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From Tidewatch to "Flood Watch"

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From Tidewatch to “flood watch”

Next steps for a broader audience

Molly Mitchell
July 2015
Hampton Roads Adaptation Forum
What is Tidewatch?

- Predicts water levels 36hr in advance
- Uses advance tidal prediction program and NOAA storm surge data to get a local “storm tide”
- Information available for 11 gauges throughout the Bay

http://www.vims.edu/bayinfo/tidewatch/index.php
Predicted (astronomical) tide is the daily change in water level produced by the gravitational interactions of the earth, moon, and sun.

Observed water level (NOAA tide gauge data) – includes storm surge

Difference between predicted and observed water level – weather tide
Highest water level the formula can predict

Mean water level in the past 30 days

Mean Sea Level – 1983-2001 tidal datum

Lowest water level the formula can predict

Extent of tidal waters

**Extratidal high water:**
Water higher than the highest predicted tide

**Extratidal low water:**
Water lower than the lowest predicted tide at that location
How do water levels become extratidal?

- Wind stress and/or a drop in barometric pressure.

- Sea-level anomaly—a measure of the difference between short-term and long-term mean sea level (seasonal shifts add to storm experience)

http://www.nhc.noaa.gov
Extratidal high water ~ Storm tide

Extratidal High Water (XHW), the height in feet or meters above HAT datum, offers special advantages in comparing storm tides between locations with different tidal ranges -- we build to the tide range

http://www.nhc.noaa.gov
How does this differ from a tide chart?

- The astronomic tide is a least-squares harmonic fit to the observed water level over the 30 days used for m30, the running mean.

- It represents an oscillation around m30 and not around MSL.

- So...it’s not quite the same as the predicted tides in the NOAA tide tables.

- Its main purpose is to explain water-level change right now and in the very near term; not to make future predictions.
Improving flood predictions

Extrapolate between gauges
Improving flood predictions

Add additional tide gauges

Fill in holes?

Locality gauges?
Improving flood communication

Convert to NAVD88

http://coast.noaa.gov/digitalcoast/

http://vdatum.noaa.gov
- We would like to know how people want to get information?
  - Web page?
  - RSS feeds?
  - Phone apps?

Questions?