

The Florida Senate
COMMITTEE MEETING EXPANDED AGENDA

INFRASTRUCTURE AND SECURITY
Senator Lee, Chair
Senator Perry, Vice Chair

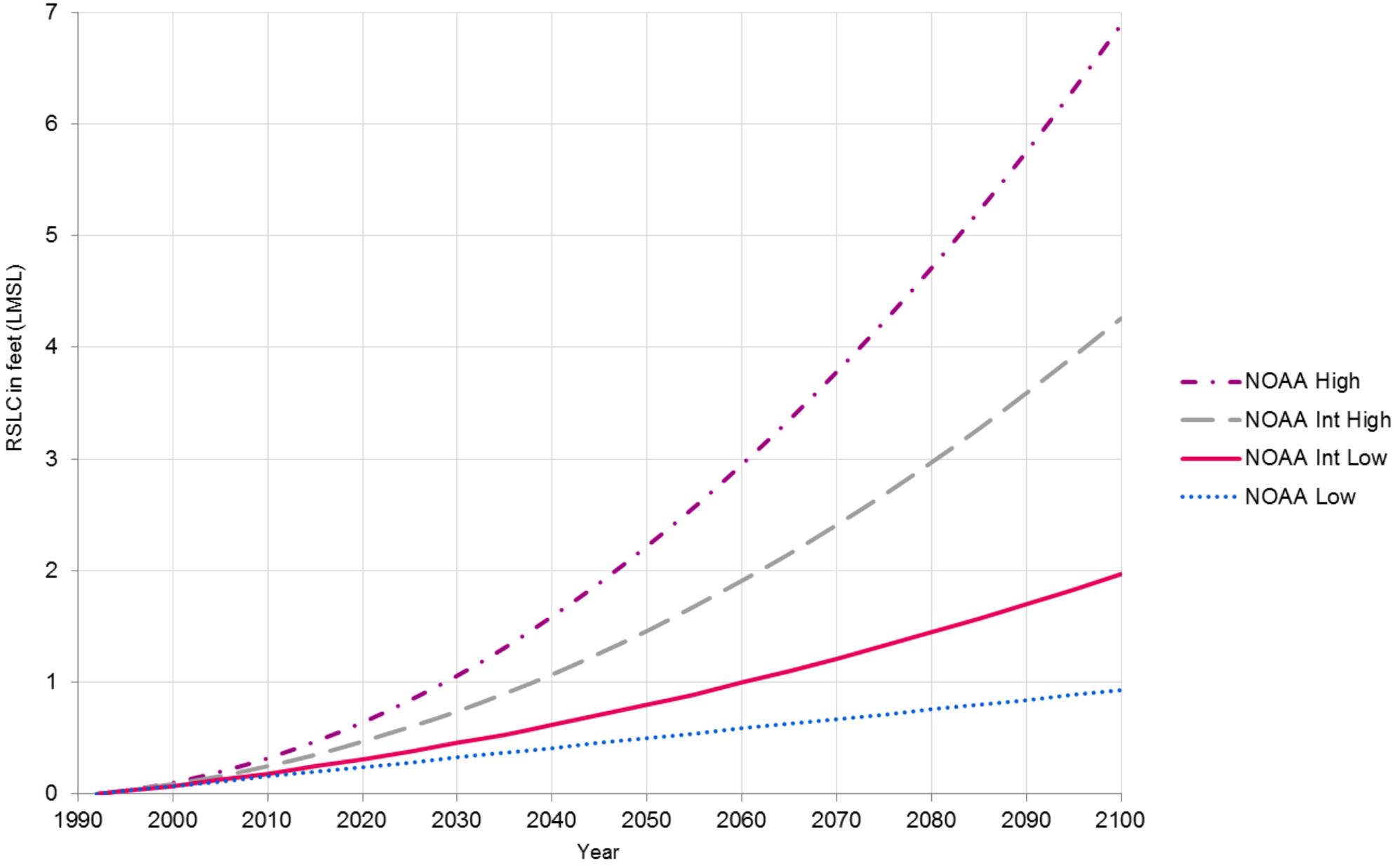
MEETING DATE: Monday, October 14, 2019
TIME: 4:30—6:00 p.m.
PLACE: *Toni Jennings Committee Room*, 110 Senate Building

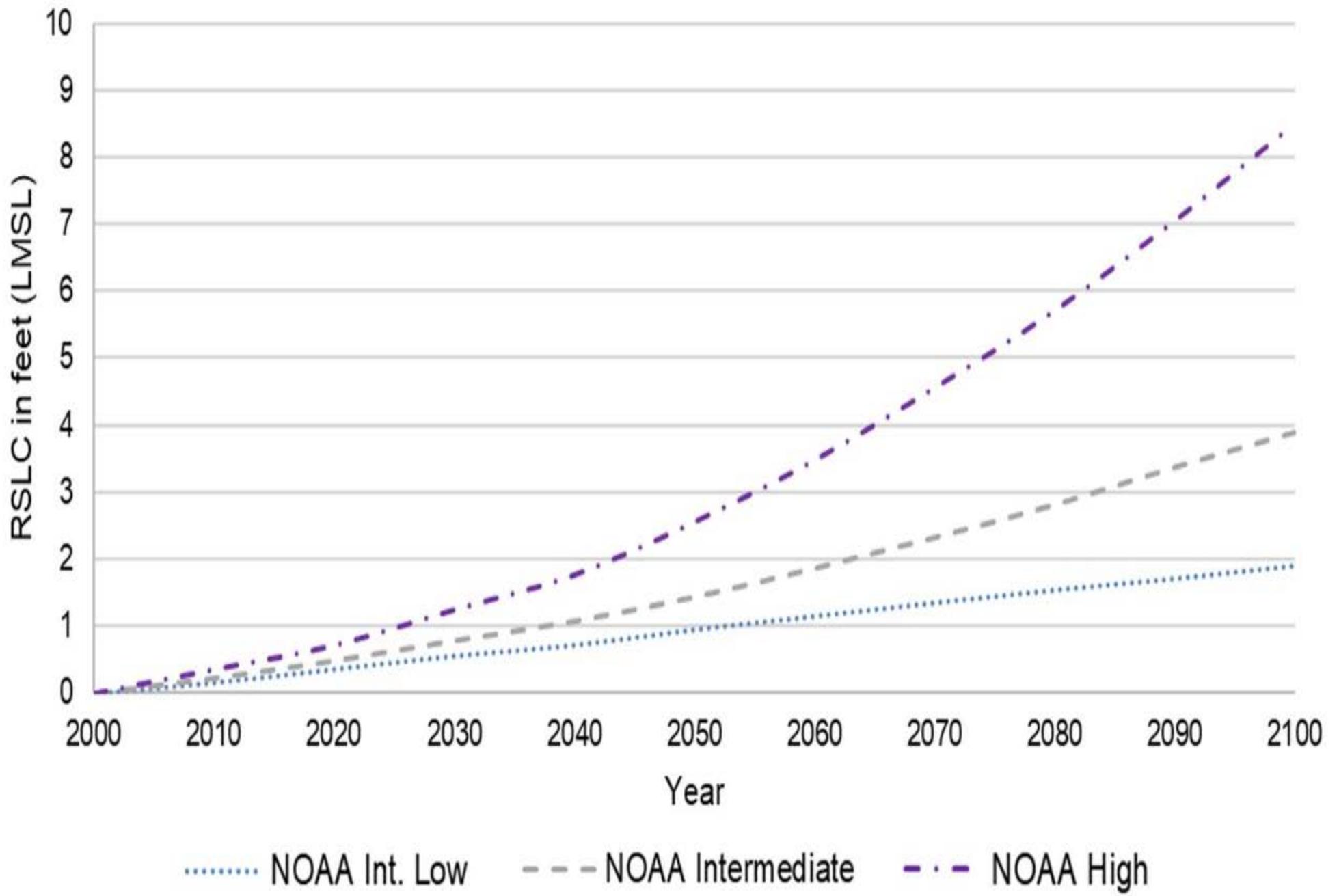
MEMBERS: Senator Lee, Chair; Senator Perry, Vice Chair; Senators Bean, Cruz, Hooper, Hutson, Stewart, and Taddeo

