

Future Projections of Recurrent Tidal Flooding



NOAA Science Days

March 9, 2016

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Coastal communities need to know what to expect

Daily Press
TUESDAY JAN 19, 2016
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Hampton Roads legislators call for new state fund for flooding assistance



Flooding is a recurring problem in Hampton Roads. Here, vehicles are stuck in Newport News. (Bangitt M...

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Miami Beach in race to control flood ahead of annual King Tide



Pumps, such as the one at left, were designed to counteract rising waters. In Miami in October 2012, left, tides flooded bus stations. Daniel Bock; Joe Raedle/Getty Images

What Climate Change Looks Like: Miami's \$300 Million Pumps

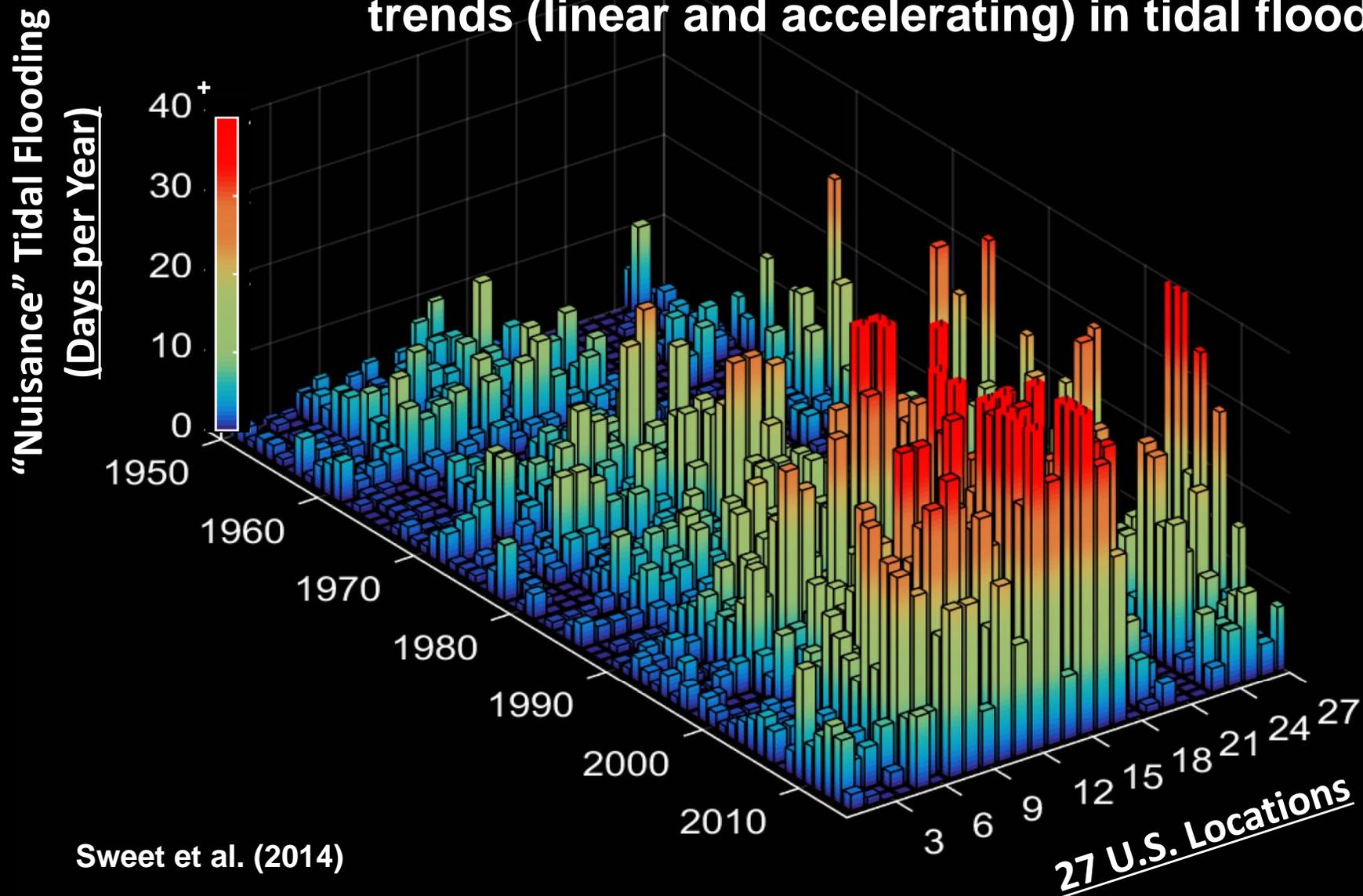
Tidal flood projections can assist community planning (e.g., budgeting for short/long term solutions).

Annual tidal-flood projections (this work) recognize:

- long trends (linear or accelerating) from local sea level rise
- **compounding El Niño Southern Oscillation (ENSO) patterns**

Nuisance Tidal Flood Trends: 300-900% increase since 1960

NOAA gauges since 1950 reveal concerning trends (linear and accelerating) in tidal flooding.



