

# **PRODUCT DESCRIPTION DOCUMENT**

## **Experimental Probabilistic Tropical Cyclone Inundation Guidance Products**

**Approved:**

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**Date:**

## Experimental Probabilistic Tropical Cyclone Inundation Guidance Products

### Part I - Mission Connection

- a. Product Description - The Probabilistic Tropical Cyclone Inundation Guidance products consist of two suites of probability products for the Gulf of Mexico and Atlantic coastal areas. The first suite of products shows probabilities, in percent, of inundation exceeding 0 feet though 20 feet above ground level, at 1 foot intervals (e.g., the probabilities in percent, of inundation exceeding 0 feet, 1 feet, 2 feet, ..., 20 feet). The second set of products show the probabilities of inundation heights (above ground level) being exceeded, from 10 to 50 percent, at 10 percent intervals. The two suites of products are provided out to 78 hours as a cumulative probability, defined as the overall probability the event will occur at each grid cell from the start of the run until some specified time (e.g. 0-6 hours, 0-12, 0-18, etc.) and as an incremental probability, defined as the probability the event will occur sometime during the specified forecast period (e.g. 0 - 6 hours, 6-12, 12-18, etc.) at each grid cell. The guidance products do not account for tide, waves, and fresh water (i.e. precipitation runoff and river inflow).
- b. Purpose – The products are intended to provide users with information to enhance their ability to make preparedness decisions specific to their own situations. Users have requested additional tropical cyclone probabilistic information, and the National Research Council’s Fair Weather Report encourages the development of probabilistic products. Based on feedback received for existing tropical cyclone storm surge guidance products provided in terms of NGVD-1929 and NAVD 1988, the NWS anticipates it will be easier for users to understand inundation guidance in terms of “above ground level”. The provision of above ground level information (inundation) is a communication focus of the NOAA Storm Surge Roadmap.
- c. Audience – The emergency management community is the primary target audience. However, this product will also be widely used by other federal, state, and local government agencies; the media; maritime interests; and the general public.
- d. Presentation Format – Online graphics (google map background and .png file) can be found at: <http://www.weather.gov/mdl/phish>. GRIB2, KMZ and GIS files can also be downloaded from the website.

Planning is currently underway to provide the GRIB2 data via the NWS Telecommunication Gateway in the future.

### Feedback Method

Technical questions may be addressed to:

National Weather Service  
Attn: Arthur Taylor  
W/OST25  
Meteorological Development Laboratory  
1325 East West Highway

Silver Spring, MD 20910  
or e-mail to: [arthur.taylor@noaa.gov](mailto:arthur.taylor@noaa.gov)

Policy questions may be addressed to:

National Weather Service  
Attn: John F. Kuhn  
W/OS21  
Marine and Coastal Services Branch  
1325 East West Highway  
Silver Spring, MD 20910

or e-mail to: [john.f.kuhn@noaa.gov](mailto:john.f.kuhn@noaa.gov)

## **Part II - Technical Description**

- a. Format & Science Basis - The Probabilistic Tropical Cyclone Inundation Guidance products are a statistical output from of an ensemble of SLOSH model runs. All ensemble members are based on the current NHC's tropical cyclone advisory. Ensemble members take into account historical error characteristics by varying input parameters such as forward speed, cross track location, radius of maximum wind, and hurricane intensity. The inundation guidance is computed by subtracting the average heights within the native SLOSH grid from the computed water levels. The resolution of the model varies based on which native SLOSH grid is used, however the resulting inundation guidance is interpolated onto a uniform 625 x 625 meter NDFD CONUS sub grid for dissemination purposes.
- b. Product Availability - The product is available whenever a hurricane watch and/or warning is in effect for any portion of the Gulf or Atlantic coasts of the continental United States. Updates to the product are generally produced one hour after the issuance of routine NHC tropical cyclone advisories (03, 09, 15, and 21 Coordinated Universal Time – UTC).

Static example of the product is available at: <http://www.weather.gov/mdl/phish>.

- c. Additional Information  
A full description of other NWS Tropical Cyclone Weather Services Program Products is provided in NWSI 10-601, which is available on the Internet at:  
<http://www.nws.noaa.gov/directives/010/010.htm>