TAB	BILL NO. and INTRODUCER	BILL DESCRIPTION and SENATE COMMITTEE ACTIONS	COMMITTEE ACTION
		Workshop: Presentations and Panel Discussion Related to Infrastructure Resiliency and Climate Change:	Presented
		Academic Research and Studies on Climate Change and Sea Level Rise Dr. Gary Mitchum, Professor and Associate Dean, College of Marine Science, University of South Florida	
		State Infrastructure Resiliency Dr. Julia Nesheiwat, Chief Resilience Officer, Executive Office of the Governor	
		Will Watts, Chief Engineer, Florida Department of Transportation	
		Huiwei Shen, Chief Planner, Florida Department of Transportation, Office of Planning	
		Local Infrastructure Resiliency Dr. Jennifer Jurado, Chief Resiliency Officer and Division Director, Broward County Environmental Planning and Community Resilience Division	
		Additional workshop panel members may be added.	
Other Related Meeting Documents			

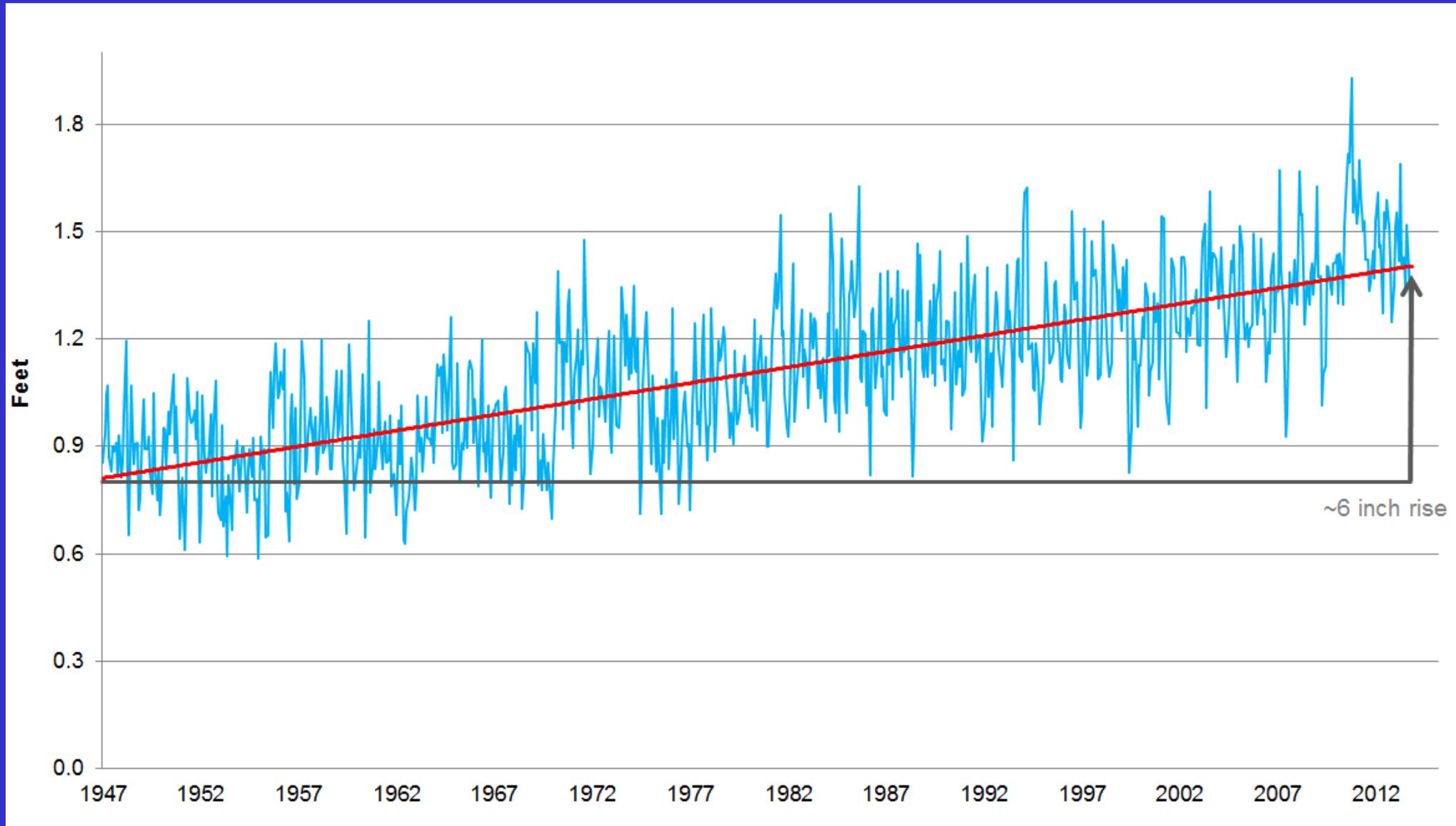


Relative Sea Level Change Projections - Gauge 8726520, St. Petersburg, FL





Sea Level has risen about 6 inches in St.Petersburg since WWII. Does it matter?







