



# The NWS National QPF Verification Program

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OFFICE OF  
METEOROLOGY



HPC

# Outline

- Introduction
- Overview
- QPF Assessment Team
- WR Follow-on Assessment
- HPC Verification
- Future Plans

# Introduction

- “Verification of direct NWP model, statistical, and forecaster value-added QPFs and PoPs is *necessary* to quantify and improve the skill of QPF/PQPF and PoP forecasts, and to assess the value-added to these forecasts at each step of the NWS [End-to-End] Forecast Process.” - Office of Meteorology (1999)
- “One of the most important components of an effective national QPF program is a comprehensive objective comparative verification system” - National Weather Service (1999)

# Overview

- The National Precipitation Verification Unit (NPVU)

Established & administered by the NWS Office of Meteorology

Located at & co-managed by the NCEP Hydrometeorological Prediction Center

Purpose is to provide timely & informative QPF verification scores to HPC, RFC, & WFO forecasters, EMC & TDL modelers, and NWS management

# Overview (cont.)

- Uniform QPF Verification Program

## Data Ingest & Archival - Observations

Point observations (01-, 06-, & 24-hour amounts)

Gridded gauge-only analyses (01-, 06-, & 24-hour amounts)

Gridded multi-sensor (gauge, radar, & satellite) analyses

## Data Ingest & Archival - Forecasts

EMC - NGM, Eta, AVN, MRF, RUC2

TDL - LAMP

HPC - 06-, 24-, 120-hr QPFs

12 CONUS RFCs - 06- & 24-hr QPFs

(participating) WFOs

## Overview (cont.)

Verification Statistics computed from QPFs for possible combinations of the following *as appropriate*:

Forecast Increments: 3-, 6-, 12-, & 24-hr, etc.

Forecast Projections

Spatial Domains: nation, region, RFC domain, etc.

Temporal Domains: forecast period, week, month, season, year, etc.

Spatial Resolutions of ~32km and multiples thereof

# Overview (cont.)

## Performance Measures:

Threat & Equitable Threat Score

Bias Score

Errors (Mean, Mean Absolute, Root-Mean-Squared)

Bias

Bayesian Informativeness Score

Correlation Coefficient

Nash-Sutcliffe Sufficiency Score

Brier Score

Ranked Probability Score

Etc.

# Overview (cont.)

Display & Feedback

AWIPS?

WWW @

**<http://www.hpc.ncep.noaa.gov/npvu/>**



<http://www.hpc.ncep.noaa.gov/npvu/>



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**HPC**

The (prototype) **NWS**

**NPVU**

(National Precipitation Verification Unit)

.....  
This Web site is currently under construction (as well as the NPVU itself). Please have patience while links and information are added to make this Web site as useful as possible. A [log of changes](#) will be maintained for an explanation of any additions and/or changes.

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**[Western Region Follow-on QPF Assessment](#)**

**[Conferences, Presentations, Etc.](#)**

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Please read the **[official National Weather Service Disclaimer](#)**

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*Questions? Comments? Send mail to [Brett McDonald](#).  
Last Modified 14 March 2000*

