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From Tidewatch to "Flood Watch"

Molly Mitchell
Virginia Institute of Marine Science

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From Tidewatch to “flood watch”
Next steps for a broader audience

Molly Mitchell
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Hampton Roads Adaptation Forum
What is Tidewatch?

http://www.vims.edu/bayinfo/tidewatch/index.php

- 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
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 (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.

[Image: Illustration of extratidal high water and storm tide]

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
Improving flood communication

Convert to NAVD88

http://vdatum.noaa.gov

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

Questions?