Location

St. Petersburg, FL

Flooding Threshold

33 cm above MHHW



Annual projections

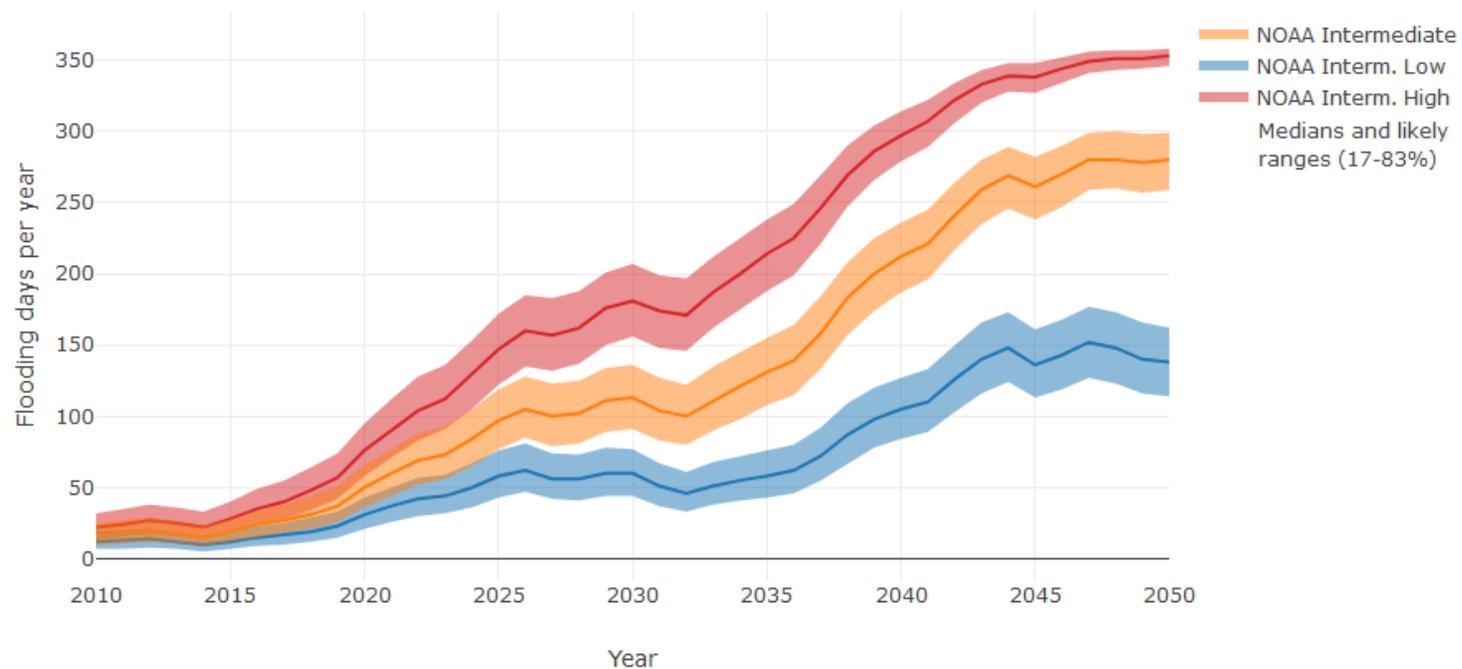
Decadal projections

Analysis

Flooding days during the 21st century

The following figure shows the number of days per year that sea level in **St. Petersburg, FL** will exceed **33 cm** above MHHW.

Based on local mean sea level projection: NOAA Sea Level Rise Scenarios

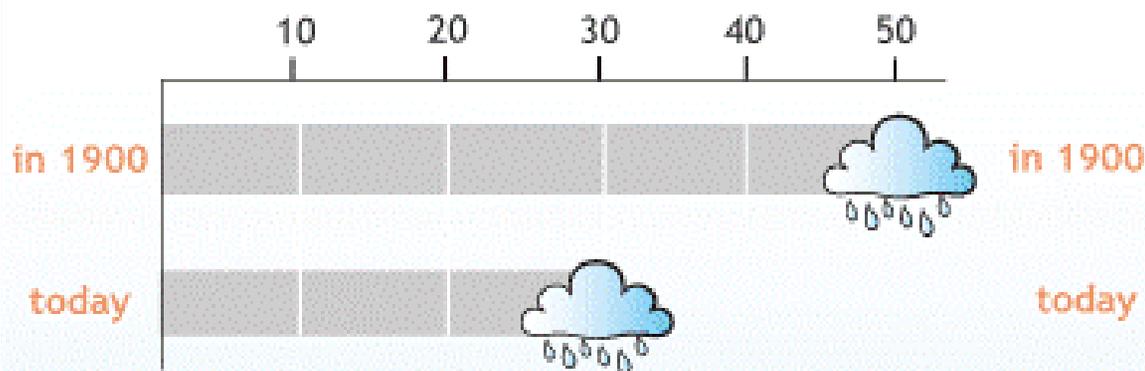


It is not just the water coming up, it's the water coming down.

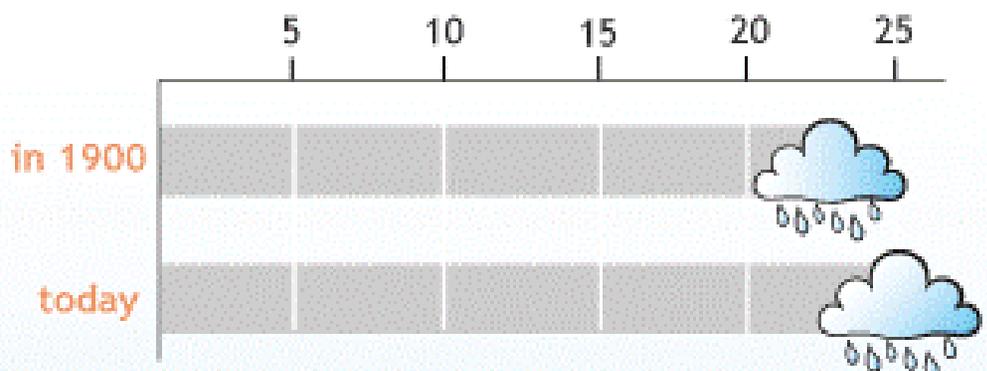


How has global warming affected **HEAVY RAIN EVENTS** like the one along the Gulf in mid-August?

