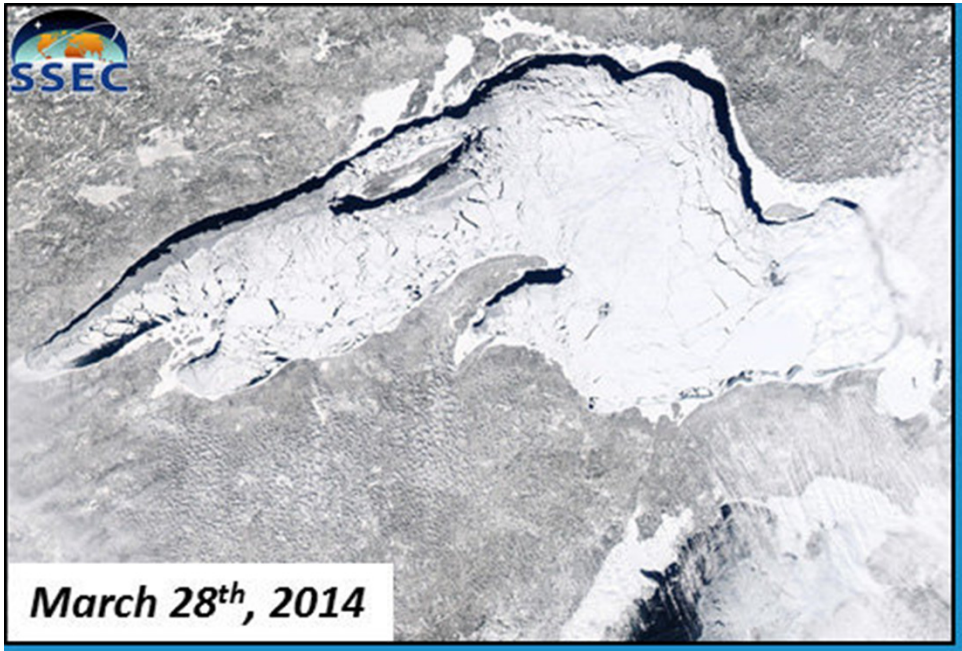
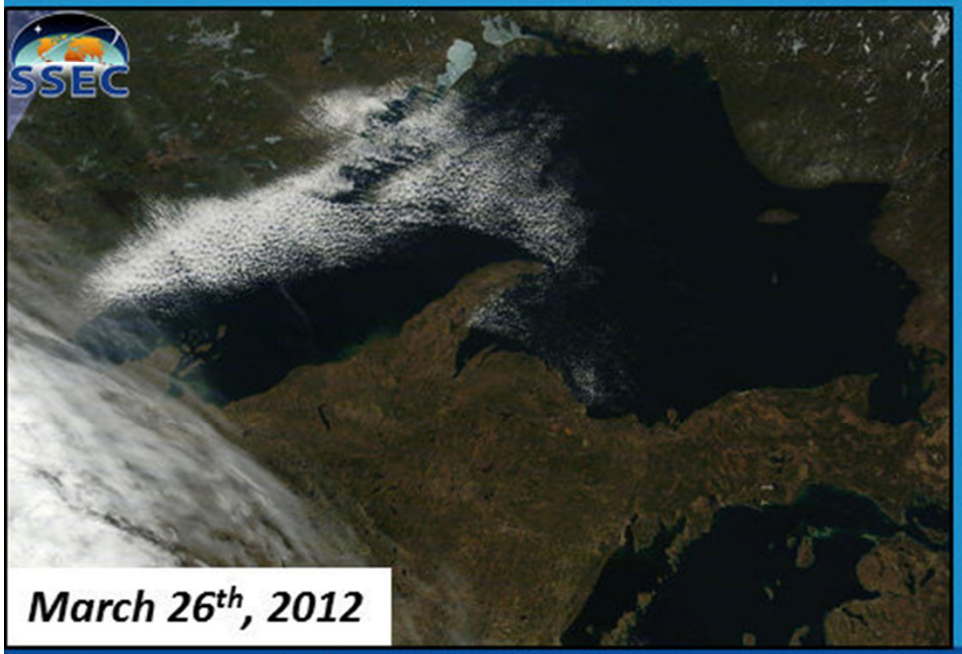
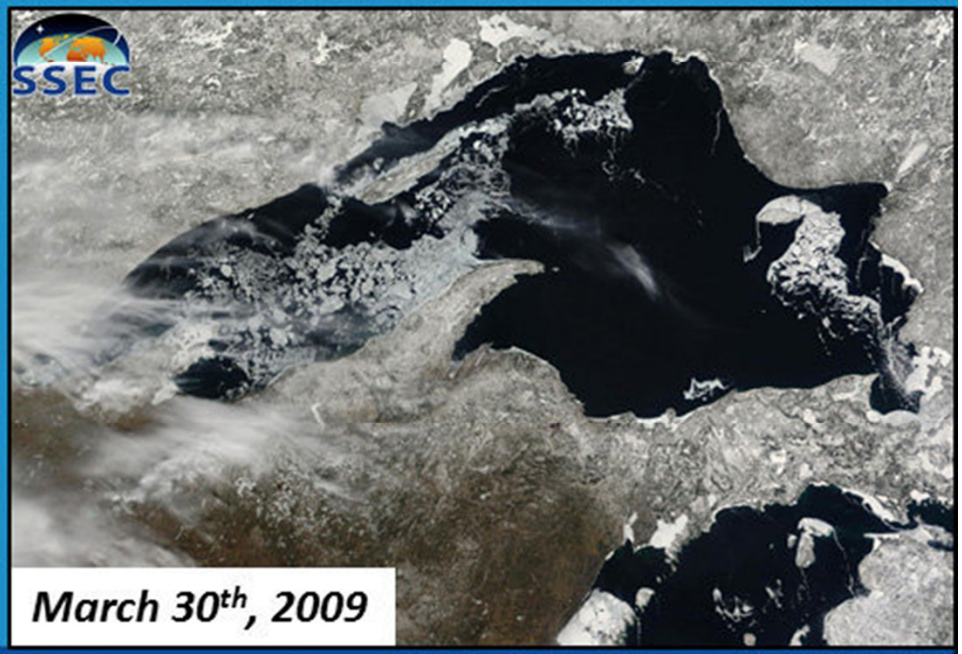
Transportation Research Board, Marine Board, Coastal Resilience Focus Session

