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Technical Implementation Notice 16-XX

National Weather Service Headquarters Washington DC

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From: Tim McClung

Chief Operation Officer

NWS Office of Science and Technology Integration

Subject: Extra-Tropical Storm Surge (ETSS) model upgrades and

the first version of Probabilistic Extra-Tropical Storm

Surge (P-ETSS) model:

Effective MM DD, 2017

On Tuesday, MM DD, 2017, beginning with the 1200 Universal Coordinated Time (UTC) cycle, the Extra-Tropical Storm Surge (ETSS) model will be upgraded to:

1. Create a single basin with overland information that covers Gulf of AK and West Coast;
2. Create a new Tide version to resolve tide phase shift in CD2, ETP3 and AP3.
3. Remove a wiggle seen in the station guidance from ETSS 2.1;
4. Experimentally generates a maximum storm tide above NAVD-88 over the next 102 hours product;
5. Extend the guidance from 96 to 102 hours;
6. Migrate to Cray;
7. Discontinue the 5.0 km CONUS and 6.0 km AK grids - AWIPS version 16.1.1 (Dec. 15, 2015) no longer needs them; and
8. General Enhancements / Bug fixes (-check bounds IT test, improve merge mask, make adjustments to the CSV files so they are self-describing, add comments to the SHEF output and remove a bug in the linear interpolation for the post-processing codes).

Also on the same day, the first version of Probabilistic Extra-Tropical Storm Surge (P-ETSS) will do the following:

1. Runs ETSS 2.2 using 21 GFS ensemble members wind and pressure (0.5 degree);
2. Uses equally weighted method to generate the probability;
3. Generates the following products:
   1. Surge and tide height above NAVD-88/AGL exceeded by 10% of storms for 0-102 hours;
   2. Surge and tide height above NAVD-88/AGL exceeded by 10% of the storms, hourly to hour 102;
   3. Surge and tide height above NAVD-88/AGL exceeded by 10% of storms in 6-hr incremental and cumulative groups to hour 102 (e.g. 0-6, 6-12, 12-18,...96-102 and 0-6, 0-12,...0-102);
   4. Probability of surge and tide height greater than 1, 2, 3, 6, 9 feet above NAVD-88 and AGL,in 6-hr incremental and cumulative groups to hour 102 (e.g. 0-6, 6-12, 12-18,...6-102 and 0-6, 0-12,...0-102);
   5. Mean, max and min surge and tide height above NAVD-88 and AGL, hourly to 102 and grouped for 0-102.

The products are available on the following three dissemination sites.

1. NCEP server (aka NOMADS):

As of MM DD, 2016, the updated products will be available here:

<http://nomads.ncep.noaa.gov/pub/data/nccf/com/etss/prod/>

<http://nomads.ncep.noaa.gov/pub/data/nccf/com/petss/prod/>

As part of NCEP’s standard 30 day parallel testing, the updated products are already experimental available here:

<http://para.nomads.ncep.noaa.gov/pub/data/nccf/com/etss/para/>

<http://para.nomads.ncep.noaa.gov/pub/data/nccf/com/petss/para/>

1. Several changes for the ETSS will occur as described below.
2. Product name changes:

The newer station text format product and SHEF product for Gulf of AK will now have a new name: etss.tHHz.stormsurge.goa.txt and shef.etss.tHHz.totalwater.goa, where HH is the cycle hour. Previously the name is labeled etss.tHHz.stormsurge.gok.txt and shef.etss.tHHz.totalwater.gok.

1. New experimentally maximum storm tide above NAVD-88 over the next 102 hours products:

The maximum storm tide above NAVD-88 products will be labeled etss.max.tHHz.stormtide.con2p5km.grib2 for 2.5 km CONUS grid; etss.max.tHHz.stormtide.con625m.grib2 for 625 m CONUS grid and etss.max.tHHz.stormtide.ala3km.grib2 for 3 km Alaska grid, where HH is the cycle hour.