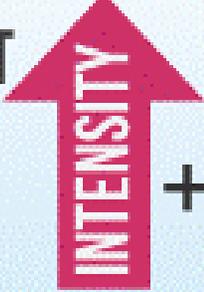
average # years between events



typical 3-day heavy rain total in inches



**RISK OF
SIMILAR
EVENTS**  **+40%**

**AMOUNT
OF
RAIN**  **+10%**

Additional slides if needed to address questions

According to the data ...

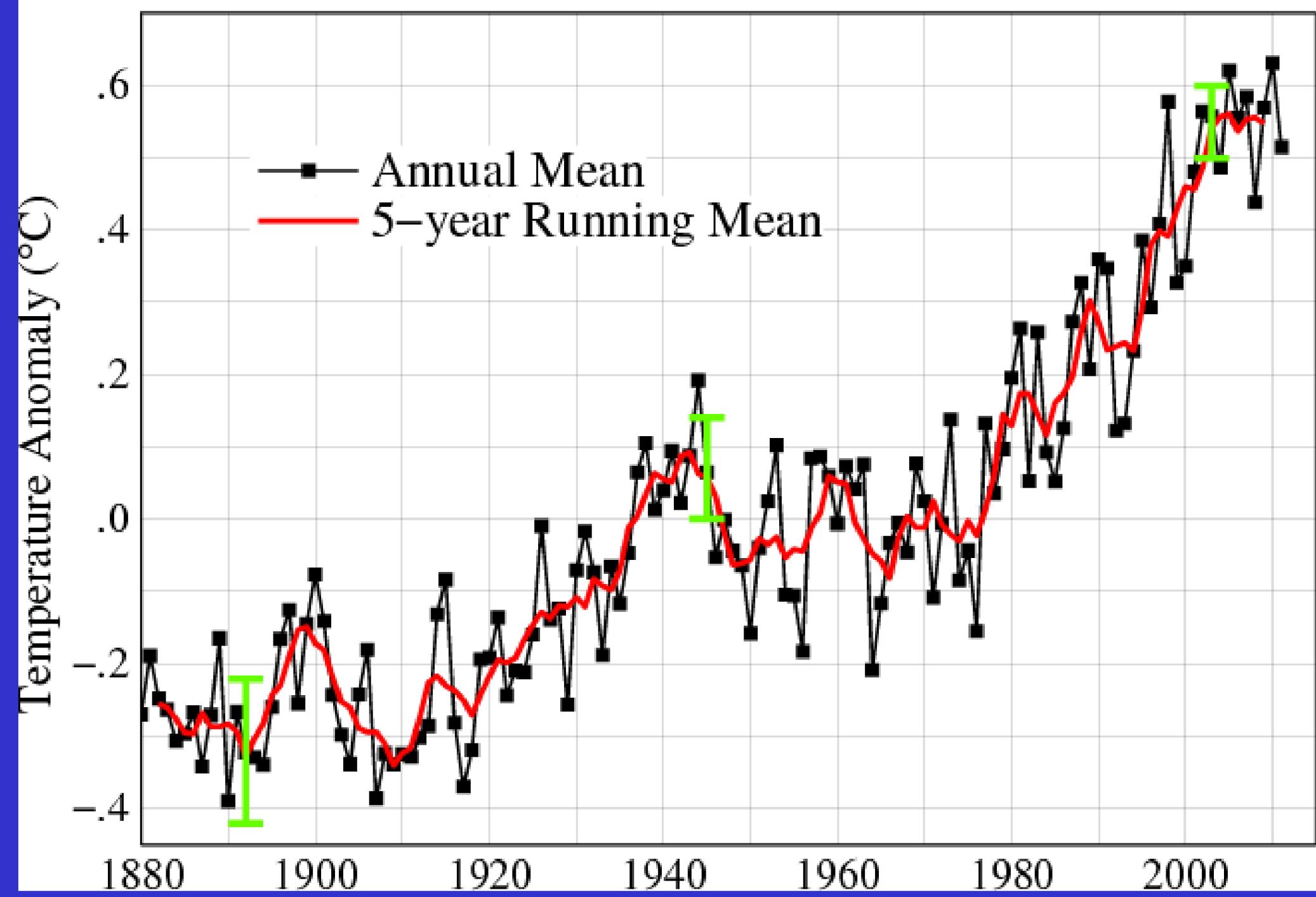
Climate-change–driven accelerated sea-level rise detected in the altimeter era

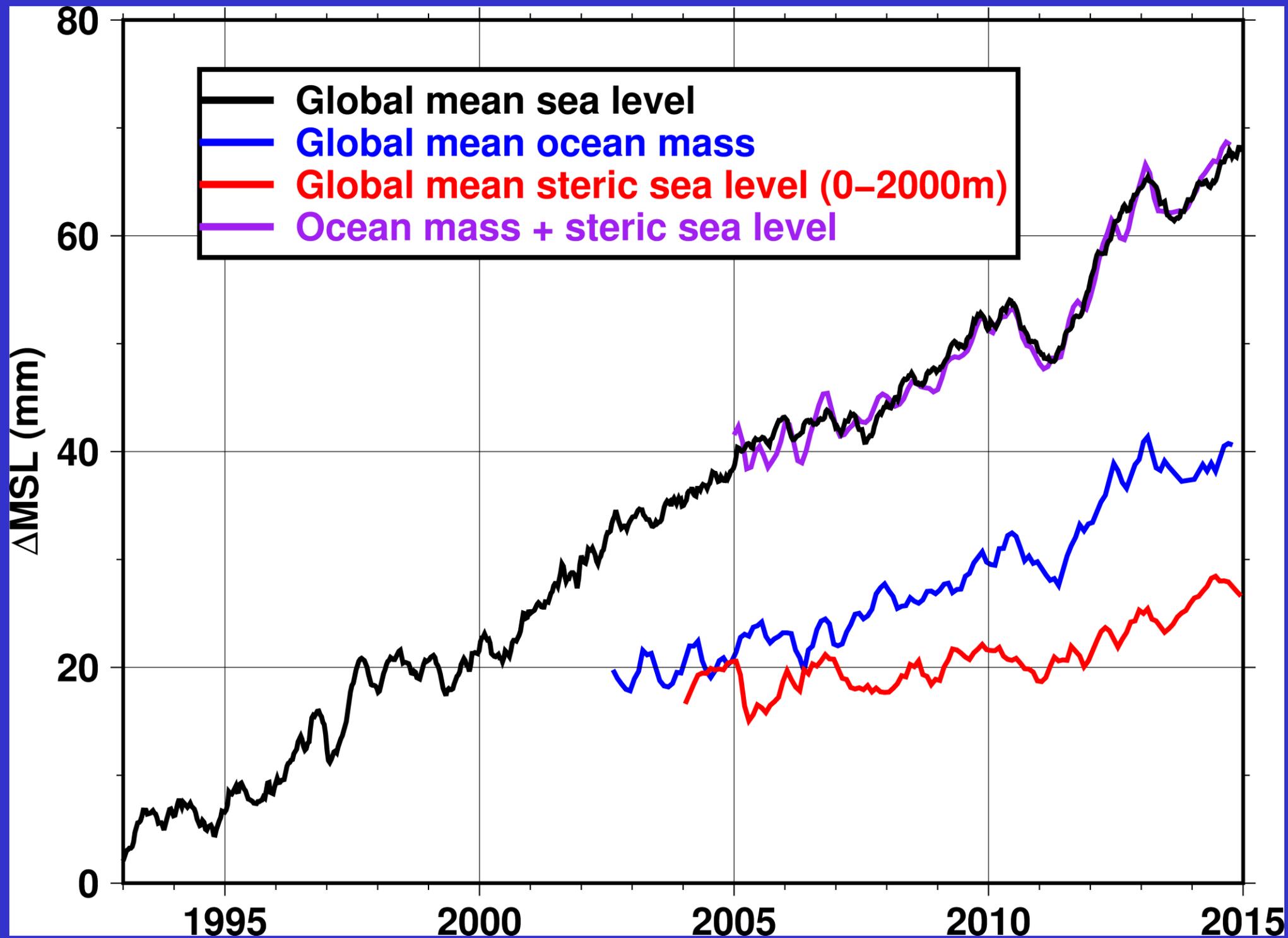
R. S. Nerem^{a,1}, B. D. Beckley^b, J. T. Fasullo^c, B. D. Hamlington^d, D. Masters^a, and G. T. Mitchum^e