April 8, 2014

Jim Dwyer, Maryland Port Administration







National Weather Service – Marquette, Michigan

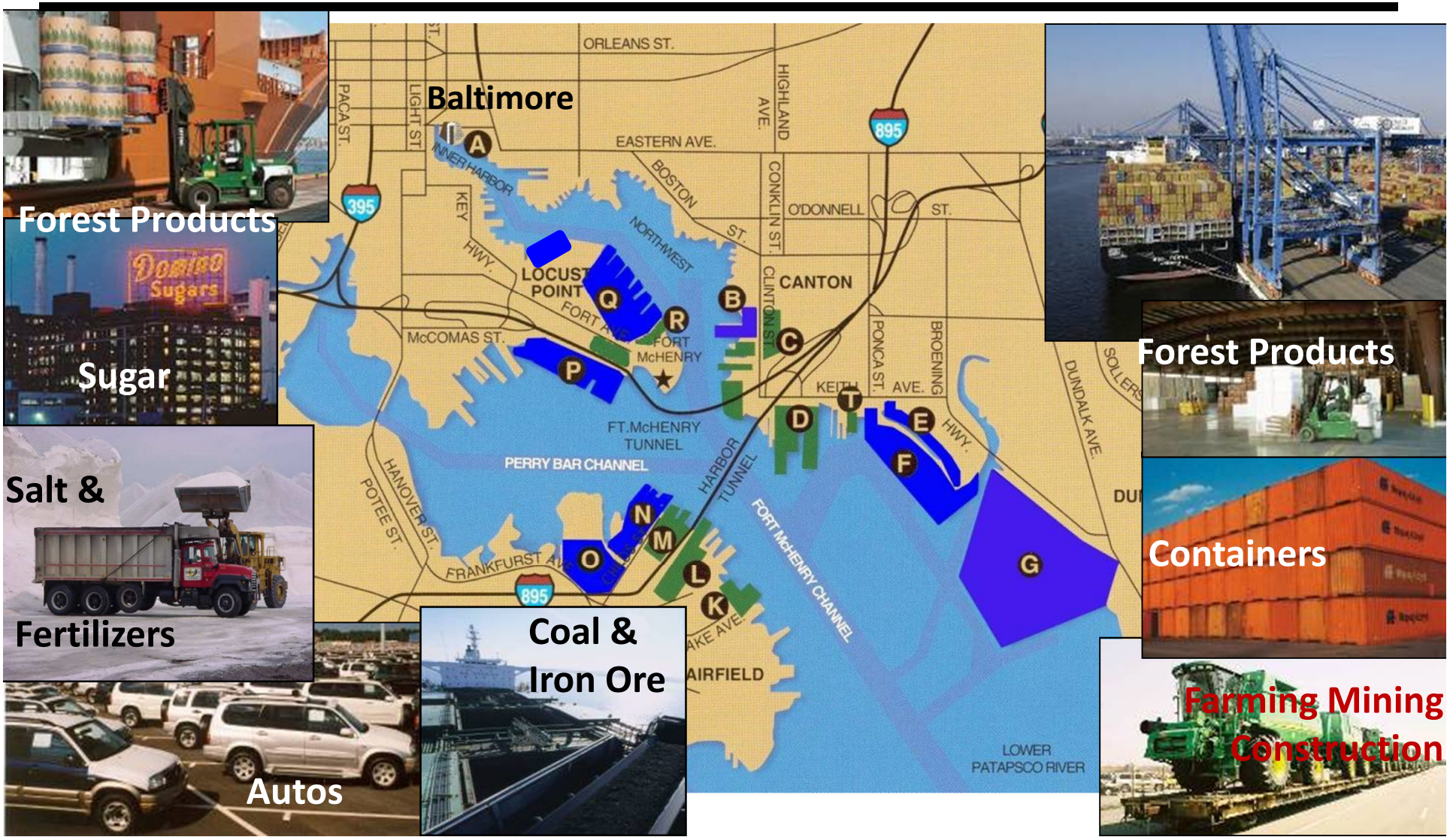
Issued: 3/29/2014 6:42 PM

www.weather.gov/up

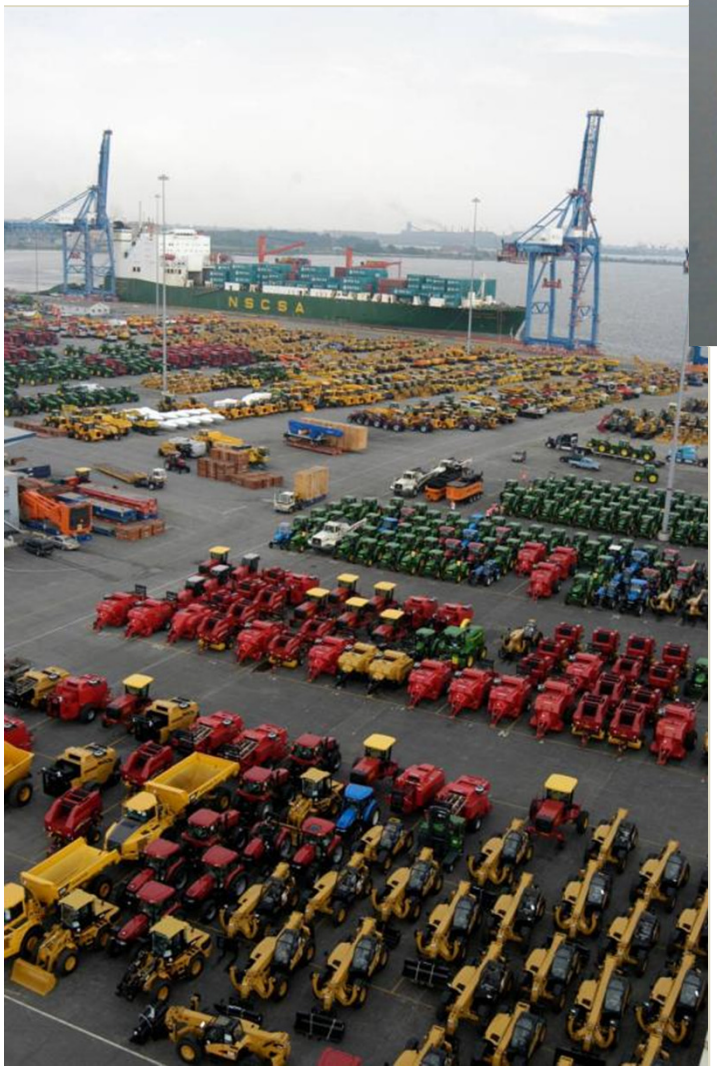
US.NationalWeatherService.Marquette