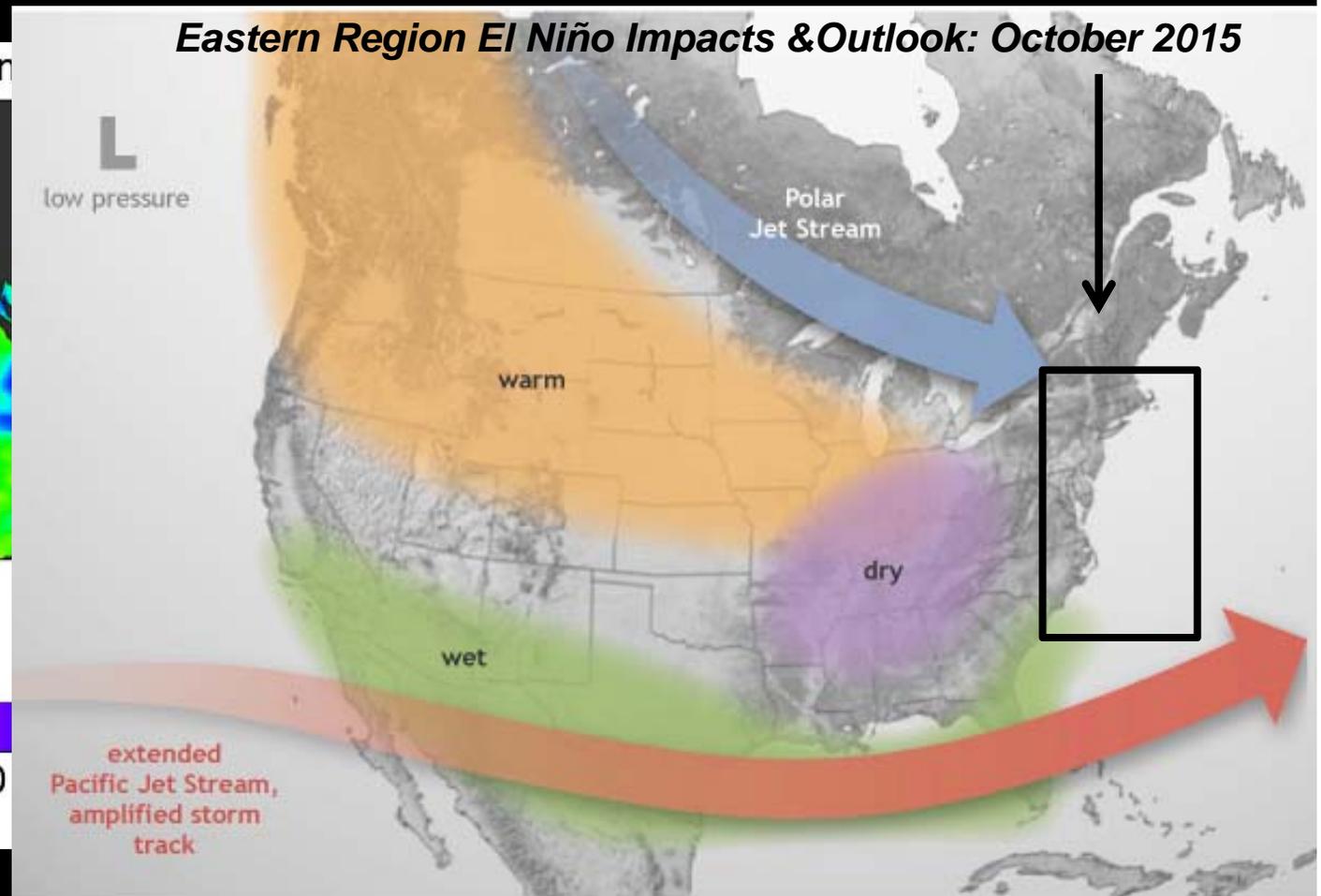
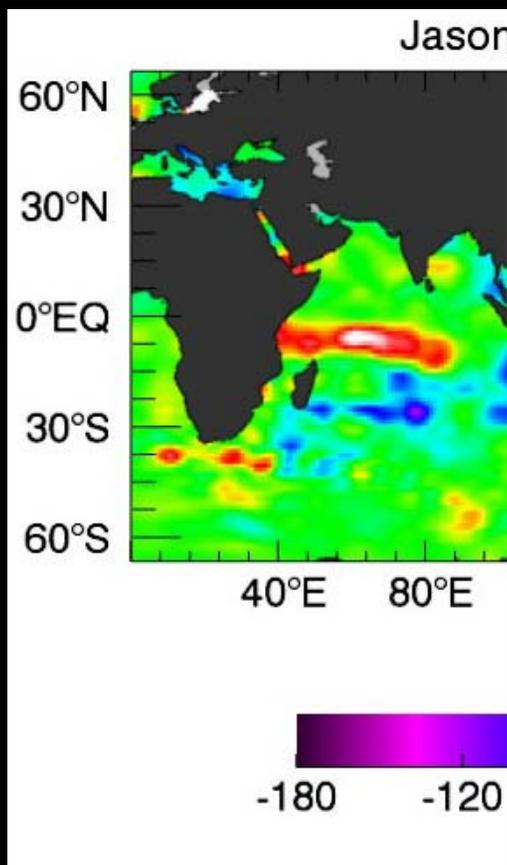
Sweet et al. (2014)