^aColorado Center for Astrodynamics Research, Ann and H. J. Smead Aerospace Engineering Sciences, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO 80309; ^bStinger Ghaffarian Technologies Inc., NASA Goddard Space Flight Center, Greenbelt, MD 20771; ^cNational Center for Atmospheric Research, Boulder, CO 80305; ^dOld Dominion University, Norfolk, VA 23529; and ^eCollege of Marine Science, University of South Florida, St. Petersburg, FL 33701

This article appeared in February 2018 in the
Proceedings of the National Academy of Sciences

Global Land–Ocean Temperature Index





Planning for Resilience: Regional Plans to Local Action



Florida Senate Committee on Infrastructure and Security

Infrastructure Resilience and Climate Change
October 14, 2019

Dr. Jennifer L. Jurado, CRO and Director
Environmental Planning and Community Resilience Division



Overview

- ❑ Climate challenges and impacts
- ❑ Focus on flood risk
- ❑ Resilient infrastructure
- ❑ Regional planning
- ❑ Local resilience strategy



Regional Climate Challenges



- Sea level rise
- Extreme rainfall
- Increased storm intensity
- Heighted storm surge
- Saltwater intrusion
- Beach erosion
- Natural systems



Increasing Flood and Community Risk



Extreme Rainfall



Tidal



