NOAA/National Weather Service
National Hurricane Center / Tropical Analysis and Forecast Branch
Experimental Satellite Rainfall Quantitative Precipitation Estimates (QPE)
Product Description Document

14 April 2015

Part I. Mission Connection

a. Product Description - The National Hurricane Center's Tropical Analysis and Forecast Branch (TAFB) is providing on **an experimental basis** event-driven Satellite Rainfall Quantitative Precipitation Estimates (QPE) graphics and model-derived Quantitative Precipitation Forecasts (QPF) graphics for tropical cyclones and tropical disturbances affecting areas within the National Hurricane Center and Central Pacific Hurricane Center areas of responsibility (AOR). The experimental product represents an improvement over the existing satellite precipitation estimate product which is based on the Griffith-Woodley technique developed in the 1970s. The experimental product provides more robust satellite-based precipitation estimates from the Naval Research Laboratory (NRL) Blended and the Climate Prediction Center (CPC) QMORPH techniques and a time-matched forecast from the Global Forecast System (GFS) in storm centered graphical formats. In addition, the experimental product provides a graphical 24 hour QPF from the Princeton Geophysical Fluid Dynamics (GFDL), the NOAA Hurricane Weather Research and Forecast (HWRF), and the GFS.

The text portion of this experimental web page has been evaluated and was transitioned to operational status in Sept. 2014.

b. Purpose – The experimental QPE and QPF page is intended to provide, on an event-driven basis, a graphical depiction of satellite rainfall QPE and graphical depiction of model based QPF for tropical cyclones and pre-tropical cyclone disturbances. The product is primarily intended to provide forecast centers in the Caribbean, Mexico, and Central America better satellite based estimates and forecast guidance for significant rainfall events. In addition, decision support service (DSS) entities would have access to targeted QPF guidance that may be of assistance for distributing and directing resources to areas impacted by heavy rainfall.

c. Audience – The target audience for this product primarily includes the forecast centers in the Caribbean, Mexico, Central America, and the Eastern and Central North Pacific. However, other potential users of the product include emergency managers and other decision support agencies as well as first responders to events both on land and at sea such as search and rescue and oil spill relief efforts. The centralized location of the Satellite QPE and QPF product on the National Hurricane Center's web page gives these products increased visibility makes it easy for these partners to view the product for specific storms.

d. Presentation Format – The product page is currently automatically generated when model guidance is initiated on a tropical disturbance or cyclone in the Atlantic, Eastern North Pacific or Central North Pacific basins. The product page consists of satellite-based precipitation estimates from the NRL Blended and QMORPH techniques and a previous forecast from the Global Forecast System (GFS) in graphical format that are centered over the storm. In addition the experimental product provides a graphical 24 hour QPF from the Princeton Geophysical Fluid Dynamics (GFDL) and NOAA Hurricane Weather Research and Forecast (HWRF) models as well as the GFS.

The URL for the experimental page is noted below

Experimental Satellite QPE and QPF for a tropical cyclone:
http://www.nhc.noaa.gov/experimental/rainfall

e. Feedback Method - Feedback and Comments

The Tropical Analysis and Forecast Branch of the National Hurricane Center is requesting your comments and feedback about the experimental satellite QPE and QPF page. Please feel free to use the link below for submitting comments via E-mail:
nhcwebmaster@noaa.gov

Users may also provide feedback on this experimental product by using the brief survey and comment form available on line at:

http://www.weather.gov/survey/nws-survey.php?code=srqpf

Additionally comments may also be provided to:

National Hurricane Center/Tropical Analysis and Forecast Branch
11691 SW 17th St
Miami, FL 33165-2149
(305) 229-4454 or (305) 229-4476
Hugh.Cobb@noaa.gov or Jessica.Schauer@noaa.gov

Experimental Feedback Period: May 15, 2015 through November 30, 2015.

Part II. Technical Description

a. Format and Science Basis – The Satellite QPE represents an improvement over the Griffith-Woodley technique by incorporating precipitation estimates from NRL blended product and QMORPH techniques as well as a time-matched recent forecast from the GFS model. These estimates are provided in graphical formats. The page also provides a QPF forecast component out to 24 hours from the GFDL and HWRF hurricane models and from the GFS model.

b. Product Availability - The experimental satellite based QPE and model based QPF products are available four times a day when there are active tropical cyclones and pre-tropical cyclone disturbance areas and are posted to the web at approximately 0400, 1000 1600 and 2200 UTC.

c. Additional Information - The following page provides a sample of the operational Satellite Tropical Disturbance Rainfall estimates for Tropical Storm Fay generated 0345 UTC 13 October 2014.

