THE NEED FOR ORDERLY PLANNING FOR INUNDATION OF BARRIER ISLANDS AND LOW COASTS

23rd Annual Southwest Florida Water Resource Conference
Florida Gulf Coast University

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Most recent U.S. government projections by NOAA, United States Geological Survey, Department of Defense, Environmental Protection Agency, Department of Energy, and the US Army Corps of Engineers

Ocean warming & limited ice melt:
- 4.1 to 6.6 feet by 2100
- 1.3 to 2.1 feet by 2050

Ocean warming & largest anticipated ice melt:
- Highest - 2.0 m
- Intermediate-High - 1.2 m
- Intermediate-Low - 0.5 m
- No Ice Sheet Melt - Lower projections not meaningful
- Lowest - 0.2 m

Linear historical:
- No Ice Sheet Melt

NOAA, December 6, 2012

H.R. Wanless, 2013
Present topography

% > 2 feet elevation: 60% inhabitable

+2 FEET (2048-2066)
72% remains
60% inhabitable

+4 FEET (2074-2099)
62% remains
40% inhabitable

+6 FEET (2093-2121)
44% remains
11% inhabitable
WHAT WE WILL LOSE

Present topography

WHAT WE WILL LOSE

Freshwater Resource
Sewage Plants

Airports
Road connectivity

Storm Protection
Tax Base
WE HAVE SERIOUSLY INCREASED THE WARMING STRESSORS. WE MUST EXPECT ICE MELT AND SEA LEVEL TO RESPOND SIGNIFICANTLY AND AS IT HAS IN THE PAST.

From Hansen, 2009, p. 153
REINFORCING FEEDBACKS OF A WARMED OCEAN AND ATMOSPHERE MAKE FUTURE ACCELERATING ICE MELT AND ACCELERATING SEA LEVEL RISE INEVITABLE AND UNSTOPPABLE.
With accelerating sea levels projected through this century and beyond, it is time to refocus on PRE-PLANNING DECISIONS to maintain community stability during relocation and environmental quality during inundation.
1. Long-term, infrastructure-intensive development on barrier islands must be terminated.
2. Public money should not be wasted on hard or soft shore protection measures but rather be put in to

- relocation assistance,
- cleaning low-lying polluted lands, and
- removing storm-damaged development and infrastructure.
3. Establish a pre-planned sea-level-rise threshold staging for insurance withdrawal through cooperative public-private agreement. This will permit both individuals and communities to plan for and understand risk.
Miami Beach tidal flooding at 10th and Alton, (aka. the corner of climate change and clean energy.). Photo is 2 ½ hours after high tide. No rain. No water main break. No hurricane. Just a twice daily high tide. 

H.R. Wanless, 2013
STORM SURGES, ACTING AT HIGHER SEA LEVELS, WILL CAUSING MORE FREQUENT AND EXPONENTIALLY MORE SEVERE AND EXPENSIVE DAMAGE.

Bolivar Peninsula, Texas
Hurricane Ike, Category 2, September 2008

from PPT by William B Potter
4. Establish firm sea-level-rise thresholds for termination of infrastructure services and of permission to rebuild following storm destruction.

May include decreasing buyout offers, assistance with relocation, and/or requirements for removal and cleaning.

Should be tied to insurance withdrawal.
The next 2 feet of sea level rise (by 2048-2066) will make barrier islands extremely risky and challenging for habitation and with severely compromised infrastructure.

Wanless, 2013
5. Establish federal, state and local legislation and mandate for 1-4 above.
6. Initiate intensive education for the affected public towards creating an educated electorate.
What cities must be doing now: integrating sea level rise projections with high-resolution elevation maps, infrastructure elevation maps, storm surge maps, and flood risk maps.

Image provided by B. Soden, U. Miami
With these maps available, detailed decision thresholds can then be produced for each foot of sea level rise.

TODAY  + 1 ft.  + 2 ft.  + 3 ft.  + 4 ft.  + 5 ft.  + 6 ft.

Include all aspects of infrastructure, public safety, and pollution - and the economics and viability of upgrades, maintenance, repair.
With these maps, intelligent pre-planning decisions can be made to determine:

• what areas and infrastructures are currently at unacceptable risk and

• at what thresholds (feet of sea level rise)
  – infrastructure will have to be modified to maintain functionality and acceptable risk or
  – infrastructure services will have to be discontinued from certain sectors.
CLIMATE CHANGE INFLUENCE IS GENERALLY GRADUAL

Increasing:

• sea-level rise & inundation,
• frequency/intensity of extreme weather events,
• and desertification

will gradually destabilize our landscape and infrastructure stability.
RESULTING CHANGES ARE COMMONLY ABRUPT AND CATASTROPHIC

(e.g. Katrina and Sandy, the recent Colorado and New Mexico flooding, and massive dust storms).

Katrina – Ocean Springs, Mississippi  
Katrina – Bay Saint Louis, Mississippi  
Road and businesses removed
MAJOR PRE-PLANNING, DECISIONS, AND ACTIONS ARE THE ONLY WAY TO MAINTAIN:

- a functional and affordable community infrastructure,
- economic viability of the community, individuals and government,
- an acceptably low safety risk to the community population, and
- minimal pollution as low-lying lands become inundated.
WE HAVE A CHOICE OF MAKING THIS A PROGRESSIVE ORDERLY PROCESS IN WHICH THERE CAN BE BOTH HELP TO THE AFFECTED FAMILIES AND CLEANING OF THE LAND BEFORE INUNDATION OR - -
– OR RISKING
CATASTROPHIC CHAOS,
CREATION OF LARGE NUMBERS OF
DISLOCATED INDIGENTS,
AND
POLLUTED WETLAND AND MARINE
ENVIRONMENTS.
THE CHOICE IS OURS.
WHAT CAN WE DO AS AN INDIVIDUAL TO HELP PREVENT EXTREME CLIMATE CHANGE – SUCH AS OVERHEATING OF THE OCEANS AND ATMOSPHERE?

• Understand the reality of climate change and how it works so you can educate others.
• Educate others so that elected officials will have to respond effectively.
• Demand that elected officials become involved in the true changes that are needed.
• Demand that businesses become involved in true responsibility to stop climate change.
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