Economic Disruption



Overwhelming Systems

September 2019 – High Tides

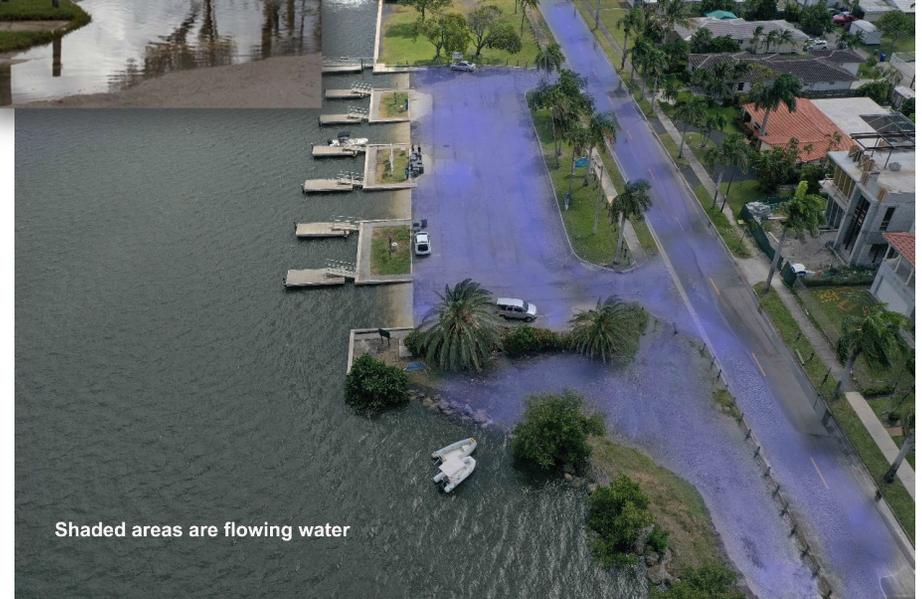


Resilient Infrastructure Improvements

Dade Boulevard, City of Miami Beach



FDEP Resilience Grant



Hollywood Marina, City of Hollywood

Varied Site-Specific Investments

7



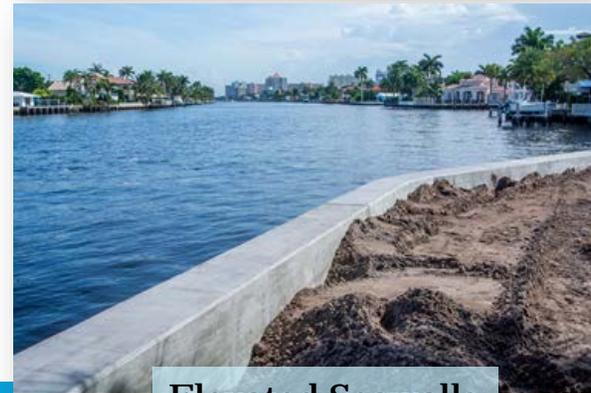
Stormwater Pumps



One-way Storm Valves



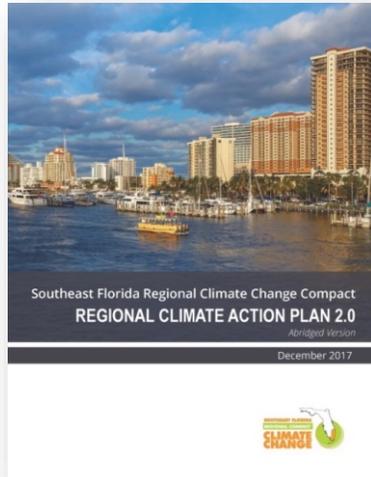
Surge Control Gates
Miami Tunnel



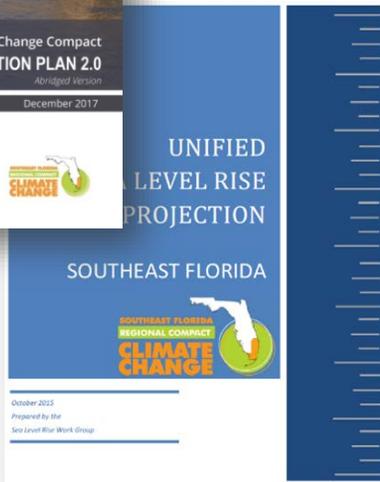
Elevated Seawalls



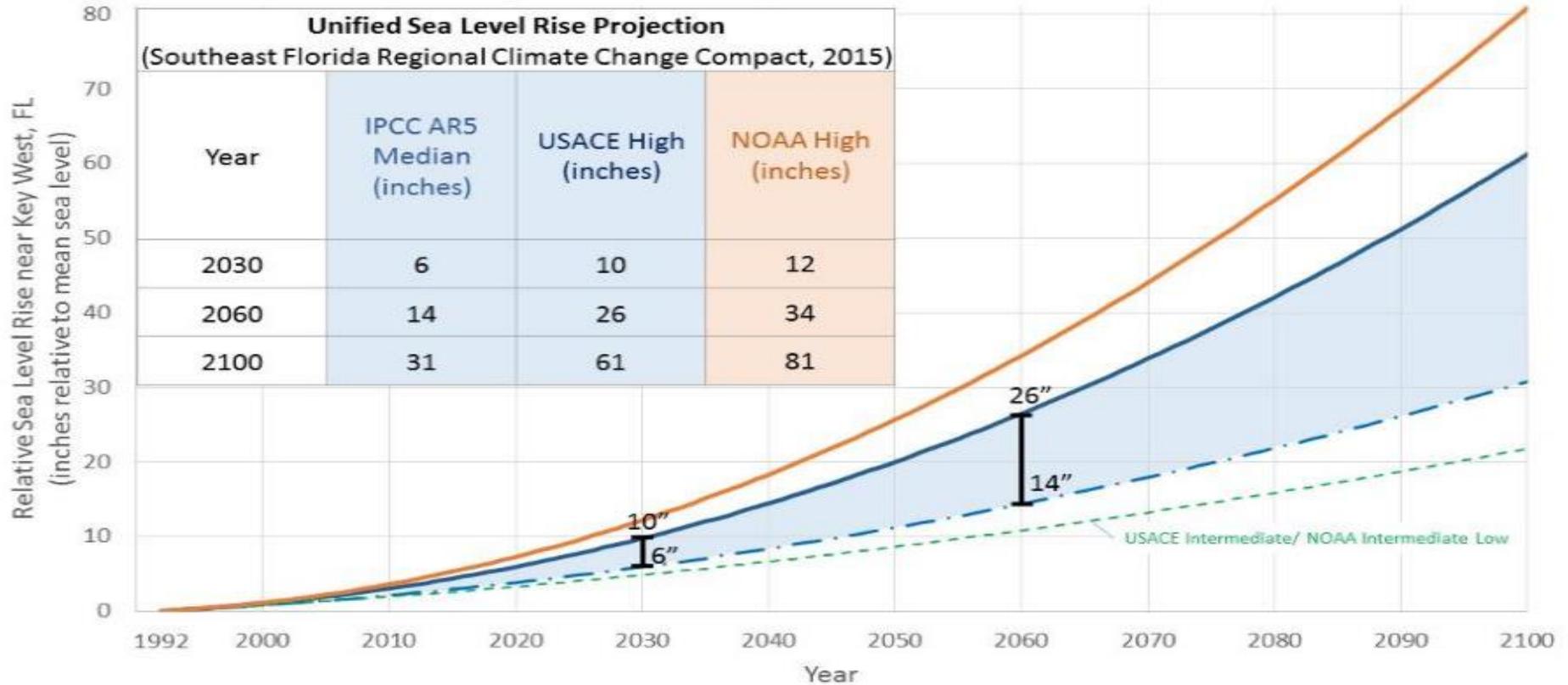
10 Years of Regional Collaboration



Southeast Florida Regional Climate Compact
Regional Greenhouse Gas Emissions Inventory
Baseline Period: 2005 - 2009



Unified Sea Level Rise Planning



Infrastructure Implications



- ❑ **Drainage Systems**
 - Loss of soil storage
 - Reduced function of drainage systems and wells
- ❑ **Wastewater Systems**
 - Increase in infiltration and inflow
- ❑ **Septic Systems**
 - Impacts to drainage fields
 - Reduced treatment and function
- ❑ **Water Management Operations**
 - Upgrade to active pumping



Collaboration on Economic Resilience





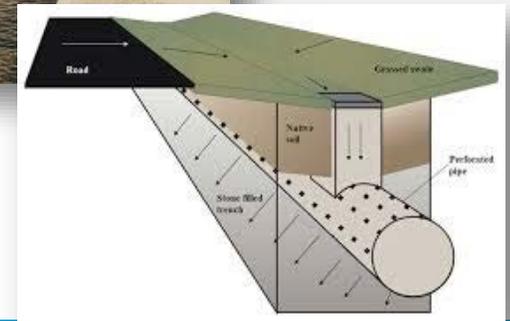
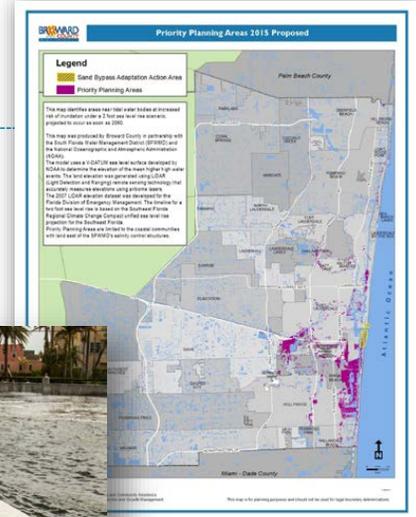
Comprehensive Planning – 2012