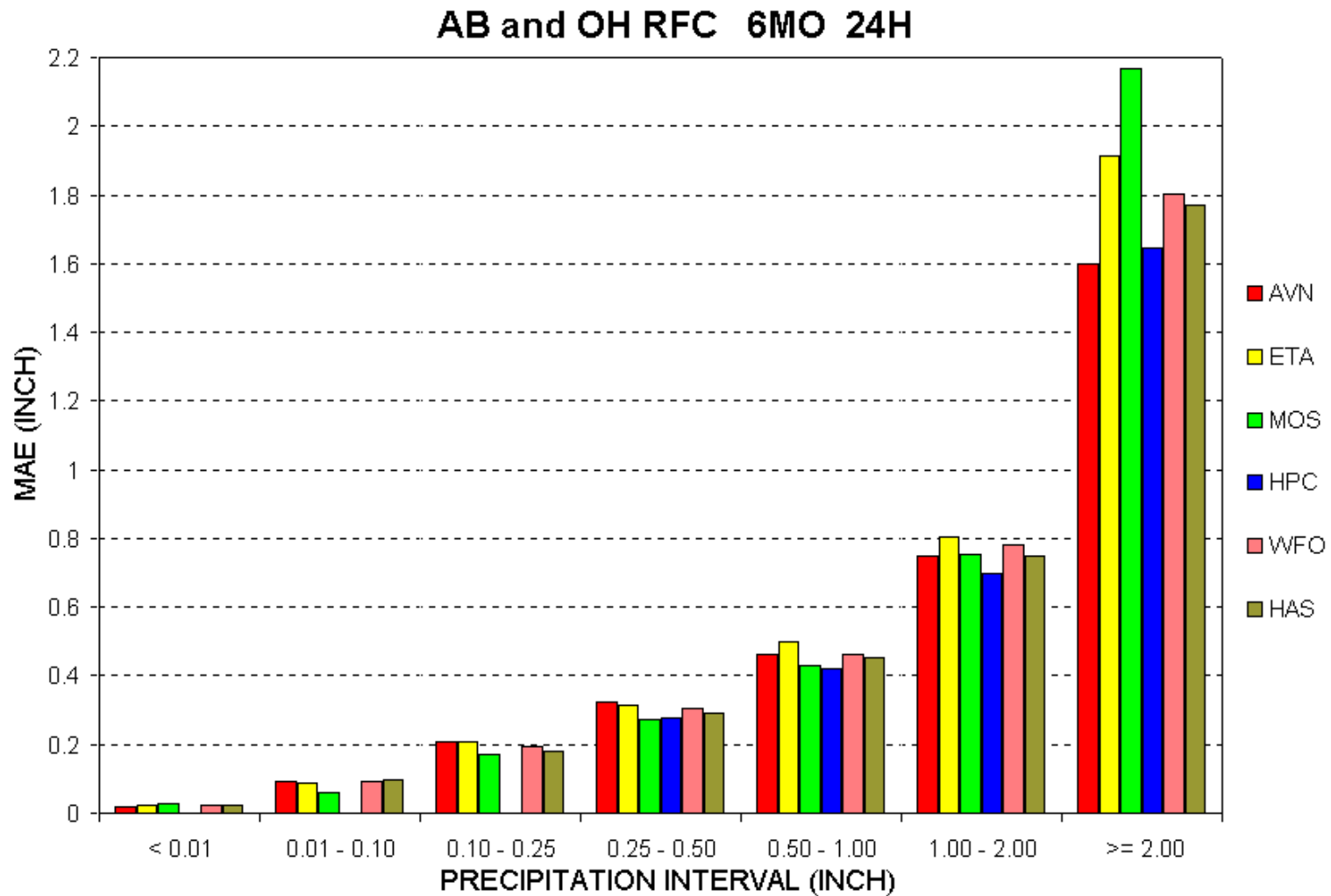
**University  
Corporation  
for  
Atmospheric  
Research**

