

Smart Harbors

Raising the Standard

Summer 2015

Keep America Beautiful Cigarette Litter Prevention Program

Keep America Beautiful (KAB) has provided the Virginia Clean Marina program with 1,000 portable ashtrays for distribution at Virginia marinas! They are car cup holder ashtrays (pictured) that are perfect for cars and boats.



During the Ocean

Conservancy's 2014 International Cleanups, the number one item collected in the United States was cigarette butts coming in at a whopping 1,138,854; and internationally the total was 2,248,064.* Those totals only account for the cigarette butts that were actually counted during the cleanups!

Besides being unsightly, many cigarette filters contain cellulose acetate, a plastic that does not degrade quickly. When they are improperly discarded on land or over the water they remain in the environment for many years and present a threat to wildlife. Plastic has been found in the stomachs of many marine creatures that mistake it for food.**

Please contact Anne Smith, annesmith@vims.edu, 804-684-7768 if you would like a supply of portable ashtrays to distribute to your slip holders and transient boaters. The only thing that KAB asks in return is that you post one of their *This is Litter, Too* campaign flyers – I will supply the flyers.

*<http://www.oceanconservancy.org/our-work/marine-debris/2015-data-release/2015-data-release-pdf.pdf>

**<http://www.longwood.edu/cleanva/cigbuttimpacts.htm>

VIMS Tidewatch: Predicting Storm Tides

With contributions from Dr. John Boon

The National Oceanic and Atmospheric Administration (NOAA) has predicted a below normal 2015 hurricane season. NOAA is indicating a 70% chance of a below-normal season, a 20% chance of a near-normal season and only a 10% chance of an above normal season. NOAA's definitions of below-normal, near-normal and above-normal hurricane seasons can be found here. The predicted storm activity for this year includes 6-11 named storms, which includes tropical storm Ana that formed in May, 3-6 hurricanes and 0-2 major hurricanes¹.

While this may seem like promising news for those of us who make our living in the coastal region of Virginia, as we have seen in the past, even one storm can have devastating effects. In addition to damage from strong winds, coastal events such as hurricanes and tropical storms pose the very real threat of flooding from dangerous storm surge. To help predict when these dangerous storm surges might occur a group of Virginia Institute of Marine Science (VIMS) professors, led by emeritus professor John Boon developed the Tidewatch system.

Tidewatch is a network of tide stations and corresponding tide charts within the Chesapeake Bay and along Virginia's seaside Eastern Shore. Each chart displays the astronomical tides caused by gravitational interactions between the earth, moon and sun and the most recent observed water levels at a given location. The difference between the two represents the non-tidal, weather-induced change in water level which includes storm surge². On Tidewatch graphs astronomical tides (blue line) and water level observations (red line) are then extended with the aid of surge predictions generated by the National Weather Service to produce a 36-hour forecast. When asked if there are plans at present to extend the forecast beyond 36 hours Dr. Boon indicated no: "The 36 hour period usually covers the next three high waters and you are doing well if you get those right. Storms can and do change course. The key is to update the water level forecast based on the very latest observations and surge predictions as often as possible."

What helps set Tidewatch apart from other forecasting systems? The Tidewatch system references NOAA tidal datum's but also keeps tabs on recent sea level rise and 'extratidal' water levels at each location. For example, Highest Astronomical Tide (HAT) at the Yorktown Coast Guard Training Center is 3.34 feet above MLLW (Mean Lower Low Water, the datum used for soundings shown on nautical charts). No Tide Table prediction should ever be higher than 3.34 feet above MLLW at this station³. However, water levels observed during storms often exceed HAT at Yorktown and many other places, producing *storm tides* marked as Extratidal High Water (XHW) on Tidewatch charts. In reality, astronomical tides also exceed HAT from time to time as they 'ride' on the sea level that exists today and not decades ago when the chart datum was last determined. Storm surge, shown by the green line on Tidewatch, thus appears as the difference between observed water level and the astronomical tide adjusted for sea level rise⁴.

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¹<http://www.cpc.ncep.noaa.gov/products/outlooks/hurricane.shtml>

²<http://www.vims.edu/bayinfo/tidewatch/index.php>

³http://www.vims.edu/bayinfo/tidewatch/how_to/index.php

⁴http://www.vims.edu/bayinfo/tidewatch/how_to/index.php

Deltaville Marina To Loan Free Life Jackets To Kids This Boating Season

By Ed Peake

This year Deltaville Marina is continuing to help keep kids safe while on the water by participating in the BoatU.S. Foundation *Life Jacket Loaner Program for Kids!* This program, made possible by the BoatU.S. Foundation for Boating Safety and Clean Water, allows boater to borrow a child's life jacket for the day or the weekend, at no charge!

Here's how the Life Jacket Loaner Program works. If a boating family discovers they don't have enough properly-fitting children's life jackets on board, they can simply visit Deltaville Marina and sign out an infant, child, or youth jacket for the day or weekend. When they've finished boating for the day they can return the jackets to the same location. Deltaville Marina was awarded a kit of 12 life jackets, allowing hundreds of children to stay safer on the water.