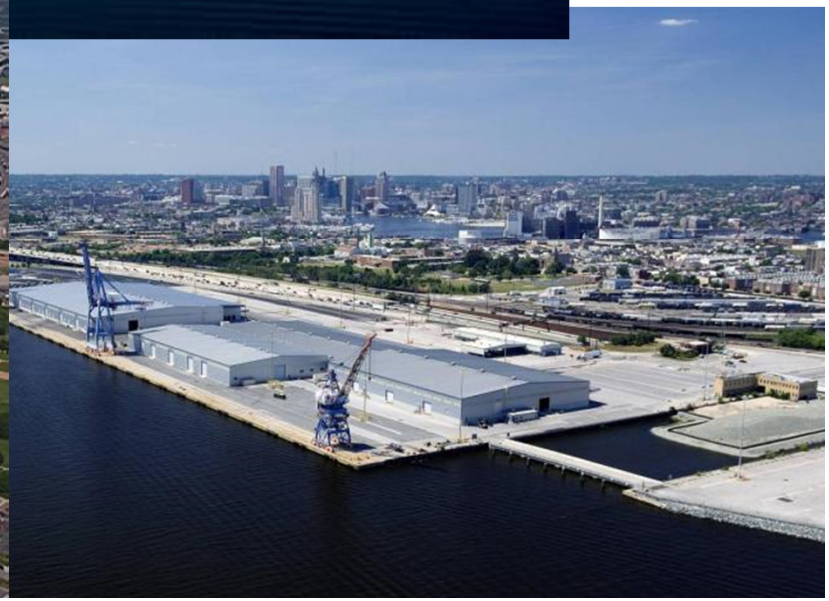
@NWSMarquette

The Port of Baltimore is a complex mix of Private and Public (MPA) terminals handling diverse bulk & general cargoes.



Marine Cargo Terminals are water dependent; we are in the flood