- Priority Planning Areas
- Adaptations Action Areas

Future Conditions Map Series - 2017

Resilience Standards

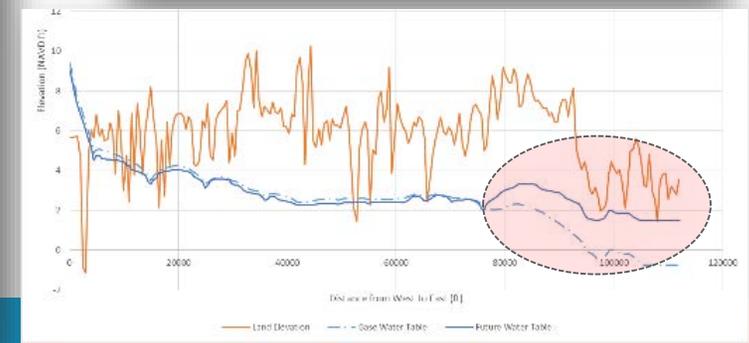
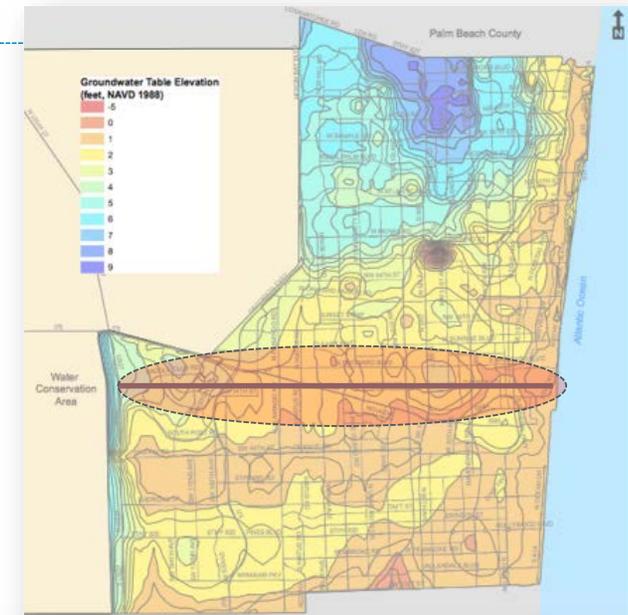
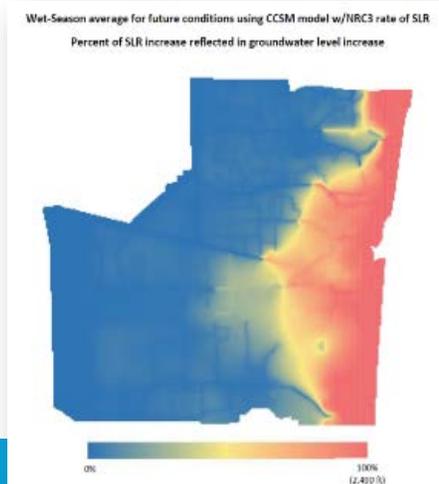
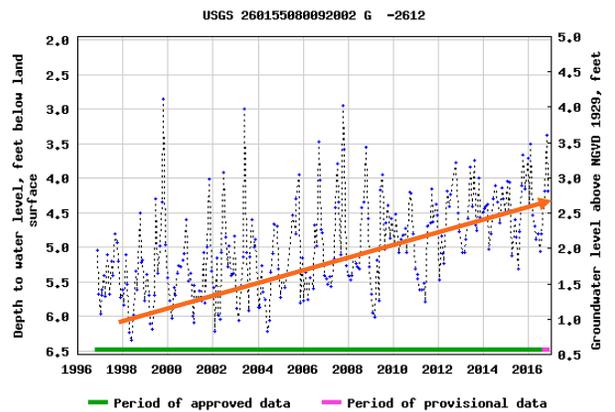
- Drainage infrastructure (2017)
- Coastal flood barriers (2019)
- Flood elevations (2020)



County-wide Resilience Standards

Account for:

- 2060-2069 conditions
- 2' SLR
- Rise in groundwater table
- Increase in rainfall
- Increase in tides and surge



Next Steps – Integrated Adaptation Plan



- ❑ **County-wide Risk Assessment and Resilient Infrastructure Plan**
 - Basin-level analysis
 - Critical infrastructure and services
 - Mitigation strategies
 - Planning level cost estimates
 - Priority capital improvements
 - Measured risk reduction



2019 Broward Leaders Resilience Roundtable

Summary and Needs



- ❑ Severe weather and sea level rise increasingly impact our communities.
- ❑ Local governments are collaborating and investing, with several state-supported projects.
- ❑ While efforts are robust, resilience requires consistency in planning, standards, and investments as part of interconnected projects and systems.
- ❑ The State is an important partner.
- ❑ Level of service performance requires that planning and design account for sea level rise and future conditions (especially rainfall) across projects and programs, from planning through construction.

Questions?

Dr. Jennifer L. Jurado
Chief Resilience Officer, Director
Environmental Planning and Community Resilience Division
Broward County
jjurado@broward.org
954-519-1464



THE FLORIDA SENATE
APPEARANCE RECORD

(Deliver BOTH copies of this form to the Senator or Senate Professional Staff conducting the meeting)

10/14/19

Meeting Date

Bill Number (if applicable)

Topic Climate change and sea level rise

Amendment Barcode (if applicable)

Name Gary T. Mitchum

Job Title Professor and Associate Dean

Address 140 7th Ave S.

Phone 727-512-9048

Street

St. Petersburg

FL

33701

Email mitchum@ust.edu

City

State

Zip

Speaking: For Against Information

Waive Speaking: In Support Against
(The Chair will read this information into the record.)

Representing College of Marine Science, University of South Florida

Appearing at request of Chair: Yes No

Lobbyist registered with Legislature: Yes No

While it is a Senate tradition to encourage public testimony, time may not permit all persons wishing to speak to be heard at this meeting. Those who do speak may be asked to limit their remarks so that as many persons as possible can be heard.

This form is part of the public record for this meeting.

S-001 (10/14/14)

THE FLORIDA SENATE
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10/14/19
Meeting Date

Bill Number (if applicable)

Topic Resilience infrastructure

Amendment Barcode (if applicable)

Name Dr. Julia Nesherwat

Job Title Chief Resilience Officer

Address The Capitol
Street

Phone 850 717 9550

Tallahassee FL
City State Zip

Email Julia.nesherwat@deg.mffluil.com

Speaking: For Against Information

Waive Speaking: In Support Against
(The Chair will read this information into the record.)

Representing EDG

Appearing at request of Chair: Yes No

Lobbyist registered with Legislature: Yes No

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10/14/19

Meeting Date

n/a

Bill Number (if applicable)

n/a

Amendment Barcode (if applicable)

Topic Workshop: Infrastructure Resiliency and Climate Change

Name Will Watts

Job Title Chief Engineer

Address 605 Suwannee Street

Street

Phone 850-414-5236

Tallahassee

Florida

32399

Email will.watts@dot.state.fl.us

City

State

Zip

Speaking: For Against Information

Waive Speaking: In Support Against
(The Chair will read this information into the record.)