If you would like to borrow a jacket, simply stop by Deltaville Marina between 8am – 5pm any day of the week. You can also call Ed Peake at (804) 776-9812 to learn more about Deltaville Marina's participation in the program.

There are over 550 BoatU.S. Foundation Life Jacket Loaner Sites located all over the country. Combined, these sites loan out jackets more than 140,000 times a year. The BoatU.S. Foundation Life Jacket Loaner program was launched in 1997. It is the only national program available in all 50 states and the District of Columbia. To learn more about the national effort to put kids in life jackets, visit <http://www.boatus.org/life-jacket-loaner>.

Upcoming Events

Please save the dates for several upcoming events!

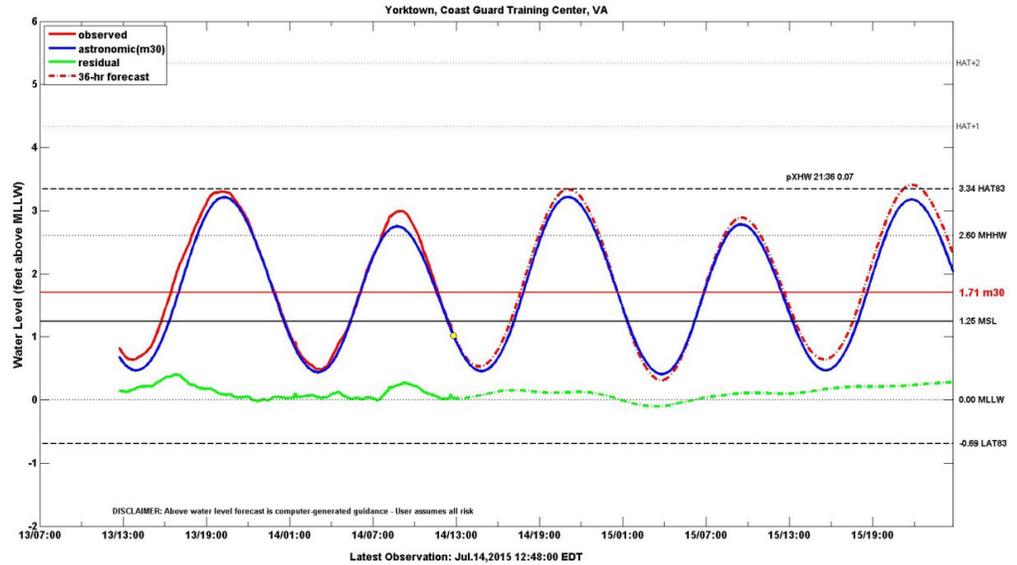
RiverFest, September 12, Nauticus

Virginia Marine Trades Association Annual Meeting, November 10, Virginia Institute of Marine Science

National Working Waterfronts and Waterways Symposium, November 16-19, Tampa, Florida

It is during 'XHW' events that the risk of flooding is greatest. Let's examine the Yorktown Coast Guard Training Center chart to determine how to read and interpret the information.

The graph pictured below from the Yorktown Coast Guard Training Center was updated on July 14, 2015, with the latest observation at 12:48 EDT. Station graphs are updated half-hourly except for Back River, Dandy Haven which is normally updated every hour. "That does not mean the time of the latest observation shown on the graph is going to be a half-hour old when you first see it as there is some delay between NOAA's collecting the data from its GOES satellite and posting it on their web server where we collect the data," says Dr. Boon.



July 14, 2015

On the above chart the blue line is the predicted astronomical tide - the daily change in water levels, as given in Tide Tables, plus an adjustment for sea level rise and seasonal change based on a running 30-day mean water level denoted here as m30. The solid red line is the observed water at the station using unverified data from NOAA and the dashed red line is the 36-hour forecast. The green line, the difference between observed and predicted water levels, reaches about a half-foot above zero indicating a slow rise due to weather. It is important to note that, even without a storm surge, at least one high water has exceeded HAT during this period. This has occurred because of a *sea level anomaly*, the difference between m30 and the Mean Sea Level (MSL) tidal datum, the average water level measured by NOAA over the 1983-2001 National Datum Epoch⁵. The anomaly in this instance is 0.48 feet (1.73-1.25). Other datums include MHHW (Mean Higher High Water) and Lowest Astronomical tide (LAT).

If you have a benchmark storm, for example Irene in August 2011, and you know flooding will occur if the storm surge is comparable, there is a Notable Storms section on the Tidewatch site. Here are the actual water levels for the Yorktown Coast Guard Training Center as recorded during Irene.

“Being able to point to the VIMS Tidewatch web site gives us the ability to provide our customers with forward looking water depth information with a confidence that we are giving them useful guidance.”

–Lew Grimm, owner / manager of Deltaville Yachting Center

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⁵http://www.vims.edu/bayinfo/tidewatch/how_to/index.php

Marketing and Social Media Workshop Survey

With the goal of supporting marine industry partners in Virginia, the VIMS Marine Advisory Program is seeking feedback regarding interest in a specialized marketing and social media tools workshop. The one-day workshop will familiarize marine industry members with the most popular marketing and social media tools available and offer hands-on sessions. Please visit the Virginia Clean Marina program website and take our short survey found at the bottom of the homepage.

