Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE SOUTHERN REGION SUPPLEMENT 01-2017
APPLICABLE TO NWSI 10-911

May 22, 2017

Operations and Services
Hydrologic Services Program, NWSPD 10-9
River Forecast Center Operations, NWSI 10-911

QUANTITATIVE PRECIPITATION ESTIMATION

OPR: W/SR12x1 (J. Johnson) **Certified by:** W/SR1 (J.Cupo)
Type of Issuance: Initial

SUMMARY: Southern Region (SR) Quantitative Precipitation Estimation (QPE) Team standardizes QPE procedures across the SR River Forecast Centers (RFCs) and make recommendations for improving QPE. Hydrometeorological operations, softwares, and training were analyzed for ways to improve QPE.

signed May 8, 2017
Steven Cooper Date
Director, Southern Region

Table of Contents: Page

1. Purpose

In 2014, a Southern Region (SR) Quantitative Precipitation Estimation (QPE) Team was formed to standardize QPE procedures across the SR River Forecast Centers (RFCs) and to make recommendations for improving QPE. Hydrometeorological operations, softwares, and training were analyzed for ways to improve QPE.

Because RFC QPE data are the most up-to-date QPE source and the accepted QPE product for the National Weather Service, all SR Weather Forecast Offices (WFOs) and RFCs should be using RFC QPE products/data as a baseline display for QPE products, climate products, and local modeling.

QPE within each RFC will be improved by documenting and suggesting methods to improve radar and precipitation processing software artifacts. A Google site was created that lists known radar artifacts and radar issues at each RFC. This site also contains a historical reference of the evaluation of QPE processing at each RFC. This site is located at https://sites.google.com/a/noaa.gov/nws-sr-qpe/home. Per the team recommendation, each RFC needs to set up their database to store and display 24-hour gage totals within 25 to 50 miles outside of their boundaries.

The RFCs will perform QPE quality-control as a part of the QPE process. However, WFOs should perform the initial quality control efforts per NWS policy, such as NWS Directives System (NDS) 10-1307 (Cooperative Program Management and Operations), NDS 10-921 (Weather Forecast Office Hydrologic Operations), and NDS 10-911 (River Forecast Center Operations). WFOs should ingest RFC generated RR9 products and have corrections written to their local Integrated Hydrologic Forecast System (IHFS) database.

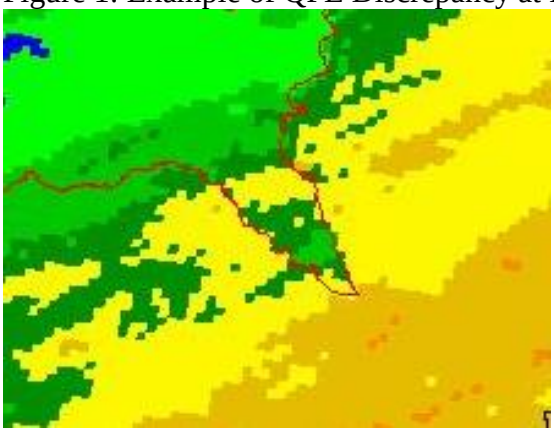
The best way to improve QPE at the boundaries between RFCs is to formalize coordination between RFCs to remove discrepancies that become apparent during daily operations. Therefore, the following instructions will be implemented in the daily Hydrometeorological Analysis and Support (HAS) shift duties.

2. RFC Coordination to Remove Boundary Discrepancies

The individual performing HAS shift duties will review the Advanced Hydrologic Prediction Service (AHPS) precipitation webpage or the Southern Region Hourly Precipitation Page to determine if any significant boundary discrepancies exist with neighboring RFCs.

A significant boundary discrepancy is an abrupt change in values (display color) along the RFC boundary indicating greatly different estimates of precipitation from different RFCs. An example is demonstrated in Figure 1, with the RFC boundary shown in the red line. If discrepancies are found that cannot be explained by topography or natural precipitation patterns, the HAS shift will investigate the situation and coordinate with the neighboring RFC in an effort to remedy the discrepancy.

Figure 1: Example of QPE Discrepancy at RFC Boundaries.



2.1. Timing of RFC-RFC Coordination

Coordination between RFCs should occur between 1700 and 2000 UTC. Immediate operational concerns, such as flood forecasting or QPE discrepancies within a single RFC domain may delay coordination.

2.2. RFC-RFC Coordination Platforms

Each Southern Region RFC will use NWSChat as the primary method for coordination with neighboring RFCs if QPE boundary issues are noted. Email, phone calls, or the AWIPS II Collaboration tool also may be used as necessary.

2.3. Communication Documentation

Coordination between RFCs to resolve QPE boundary discrepancies should be noted in the operational shift log.

2.4. "Southern Region QPE Tools and Techniques" Google Site

The individual performing HAS shift duties will utilize the "Southern Region QPE Tools and Techniques" Google site created by the team as appropriate (https://sites.google.com/a/noaa.gov/nws-sr-qpe/home). A best practice would be to include a text file with a link to this site on the desktop computer reserved for the HAS shift or to ensure that a link to the Google site is bookmarked on the computer for each user's Google profile who performs HAS shift duties.

2.5. HAS Correlation Test Software

Each SR RFC will use the QPE test software (HAS Check or Precip Scatterplot Utility) developed by West Gulf RFC (WGRFC) and Southeast RFC (SERFC), respectively, to calculate correlation and bias of the QPE estimates using gage data. The goal for each RFC should be to strive for the highest correlation and best bias reasonably possible.

3. RFC-WFO Coordination

3.1 WFO Dispay of Hourly QPE Data Produced by RFCs

WFO software should be configured to display hourly RFC QPE in Display-2-Dimensions (D2D). Instructions to setup the ingest process at WFOs are located in the document, "RFC MPE Usage at WFOs" found on the NWS WFO Hydrologic Forecast System (WHFS) web page (http://www.nws.noaa.gov/os/water/WFO_support/index.shtml).

3.2 Coordination of WSR-88D Calibration Information

WFOs should routinely coordinate with RFCs to communicate information related to the calibration of their local WSR-88D to ensure precipitation estimates derived from WSR-88D algorithms are as accurate as possible and known biases are incorporated into the RFC MPE QA/QC process.

3.3 Coordination of AHPS Web Page MPE Displays

WFOs in collaboration with RFCs should review MPE data that appears on the Advanced Hydrologic Predication System (AHPS) national web page (http://water.weather.gov/ahps/). WFOs should contact RFCs in cases where data are missing or discrepancies with rainfall patterns observed by the WFO are noted.