El Niño Pattern: More West & East Coast Tidal Flooding

West Coast:

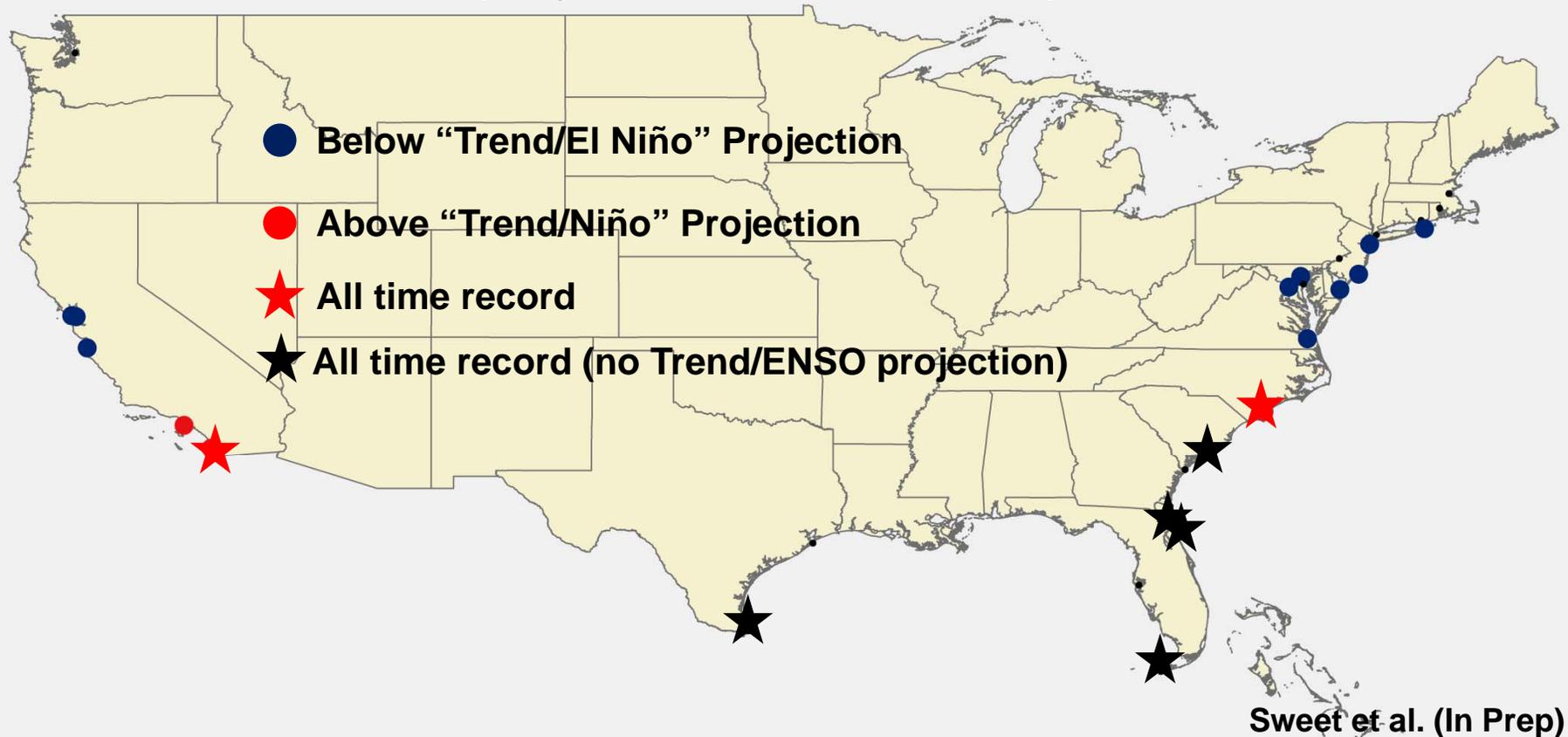
High sea levels for months NE winds, storms and surges increase the reach of storms and tides

East Coast:



2015 El Niño Pattern: 33-200% Tidal Flood Increase Projected

2015 Nuisance Tidal Flood Days To Date (May 2015 – Feb 29, 2016)



2015 Outlook (May 2015 – April 2016) issued in summer of 2015

In Summary:

- Tidal flooding during the 2015/16 El Niño has already surpassed projections and broke records.
- El Niño will likely become more frequent in the future, compounding impacts (in addition to sea level rise).
- NOAA is advancing a national recurrent-flood information system and local dashboards to:
 - deliver flood-frequency projections
 - track impact indicators & their frequency changesto enhance resiliency within coastal communities.