1. The guidance is extended from 96 to 102 hours.
2. Several brand new P-ETSS products will be generated.
3. Station text products:

The station text format storm surge and storm tide products: petss.NAME.tHHz.stormsurge.RGN.txt and petss.NAME.tHHz.stormtide.RGN.txt, where NAME is probability product type (10p/90p=Water height exceedance 10%/90% of ensemble members, max/mean/min=Water height of maximum/mean/minimum of ensemble members), HH is the cycle hour and RGN is the region (est=East coast, gom=Gulf of Mx, wst=West coast, ber=New Alaska Basin, goa=Gulf of AK).

1. Above NAVD-88 gridded products:
   1. Hourly incremental to 102 hour products: petss.1hr.inc.NAME.tHHz.stormtide.con2p5km and petss.1hr.inc.NAME.tHHz.stormtide.con625m for CONUS and petss.1hr.inc.NAME.tHHz.stormtide.ala3km for Alaska.
   2. 6-hour incremental to 102 hour products: petss.6hr.inc.NAME.tHHz.stormtide.con2p5km and petss.6hr.inc.NAME.tHHz.stormtide.con625m for CONUS and petss.6hr.inc.NAME.tHHz.stormtide.ala3km for Alaska.
   3. Cumulative 0-102 hour products: petss.102hr.cum.NAME.tHHz.stormtide.con2p5km and petss.102hr.cum.NAME.tHHz.stormtide.con625m for CONUS and petss.102hr.cum.NAME.tHHz.stormtide.ala3km for Alaska.
   4. 6-hour cumulative groups to hour 102 products: petss.6hr.cum.NAME.tHHz.stormtide.con2p5km and petss.6hr.cum.NAME.tHHz.stormtide.con625m for CONUS and petss.6hr.cum.NAME.tHHz.stormtide.ala3km for Alaska.
   5. Where NAME is probability product type (10p=Water height exceedance 10% of ensemble members, max/mean/min=Water height of maximum/mean/minimum of ensemble members and 1/2/3/6/6/9ft.chance=Probability of storm tide height greater than 1/2/3/6/9 feet above NAVD-88) and HH is the cycle hour.
2. Above ground level gridded products:
   1. Hourly incremental to 102 hour products: petss.agl.1hr.inc.NAME.tHHz.stormtide.con2p5km and petss.agl.1hr.inc.NAME.tHHz.stormtide.con625m for CONUS and petss.agl.1hr.inc.NAME.tHHz.stormtide.ala3km for Alaska.
   2. 6-hour incremental to 102 hour products: petss.agl.6hr.inc.NAME.tHHz.stormtide.con2p5km and petss.agl.6hr.inc.NAME.tHHz.stormtide.con625m for CONUS and petss.agl.6hr.inc.NAME.tHHz.stormtide.ala3km for Alaska.
   3. Cumulative 0-102 hour products: petss.agl.102hr.cum.NAME.tHHz.stormtide.con2p5km and petss.agl.102hr.cum.NAME.tHHz.stormtide.con625m for CONUS and pets.agl.102hr.cum.NAME.tHHz.stormtide.ala3km for Alaska.
   4. 6-hour cumulative groups to hour 102 products: petss.agl.6hr.cum.NAME.tHHz.stormtide.con2p5km and petss.agl.6hr.cum.NAME.tHHz.stormtide.con625m for CONUS and pets.agl.6hr.cum.NAME.tHHz.stormtide.ala3km for Alaska.
   5. Where NAME is probability product type (10p=Water height exceedance 10% of ensemble members, max/mean/min=Water height of maximum/mean/minimum of ensemble members and 1/2/3/6/6/9ft.chance=Probability of storm tide height greater than 1/2/3/6/9 feet above ground level) and HH is the cycle hour.

