Informal Release Notes: ETSS v2.2.0

As of: Feb 28, 2017

For **P-ETSS 1.0**, please see here: [Informal Release Notes for P-ETSS 1.0](https://docs.google.com/document/d/1uebYBYw7kERfV89kNetkBkwyswPDIrDy91kxSboq3ss/edit)

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# Supporting Documents

1. "Informal Release Notes" -> This document
2. [Formal Release Notes for ETSS 2.2](https://docs.google.com/document/d/1Qsm9qPyBFf1SsdT473EDIAmfNHIxN-PNULDPi9Rby6E)
3. [Implementation Instructions](https://docs.google.com/document/d/1Ot_EHEmKgy8cvIX1IP8CxJJtfbLF2aLbSWJxxcwLdBU)
4. [Flow Diagram](https://drive.google.com/open?id=0B5Fco9oi4iLSYmNuSkFEcGFEakU)
5. [TIN](https://docs.google.com/document/d/1MHHvj8YmXHI_sNqUwuBc4mn8Ypx-NuqCCRCHEOTaqH4)

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# History

V0.0.0 - Initial implementation of Model -- Oct 3, 1995

V0.0.0 - Bering Sea basin **(eOTZ)** built -- Oct 27, 1998

V0.0.0 - East Coast basin **(eEXT)** built -- Jan 9, 1999

V0.0.0 - Gulf of Mexico basin **(eGLL)** built -- Mar 30, 1999

V0.0.0 - West Coast **(eWCT)** and Arctic **(eNOM)** added -- Sep 25, 2000

V0.0.0 - Handle all 4 cycles of GFS -- Sep 1, 2001

V0.0.0 - Gulf of Mexico basin 2 **(eGL2)** (replacing the **eGLL** basin) built -- Oct 12, 2001

V0.0.0 - Changing model to handle 96 hours forecast -- May 10, 2007

V0.0.0 - Output to NDFD grids -- Nov 7, 2007

V0.0.0 - Updating east coast basin **(eEX2)** (replacing the **eEXT** basin) and adding Gulf of Alaska **(eGOA)** basin -- Apr 11, 2008

V0.0.0 - Updating Gulf of Mexico basin **(eGM3)** (replacing the **eGL2** basin) -- Jun 30, 2010

V0.0.0 - Adding scripts to run ETSS model in parallel -- Jan 21, 2011

V0.0.0 - West Coast basin **(eWC2)** (replacing the **eWCT** basin) built -- Feb 9, 2011

V1.0.0 - Modified model to run on WCOSS by Arthur Taylor -- Oct 11, 2012

v1.5.0 - Implemented on Oct.15, 2014

1. Using GRIB2 0.5 degree GFS data instead of GRIB1 1 degree GFS data
2. Bug fix for wind control window for Arctic basin
3. Additional output of 2.5 km CONUS grids (requiring a new mask file)
4. Additional output of 3 km Alaska grids (requiring a new mask file)
5. Correcting the Alaska mask files in the south Bering Sea

v2.0.0 - Implemented on May 19, 2015

1. Re-introducing the inundation algorithm based on surge
2. For the East and Gulf of Mexico coastlines, nesting the tropical and Extra-Tropical computational grids to leverage the finer overland details contained within tropical grids. The tropical basins introduced were: (**AP3, CD2, CO2, CP5, CR3, DE3, EBP3, EBR3, EFM2, EGL3, EJX3, EKE2, EMO2, EOK3, EPN3, ESV4, ETP3, HCH2, HMI3, HOR3, HPA2, HT3, IL3, LF2, MS7, NY3, PB3, PN2, PS2, PV2**)
3. ETSS post processing is being introduced to the operational environment to create SHEF-encoded water level guidance for River Forecast Centers
4. ETSS post processing now uses NCEP's BUFR tanks (as opposed to web scraping) for observations

v2.1.0 - Implemented on November 3, 2015

1. Creating a new Bering-Beaufort-Chukchi Sea (**eBBC**) (replacing the **eOTZ** and **eNOM** basins) Alaska basin to resolve a problem with water flowing from one basin to another through the Bering Strait.
2. Determine best wind drag coefficient to use for eBBC
3. Re-introducing the inundation algorithm based on surge and tide
4. Provide overland guidance based on surge and tide for all U.S coastlines, which include tidal forcing for all domains
5. Correct the SHEF encoding to use MLLW instead of MHHW as a vertical datum, and incorporate more stations

v2.2.0 - Implementation on June 06, 2017 -- (Code handoff on February 22, 2017)