**National  
Center for  
Atmospheric  
Research**

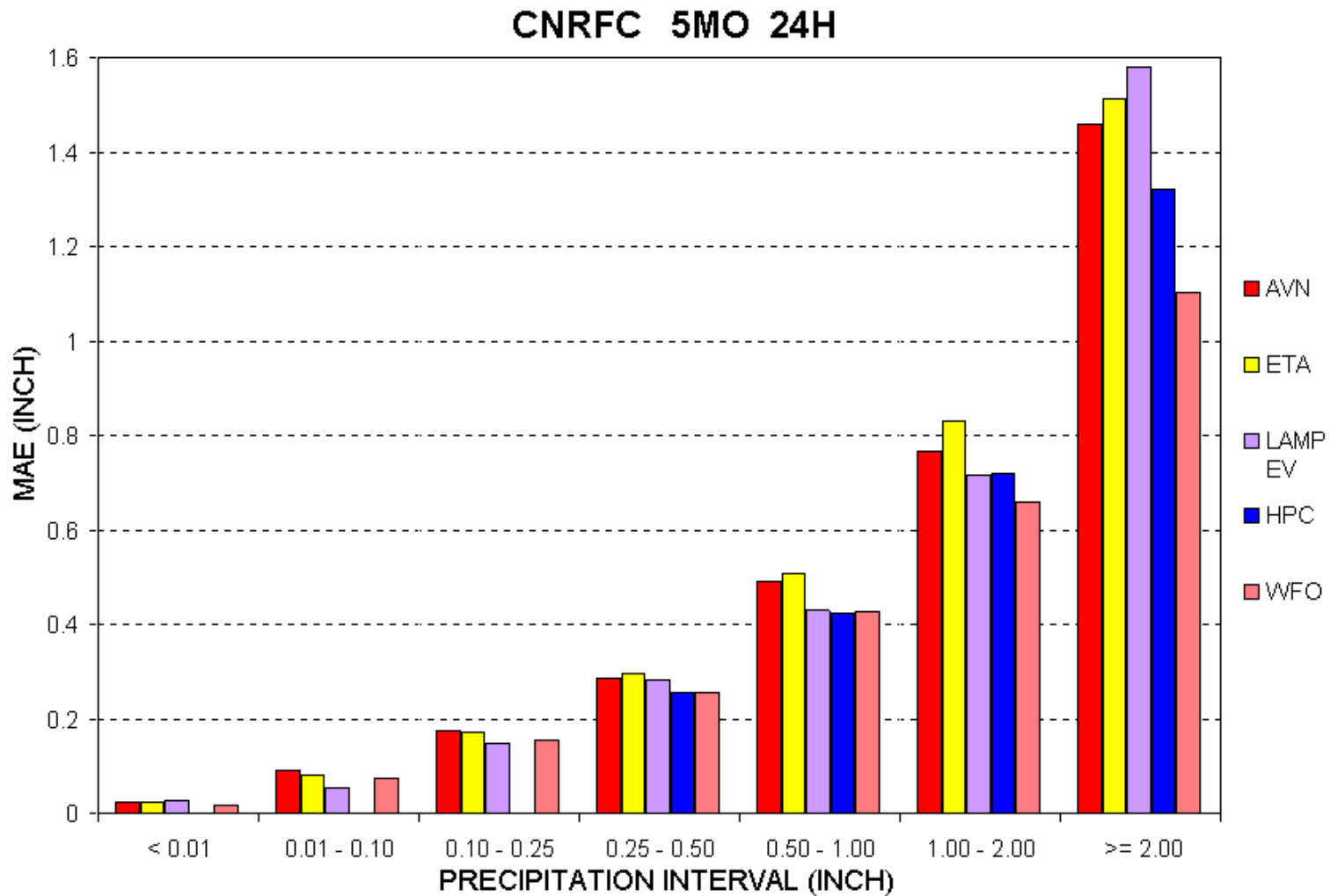
**UCAR  
Office of  
Programs**



# QPF Assessment Team