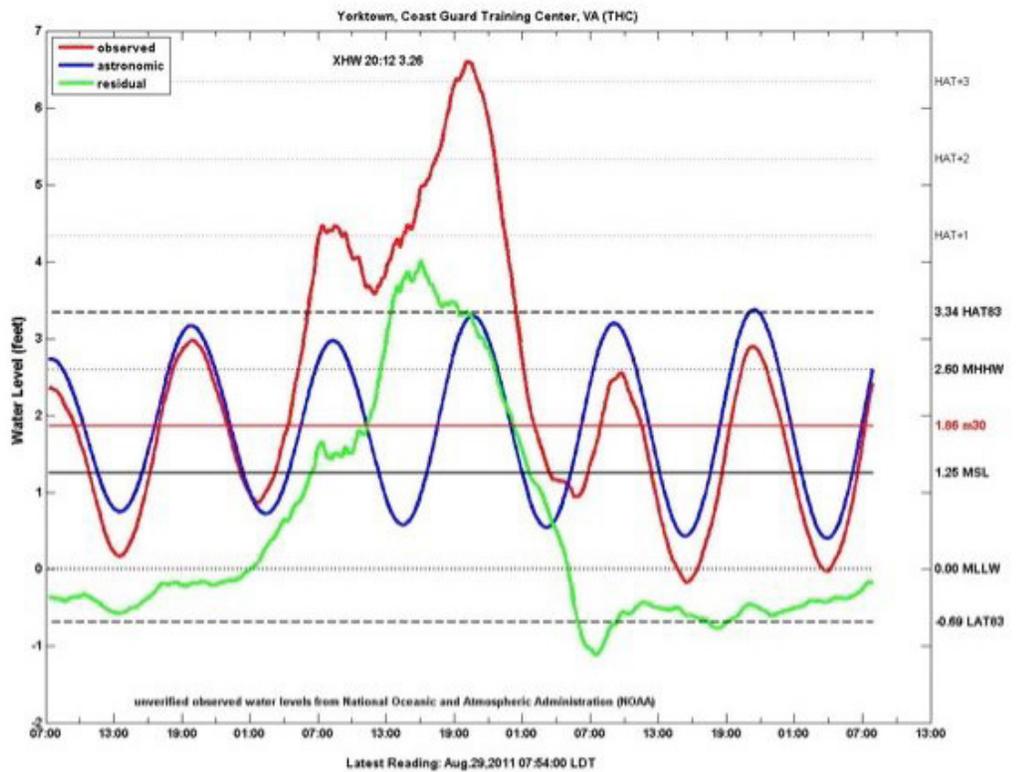
Please send us your News!

Do you have a new and exciting method for managing recyclables at your facility? Are there any regulatory items that you would like addressed? Has your facility won an award, hired a new manager or purchased a fancy pump-out boat? If you have any news that you would like included in the Clean Marina Newsletter, Smart Harbors, please let us know. This is a quarterly newsletter with the next issue scheduled for Fall 2015 and we would like to include information from the marina community.

Comments or questions:

Anne Smith
annesmith@vims.edu
804-684-7768

For additional information on the Virginia Clean Marina program please click on the logo to visit our website.



Hurricane Irene: August 2011

As you can see, at the peak of the storm, the storm surge was close to 3 1/4 feet above HAT. If flooding occurred at your facility during Irene, the chances are probable that flooding will occur again should the storm surge on a current Tidewatch chart approach 3 1/4 feet.

Lew Grimm, owner / manager of Deltaville Yachting Center has worked with Dr. Boon and his team and uses Tidewatch to keep his customers and staff informed when a storm is approaching. "Our customers turn to Deltaville Yachting Center for guidance and advice about having fun with their boat. When a storm is coming, they come to us for help deciding on what steps are appropriate for securing their boat. Being able to point to the VIMS Tidewatch web site gives us the ability to provide our customers with forward looking water depth information with a confidence that we are giving them useful guidance.

In addition to periodic use for storm management, we use it in our marina operations for guidance and to avoid the surprise of wind and tide driven water variation that interfere with service or maintenance work. Dr. Boon and his team spent considerable time finding out what would help the marinas and the boating public. That level of market research is apparent in their product and how useful it is to both the marinas and their customers."

Tidewatch currently has observation stations and corresponding charts for Back River, Dandy Haven; Bishops Head, Maryland; the Chesapeake Bay Bridge Tunnel; Kiptokee; Lewisetta; Money Point; Sewells Point; Wachapreague; Windmill Point; and the Yorktown Coast Guard Training Center. Tidewatch is just one of many tools available to aid coastal residents and business owners in their preparation for extreme weather. Some other sites of interest include NOAA's National Weather Service Digital Forecast Interface, BoatU.S. Foundation's online Hurricane Preparation for Boaters, BoatU.S. Foundation's Hurricane Tracking and Resource Center and NOAA's National Weather Service National Hurricane Center.



Deltaville Yachting Center.

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