plain. It's our natural habitat.





MPA also operates Dredged Material Containment Facilities - Dikes are +36’ and armored with stone.

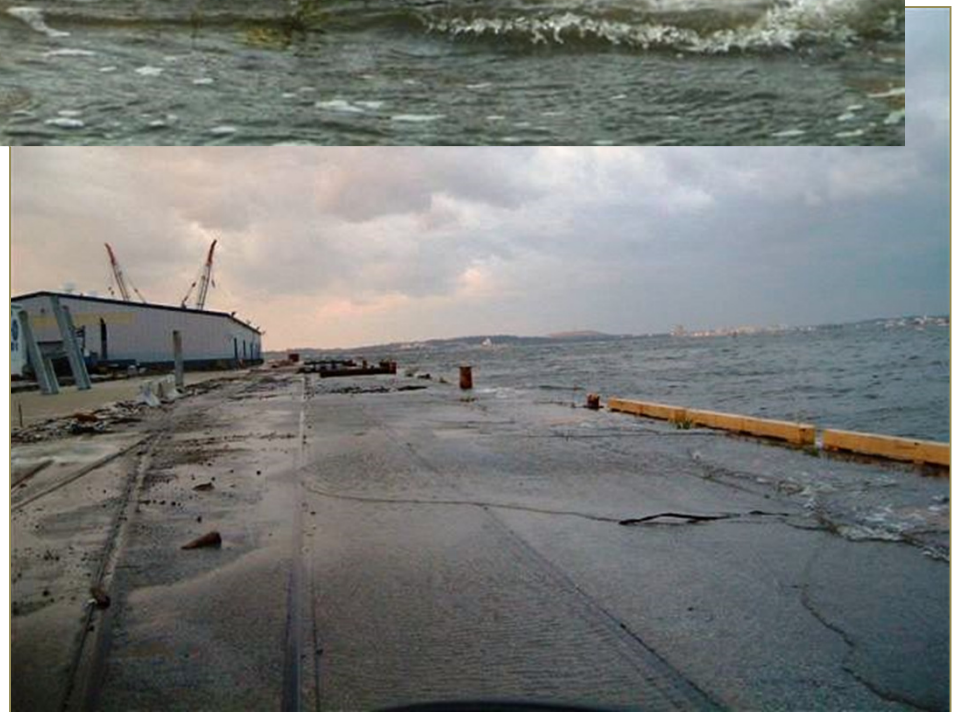
NOAA's Focus Questions concerning Coastal resilience and climate adaptation:

