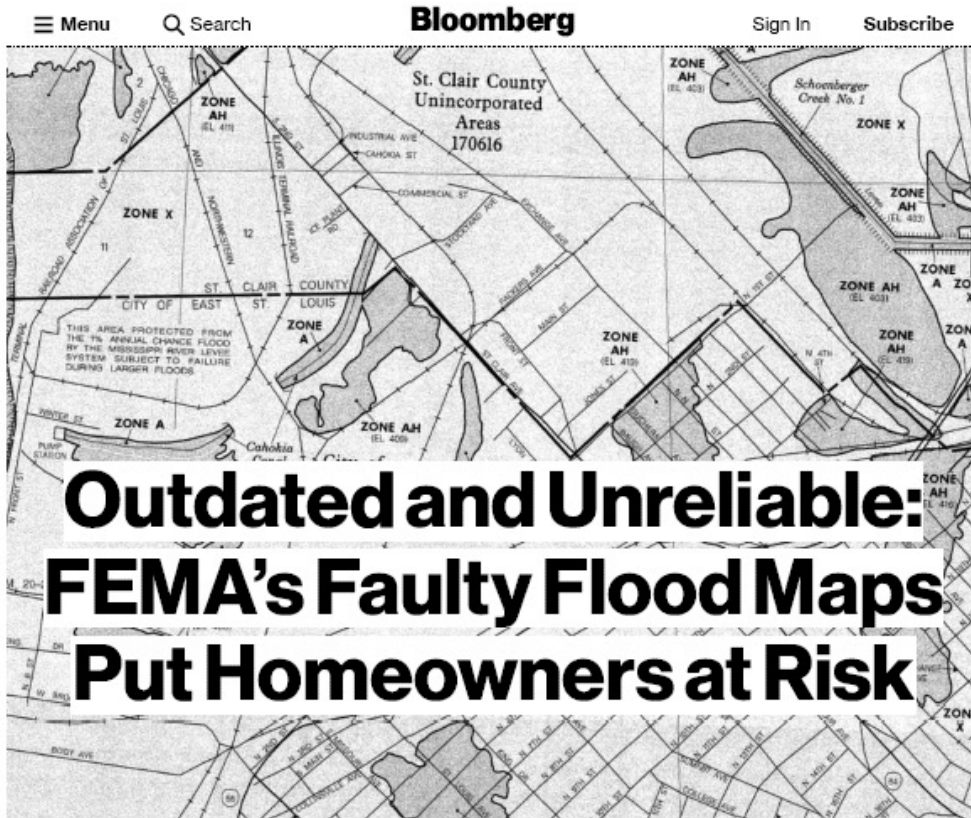
Accommodate

Advance

Retreat

Ecosystem-based adaptation

Box 4.3, Figure 1: Different types of responses to coastal risk and SLR



By Michael Keller, Mira Rojasakul, David Ingold, Christopher Flavelle and Brittany Harris
October 6, 2017

11/5/2018

FEMA Flood Maps Ignore Climate Change, and Homeowners Are Paying the Price | InsideClimate News



A Pulitzer Prize-winning, non-profit, non-partisan news organization dedicated to covering climate change, energy and the environment.



By James Bruggers
Nov 1, 2018



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