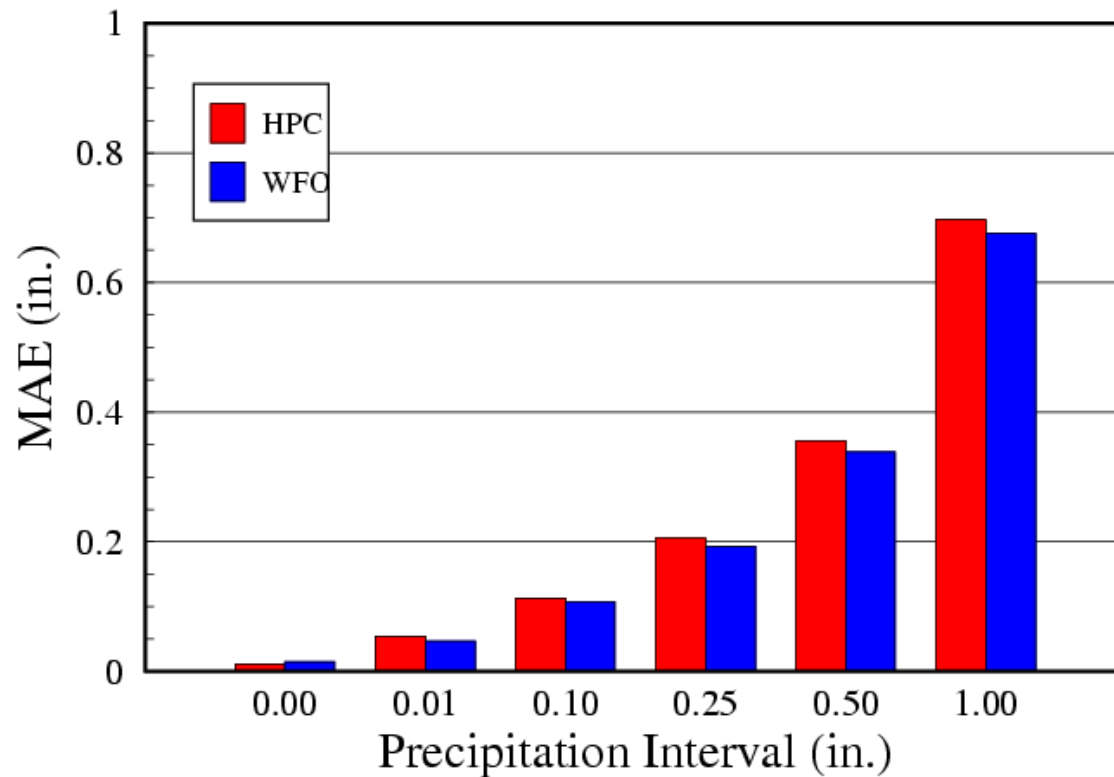
# QPF Assessment Team (cont.)



# WR Follow-on Assessment

## NWRFC – MAE

Nov1999–Mar2000 DAY1 06H PTS (OBS & FOR)