1. What are the predominant coastal **risks** facing communities, ports, and maritime infrastructure?
2. What is **being done** to address those risks? Is it working?
3. What **challenges** stand in the way of doing more to address them?
4. What **information** and decision-support **tools** would help, and in what format/ways are those data and tools most helpful?
5. What other **ways** can the Federal gov't (NOAA) **do more** to support local/regional resilience efforts?
6. How can coastal scientists and engineers best **communicate** with coastal planners and decision-makers on issues related to risk and resilience?

Risks:

Hurricane Isabel, Sept. 2003

+8’ storm surge with waves matched deck height at many of the Port’s berths.



Flooding caused electrical issues, some wave-action damage and lots of debris….

Hurricane Isabel – Damage was minor, except for electrical issues, (especially for WTC bldg).

Highway and rail access to the terminals was also vulnerable.

#1. What are the predominant coastal **risks** facing communities, ports, and maritime infrastructure?

- Flooding & high wind = wave action damage.

- Ice events - damaging aids to navigation, wharf structures, interfering with shipping.

- Snow events can stop truck/RR traffic leading to the port as well as terminal ops.

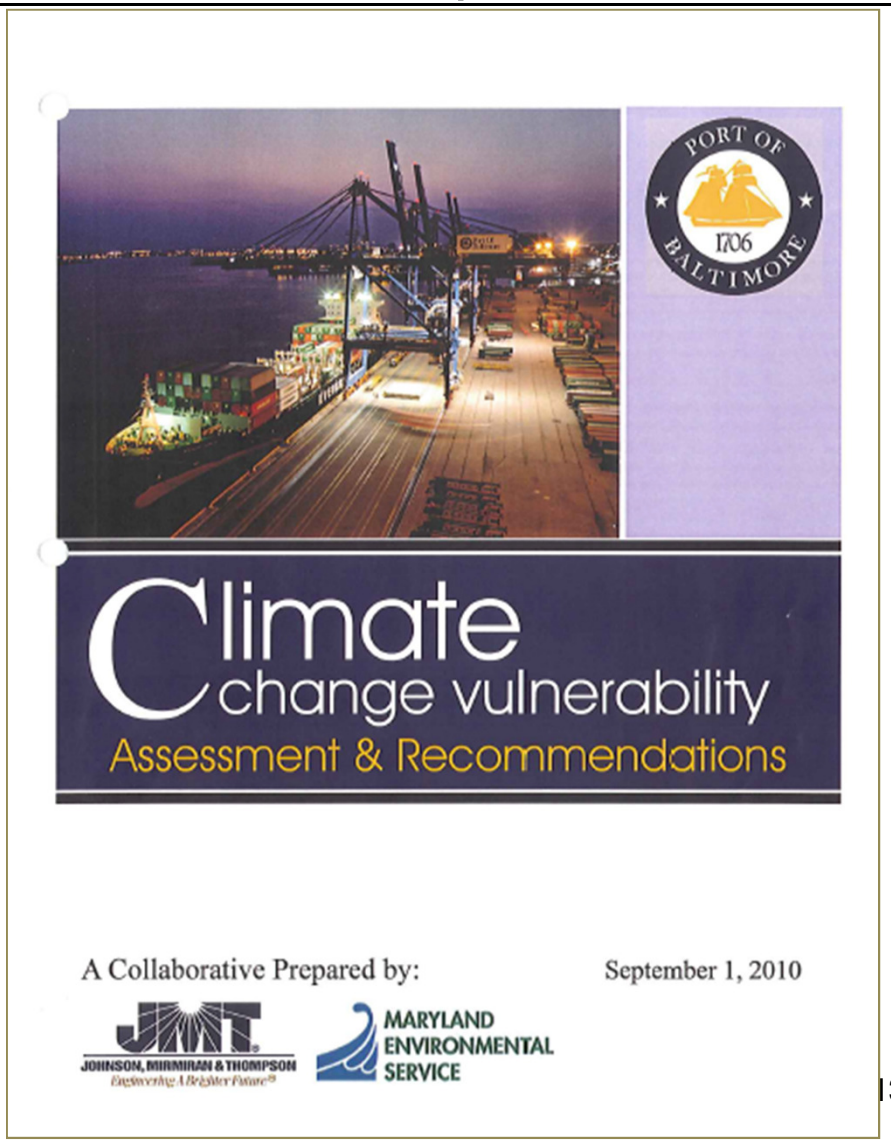
- Increased sedimentation rates and shoaling thus obstructing navigation channels, or causing increased dredging costs.