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TCMT22 KNHC 130345
STDAT2
SATELLITE TROPICAL DISTURBANCE RAINFALL ESTIMATES
NWS NATIONAL HURRICANE CENTER MIAMI FL
0345 UTC MON OCT 13 2014

SYSTEM NAME                        DATE/TIME          LOCATION
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TROPICAL STORM FAY [07L]           13/0000 UTC          34N 59W

RAINFALL ESTIMATED BY SATELLITE VIA QMORPH...
24-HR RAINFALL MAXIMUM FROM 00-00 UTC- 170MM AT 34N 63W
6-HR RAINFALL MAXIMUM FROM 18-00 UTC- 90MM AT 34N 63W
RAINFALL DISTRIBUTION IN MM OVER THE LAST 6 HOURS FROM 18-00 UTC...

LATITUDE.............................LONGITUDE.....................
....... 62W- 61W  61W- 60W  60W- 59W  59W- 58W  58W- 57W  57W- 56W
36N-37N   0- 20     0- 40    20- 30    30- 50    10- 40     0- 40
35N-36N  10- 50    20- 70    20- 80     0- 50     0- 40     0-  0
34N-35N  30- 90     0- 30     0- 20     0- 10     0-  0     0-  0
33N-34N   0- 50     0- 10     0-  0     0-  0     0-  0     0-  0
32N-33N   0-  0     0-  0     0-  0     0-  0     0-  0     0-  0
31N-32N   0-  0     0-  0     0-  0     0-  0     0-  0     0-  0
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RAINFALL ESTIMATED BY SATELLITE VIA NRL-BLEND...
24-HR RAINFALL MAXIMUM FROM 00-00 UTC- 140MM AT 36N 59W
6-HR RAINFALL MAXIMUM FROM 18-00 UTC- 120MM AT 36N 59W
RAINFALL DISTRIBUTION IN MM OVER THE LAST 6 HOURS FROM 18-00 UTC...

LATITUDE.............................LONGITUDE.....................
....... 62W- 61W  61W- 60W  60W- 59W  59W- 58W  58W- 57W  57W- 56W
36N-37N   0- 10     0- 30    10- 40    30-120     0- 50     0- 50
35N-36N   0- 10     0- 30     0- 60     0-110     0- 20     0-  0
34N-35N   0- 20     0- 50     0- 10     0- 10     0-  0     0- 10
33N-34N   0- 10     0-  0     0-  0     0-  0     0-  0     0-  0
32N-33N   0- 30     0-  0     0-  0     0-  0     0-  0     0-  0
31N-32N   0-  0     0-  0     0-  0     0-  0     0- 10     0-  0
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RAINFALL ESTIMATED FROM 18 UTC 12 OCT GFS MODEL RUN...
24-HR RAINFALL MAXIMUM FROM 00-00 UTC- 0MM AT 0N 0W
6-HR RAINFALL MAXIMUM FROM 18-00 UTC- 0MM AT 0N 0W
RAINFALL DISTRIBUTION IN MM OVER THE LAST 6 HOURS FROM 18-00 UTC...

LATITUDE.............................LONGITUDE.....................
....... 62W- 61W  61W- 60W  60W- 59W  59W- 58W  58W- 57W  57W- 56W
36N-37N 999-999   999-999   999-999   999-999   999-999   999-999
35N-36N 999-999   999-999   999-999   999-999   999-999   999-999
34N-35N 999-999   999-999   999-999   999-999   999-999   999-999
33N-34N 999-999   999-999   999-999   999-999   999-999   999-999
32N-33N 999-999   999-999   999-999   999-999   999-999   999-999
31N-32N 999-999   999-999   999-999   999-999   999-999   999-999
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DIFFERENCES BETWEEN THE SATELLITE AND MODEL-DERIVED RAINFALL
ESTIMATES INDICATE UNCERTAINTY IN THE AMOUNT OF RAIN RECEIVED

RAINFALL MAY BE UNDERESTIMATED ON THE WINDWARD SIDE OF TERRAIN

PLEASE SEE THE LATEST TROPICAL CYCLONE PUBLIC ADVISORY FOR THE
OFFICIAL RAINFALL FORECAST FOR TROPICAL CYCLONES
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