1. Create an improved West Coast basin (**NEP**) (replacing the **eWC2** basin) that has overland information and covers Gulf of AK, Western Canada and the West Coast. The intent is to model surge propagating south along the Canadian Coast.
2. Create a new Tide version to resolve tide phase shift in Cedar Key FL (CD2), Tampa Bay FL (ETP3) and Apalachicola FL (AP3).
3. Replaced the 13 tidal constituents from OSU's TOPEX/Poseidon Global Tide model with 13 tidal constituents from Notre Dame's ADCIRC model in the Bering-Beaufort-Chukchi Sea (**eBBC**) basin.
4. Experimentally generate max surge + tide above NAVD88 for 0 to 102 hours
5. Extend forecast from 96 to 102 hours (to match P-Surge 2.6 (2016))
6. Removed the reported storm surge 'wiggle' for the East Coast and Gulf of Mexico in version 2.1
7. Migrate to the Cray
8. Discontinue 5.0 km CONUS and 6.0 km AK grids as they are not needed by AWIPS as of build: 16.1.1, Dec 15, 2015.
9. General Enhancements / Bug fixes (-check bounds IT test, improve merge mask, make the CSV files self-describing and remove a linear interpolation bug in the post-processing codes)

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# Input Data Changes

None

# Output Data Changes

1. **Discontinued from SBN** the 5.0 km CONUS and 6.0 km AK grids (Size: **-60 Mb** every 6 hours)
2. **Added WMO headers** for 96 to 102 hours surge only (2.5 km CONUS and 3 km AK) grids (Size: **+2 Mb**, **+4 Mb** respectively every 6 hours)
3. **Added WMO headers** to surge + tide (2.5 km and 625 m CONUS and 3 km AK) grids to add them to the SBN and into AWIPS (Size: **+30 Mb**, **+100 Mb**, **+80 Mb** respectively every 6 hours)
4. **Added WMO headers** to tide only (CONUS 625 m) grids to add them to the SBN and into AWIPS (Size: **+100 Mb** bytes every 6 hours)

Net Change is -60 Mb +6 Mb +210 Mb + 100 Mb = **+256** Mb every 6 hours

1. Extended the model's "new text format", SHEF format, and CSV format to 0 to 102 hours (from 0 to 96). Did not change the 0 to 96 hours in the model's "original text format".
2. Removed 'Super WMO headers' from surge only products
3. Additional output of maximum Surge + Tide above NAVD88 for 0-102 hours on 2.5 km and 625 m CONUS and 3 km Alaska grids

# Technical Details (aka Computational Resource Information)

* Number of CPU: 14 CPU (No change)
* Memory: 1600 MB / CPU (No change)
* Serial/Parallel runs: 14 independent scripts run in parallel
* Run Time: 28 minutes (from 37 minutes)
* How often: 4 cycles per day

# Dependencies

1. **Compiling model codes:**
* module load PrgEnv-intel/5.2.56 (default)
* module load g2-intel/2.5.0
* module load bacio-intel/2.0.1
* module load w3nco-intel/2.0.6
* module load jasper-gnu-haswell/1.900.1
* module load png-intel-haswell/1.2.49
* module load zlib-intel-haswell/1.2.7
1. **Running model:**
* module load PrgEnv-intel/5.2.56 (default)
* module load prod\_util/1.0.5 (default)
* module load grib\_util/1.0.3
* module load gempak/7.3.0
1. **Storm surge model input**
* GFS model results (wind and pressure)

# Disk Usage

* Data retention for files in /com and /nwges under prod/para/test environments:

 A few weeks

* + /com usage - **1.0 Gigs** (Data retained currently for7 Days)

|  |
| --- |
| % du -sh ./com/etss/prod/etss.YYYYMMDD/**1.0G** ./com/etss/prod/etss.YYYYMMDD/ |

* + /pcom usage - **886 Megs**

|  |
| --- |
| % du -sh ./pcom/prod/etss/**886M** ./pcom/prod/etss/ |

# Testing Requirements

* Does this change require a 30-day evaluation? **Likely**
* Suggested evaluators?
	+ **West Coast basin update - WR-HQ, OPC**
	+ **FL tides - SR-HQ, NHC-TAFB**

# Dissemination Information

* Where should this output be sent? **SBN and ftp server**
* Primary users: **WFOs, OPC and NHC**
* Archive to HPSS: **Yes**
	+ Retention length: **Few years**
	+ List which output files should be archived:
		- The GRIB files (etss.t${cyc}z\*.grib2)
		- Station output files (mdlsurge.${cyc}\* and etss.t${cyc}z\*.txt)
		- Shef and CSV files (etss.t${cyc}z\*.shef\_tar and etss.t${cyc}z\*.csv\_tar)