#2 “What is being done?

Conducted assessment to better understand vulnerability, knowing that we operate within the flood plain, (Sept. 2010).

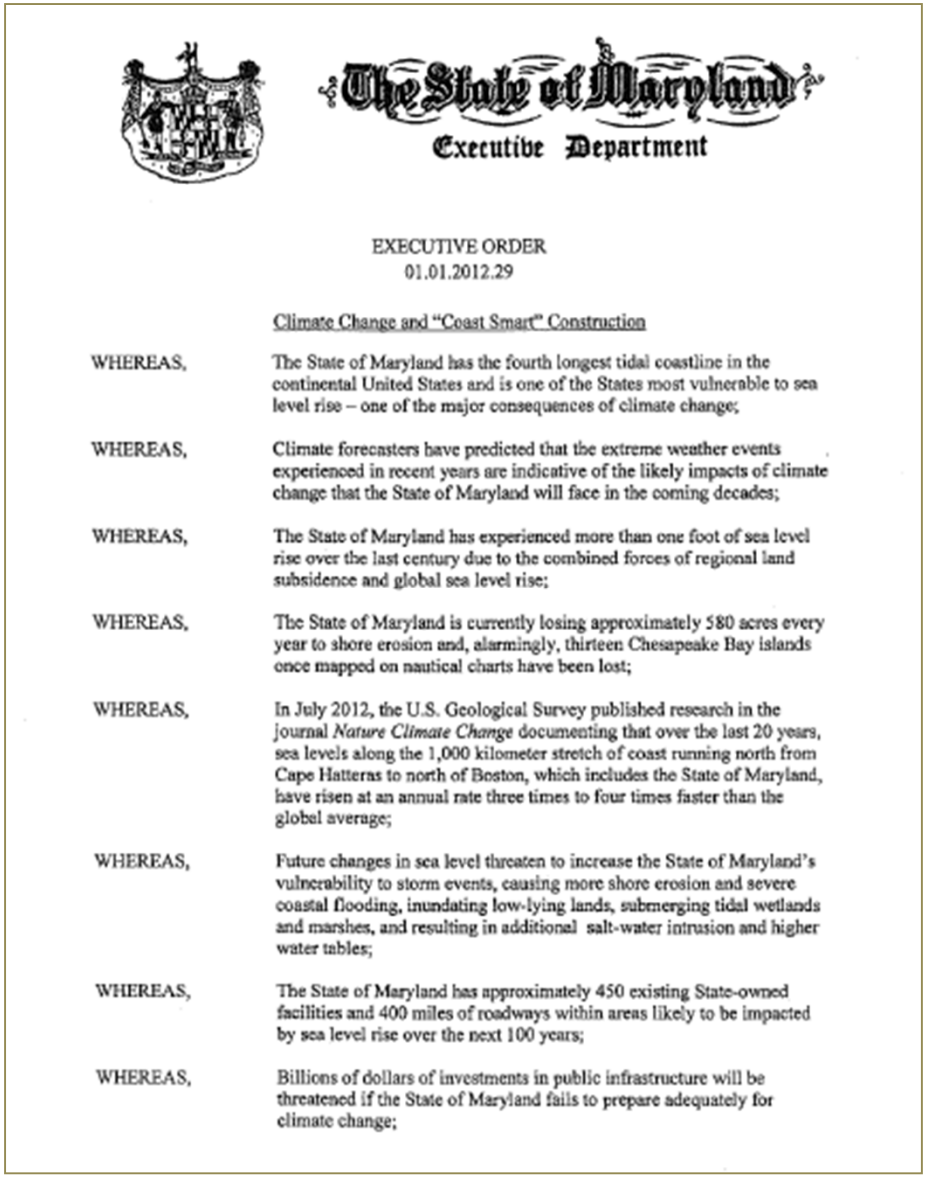
1) Hardening: When building new facilities or structures sensitive to damage (i.e. flooding), MPA will construct them at +2’ above current flood plain.