2. NWS server (aka NDGD):

Several changes for the ETSS will occur as described below:

1. The names for 2.5 km CONUS and 3 km Alaska surge only grid products are changed to ds.etss-stormsurge-2p5.bin and ds.etss-stormsurge-3p0.bin respectively.
2. The new added 2.5 km CONUS and 3 km Alaska surge plus tide grid products are named ds.etss-stormtide-2p5.bin and ds.etss-stormtide-3p0.bin respectively.
3. The new added 625 m CONUS surge plus tide and tide only grid products are named ds.etss-stormitde-625m.bin and ds.etss-tide-625m.bin respectively.

CONUS grid products will be available in the National Digital Guidance Database (NDGD) here:

<http://weather.noaa.gov/pub/SL.us008001/ST.expr/DF.gr2/DC.ndgd/GT.slosh/AR.conus/VP.001>

<http://weather.noaa.gov/pub/SL.us008001/ST.expr/DF.gr2/DC.ndgd/GT.slosh/AR.conus/VP.002>

<http://weather.noaa.gov/pub/SL.us008001/ST.expr/DF.gr2/DC.ndgd/GT.slosh/AR.conus/VP.003>

<http://weather.noaa.gov/pub/SL.us008001/ST.expr/DF.gr2/DC.ndgd/GT.slosh/AR.conus/VP.004>

<http://weather.noaa.gov/pub/SL.us008001/ST.expr/DF.gr2/DC.ndgd/GT.slosh/AR.conus>/VP.005

Similarly, Alaska grid products will be available in the NDGD here:

<http://weather.noaa.gov/pub/SL.us008001/ST.expr/DF.gr2/DC.ndgd/GT.slosh/AR.alaska>/VP001

<http://weather.noaa.gov/pub/SL.us008001/ST.expr/DF.gr2/DC.ndgd/GT.slosh/AR.alaska>/VP002

<http://weather.noaa.gov/pub/SL.us008001/ST.expr/DF.gr2/DC.ndgd/GT.slosh/AR.alaska/VP003>

<http://weather.noaa.gov/pub/SL.us008001/ST.expr/DF.gr2/DC.ndgd/GT.slosh/AR.alaska/VP004>

<http://weather.noaa.gov/pub/SL.us008001/ST.expr/DF.gr2/DC.ndgd/GT.slosh/AR.alaska/VP005>

3. Satellite Broadcast Network:

A) Gridded Data –

As a reminder, the surge only CONUS 5 km and Alaska 6 km will be discontinued. The surge only and surge plus tide CONUS 2.5 km and Alaska 3 km gridded products as well as tide only and surge plus tide CONUS 625m gridded products will be available over the SBN.

The 625m, 2.5 and 3 km WMO headers are as follows:

WMO Heading Region

MHU... KNHC NDFD CONUS 2.5 km surge only grid

MPQ... KNHC NDFD CONUS 2.5 km surge plus tide grid

MPU... KNHC NDFD CONUS 625 m surge plus tide grid

LPU... KNHC NDFD CONUS 625 m tide only grid

MHR... KNHC NDFD Alaska 3 km surge only grid

LPQ... KNHC NDFD Alaska 3 km surge plus tide grid

The “...” in the WMO heading will be replaced by DHH where D is the day of the forecast. A=Day 0, B=Day 1, ..., F=Day 5 and HH is the hour of day when the forecast is valid. A full chart of the header combinations per forecast cycle for surge only is available here:

http://slosh.nws.noaa.gov/etss/docs/headers1.xlsx

A full chart of the header combinations per forecast cycle for surge plus tide and tide only is available here:

http://slosh.nws.noaa.gov/etss/docs/headers2.xlsx

B) SHEF Data –

If you have any questions about these changes and additions to the Extra-Tropical Storm Surge guidance, please contact:

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This and other NWS Technical Implementation Notices are available here:

<http://www.nws.noaa.gov/om/notif.htm>

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