Representing Florida Department of Transportation

Appearing at request of Chair: Yes No

Lobbyist registered with Legislature: Yes No

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10/14/19

Meeting Date

n/a

Bill Number (if applicable)

n/a

Amendment Barcode (if applicable)

Topic Workshop: Infrastructure Resiliency and Climate Change

Name Huiwei Shen

Job Title Chief Planner

Address 605 Suwannee Street

Street

Phone 850-414-5251

Tallahassee

Florida

32303

Email huiwei.shen@dot.state.fl.us

City

State

Zip

Speaking: For Against Information

Waive Speaking: In Support Against
(The Chair will read this information into the record.)

Representing Florida Department of Transportation

Appearing at request of Chair: Yes No

Lobbyist registered with Legislature: Yes No

While it is a Senate tradition to encourage public testimony, time may not permit all persons wishing to speak to be heard at this meeting. Those who do speak may be asked to limit their remarks so that as many persons as possible can be heard.

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10/14/19

Meeting Date

Bill Number (if applicable)

Topic _____

Amendment Barcode (if applicable)

Name Dr. Jennifer Jurado

Job Title Chief Resiliency Officer Broward County

Address 115 S. Andrews Ave

Phone 954-770-2060

Street
Fort Lauderdale FL 33301
City State Zip

Email jjurado@broward.org

Speaking: For Against Information

Waive Speaking: In Support Against
(The Chair will read this information into the record.)

Representing Broward County

Appearing at request of Chair: Yes No

Lobbyist registered with Legislature: Yes No

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CourtSmart Tag Report

Room: EL 110

Case No.:

Type:

Caption: Committee on Infrastructure and Security

Judge:

Started: 10/14/2019 4:34:05 PM

Ends: 10/14/2019 6:00:42 PM

Length: 01:26:38

4:34:04 PM Meeting called to order by Chair Lee
4:34:06 PM Roll call by Administrative Assistant Marilyn Hudson
4:34:15 PM Quorum present
4:34:21 PM Comments from Chair Lee
4:37:45 PM Comments from Dr. Julia Nesheiwat
4:38:03 PM Introduction of Dr. Gary Mitchum by Chair Lee
4:39:02 PM Presentation by Dr. Gary Mitchum, Professor and Associate Dean, College of Marine Science, University of South Florida
4:49:12 PM Comments from Chair Lee
4:49:31 PM Question from Senator Perry
4:49:38 PM Response from Dr. Mitchum
4:50:17 PM Follow-up question from Senator Perry
4:50:24 PM Response from Dr. Mitchum
4:51:22 PM Additional question from Senator Perry
4:51:30 PM Response from Dr. Mitchum
4:51:36 PM Additional question from Senator Perry
4:51:43 PM Response from Dr. Mitchum
4:52:13 PM Follow-up question from Senator Perry
4:52:21 PM Response from Dr. Mitchum
4:52:31 PM Additional question from Senator Perry
4:52:38 PM Response from Dr. Mitchum
4:53:24 PM Additional question from Senator Perry
4:53:32 PM Response from Dr. Mitchum
4:54:20 PM Additional question from Senator Perry
4:54:27 PM Response from Dr. Mitchum
4:55:09 PM Question from Senator Stewart
4:55:19 PM Response from Dr. Mitchum
4:56:34 PM Question from Senator Cruz
4:56:40 PM Response from Dr. Mitchum
4:58:11 PM Follow-up question from Senator Cruz
4:58:20 PM Response from Dr. Mitchum
4:59:00 PM Additional question from Senator Cruz
4:59:08 PM Response from Dr. Mitchum
5:00:45 PM Comments from Chair Lee
5:01:17 PM Question from Senator Hutson
5:01:22 PM Response from Dr. Mitchum
5:02:21 PM Follow-up question from Senator Hutson
5:02:29 PM Response from Dr. Mitchum
5:03:38 PM Comments from Senator Hutson
5:03:47 PM Comments from Senator Bean
5:03:53 PM Response from Dr. Mitchum
5:04:40 PM Comments from Chair Lee
5:04:56 PM Question from Senator Rodriguez
5:05:04 PM Response from Dr. Mitchum
5:06:48 PM Comments from Chair Lee
5:07:58 PM Question from Chair Lee
5:08:03 PM Response from Dr. Mitchum
5:08:54 PM Introduction of Dr. Julia Nesheiwat by Chair Lee
5:09:12 PM Presentation by Dr. Julia Nesheiwat, Chief Resilience Officer, Executive Office of the Governor
5:20:33 PM Question from Senator Stewart
5:20:48 PM Comments from Chair Lee
5:21:26 PM Response from Dr. Nesheiwat

5:22:45 PM Question from Senator Rodriguez
5:22:52 PM Response from Dr. Nesheiwat
5:24:09 PM Comments from Chair Lee
5:24:27 PM Introduction of Mr. Will Watts by Chair Lee
5:24:46 PM Presentation from Mr. Will Watts, Chief Engineer, Florida Department of Transportation
5:29:15 PM Comments from Chair Lee
5:29:41 PM Introduction of Ms. Huiwei Shen by Chair Lee
5:30:42 PM Presentation by Ms. Huiwei Shen, Chief Planner, Florida Department of Transportation, Office of Planning
5:36:34 PM Question from Senator Stewart
5:36:41 PM Response from Ms. Shen
5:37:38 PM Comments from Chair Lee
5:37:43 PM Introduction of Dr. Jennifer Jurado by Chair Lee
5:37:53 PM Presentation by Dr. Jennifer Jurado, Chief Resiliency Officer and Division Director, Broward County
Environmental Planning and Community Resilience Division
5:51:22 PM Comments from Chair Lee
5:51:30 PM Question from Chair Lee
5:51:49 PM Response from Ms. Shen
5:52:21 PM Follow-up question from Chair Lee
5:52:27 PM Response from Mr. Watts
5:53:49 PM Follow-up question from Chair Lee
5:55:01 PM Response from Dr. Mitchum
5:57:11 PM Response from Dr. Nesheiwat
5:58:11 PM Response from Dr. Jurado
5:59:07 PM Response from Ms. Shen
5:59:31 PM Response from Mr. Watts
5:59:56 PM Comments from Chair Lee
6:00:22 PM Senator Perry moves we rise, meeting adjourned