2) Developed plans and contingencies, which are exercised periodically.



#2 "What is being done?
Governor's Executive Order 01.01.2012.29 (Dec. 2012)

Provided guidelines:
"… for new permanent State structures to have a minimum of two feet of freeboard above the 100-year base flood elevation…"



The State of Maryland
Executive Department

EXECUTIVE ORDER
01.01.2012.29

Climate Change and "Coast Smart" Construction

WHEREAS, The State of Maryland has the fourth longest tidal coastline in the continental United States and is one of the States most vulnerable to sea level rise – one of the major consequences of climate change;

WHEREAS, Climate forecasters have predicted that the extreme weather events experienced in recent years are indicative of the likely impacts of climate change that the State of Maryland will face in the coming decades;

WHEREAS, The State of Maryland has experienced more than one foot of sea level rise over the last century due to the combined forces of regional land subsidence and global sea level rise;

WHEREAS, The State of Maryland is currently losing approximately 580 acres every year to shore erosion and, alarmingly, thirteen Chesapeake Bay islands once mapped on nautical charts have been lost;

WHEREAS, In July 2012, the U.S. Geological Survey published research in the journal *Nature Climate Change* documenting that over the last 20 years, sea levels along the 1,000 kilometer stretch of coast running north from Cape Hatteras to north of Boston, which includes the State of Maryland, have risen at an annual rate three times to four times faster than the global average;

WHEREAS, Future changes in sea level threaten to increase the State of Maryland's vulnerability to storm events, causing more shore erosion and severe coastal flooding, inundating low-lying lands, submerging tidal wetlands and marshes, and resulting in additional salt-water intrusion and higher water tables;

WHEREAS, The State of Maryland has approximately 450 existing State-owned facilities and 400 miles of roadways within areas likely to be impacted by sea level rise over the next 100 years;

WHEREAS, Billions of dollars of investments in public infrastructure will be threatened if the State of Maryland fails to prepare adequately for climate change;

#2 “What is being done?

Old ship berthing slip to be filled and redeveloped for cargo storage at +2’ above surrounding terminal area.

#3. What **challenges stand in the way?**

a. Operational: Berth 4 will **not** be +2' above Flood.

b. Hardening is expensive: What level of insurance is right?

MPA is a "water dependent" agency. Therefore, we try to mitigate, but cannot migrate away from the waterfront.

NOAA's Focus Questions:

…the last three questions are the toughest…

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…the last three questions are the toughest…

1. What: **Risks**? **Being done**? **Challenges?**

4. What **information** and decision-support **tools** would help, and in what format/ways are those data and tools most helpful?

Planning: forecasts of what, how and when it's changing.
Operating: we will continue to use P.O.R.T.S.

4. What other **ways** can the Federal gov't (NOAA) **do more** to support local/regional resilience efforts?

5. How can coastal scientists and engineers best **communicate** with coastal planners and decision-makers on issues related to risk and resilience?

Start an enormous PR campaign to spread the word. Somehow get the attention of politicians & policy makers (and their backers), and possibly celebrities….good luck.

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