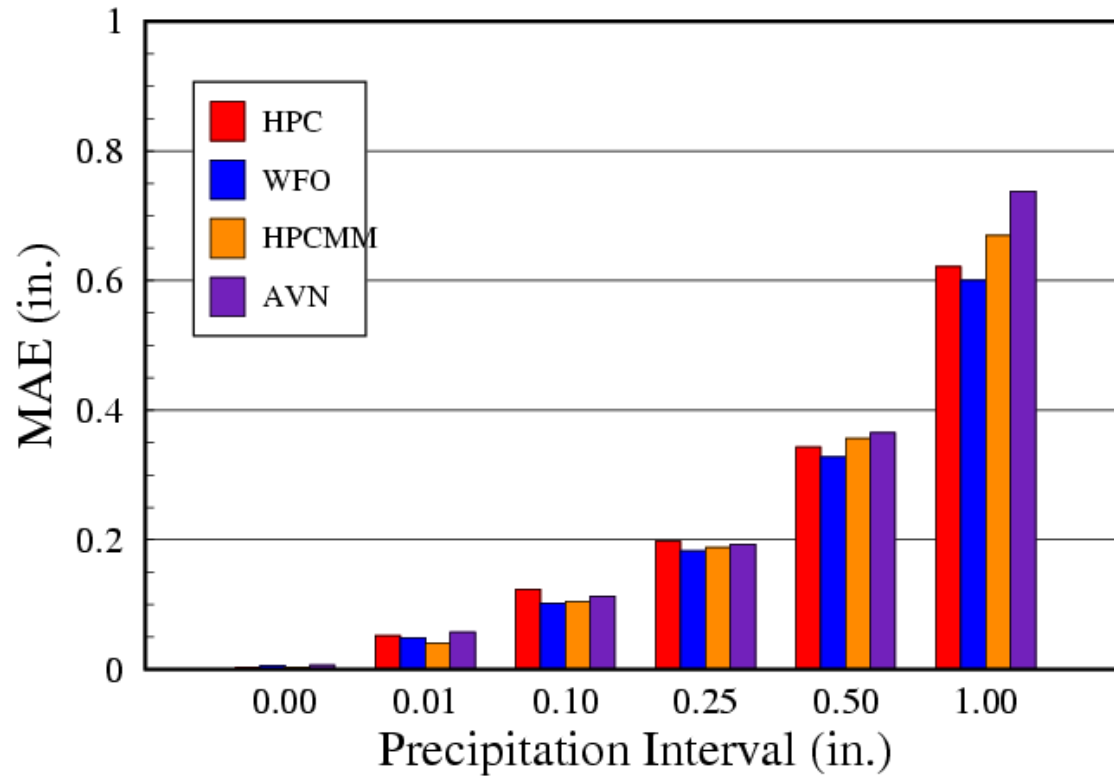


*Fri Apr 28 14:26:01 2000*

# WR Follow-on Assessment (cont.)

## CNRFC2 – MAE

Nov1999–Mar2000 DAY1 06H GRD (OBS)

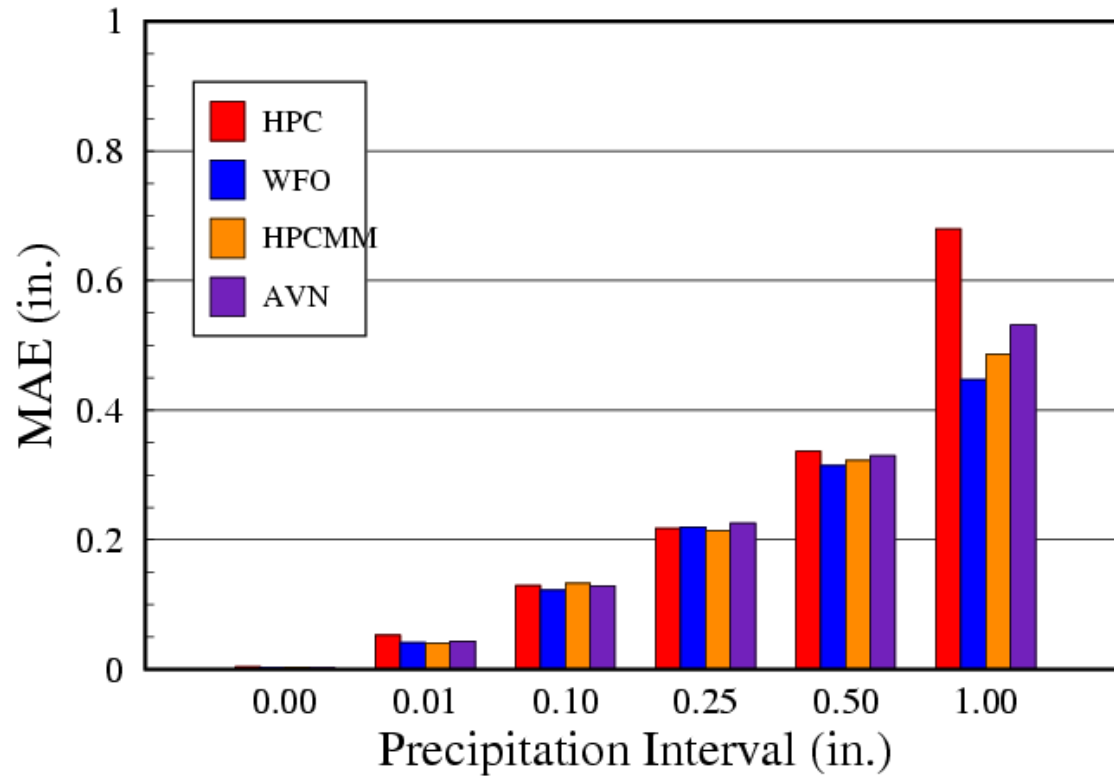


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# WR Follow-on Assessment (cont.)

## CNRFC2 – MAE

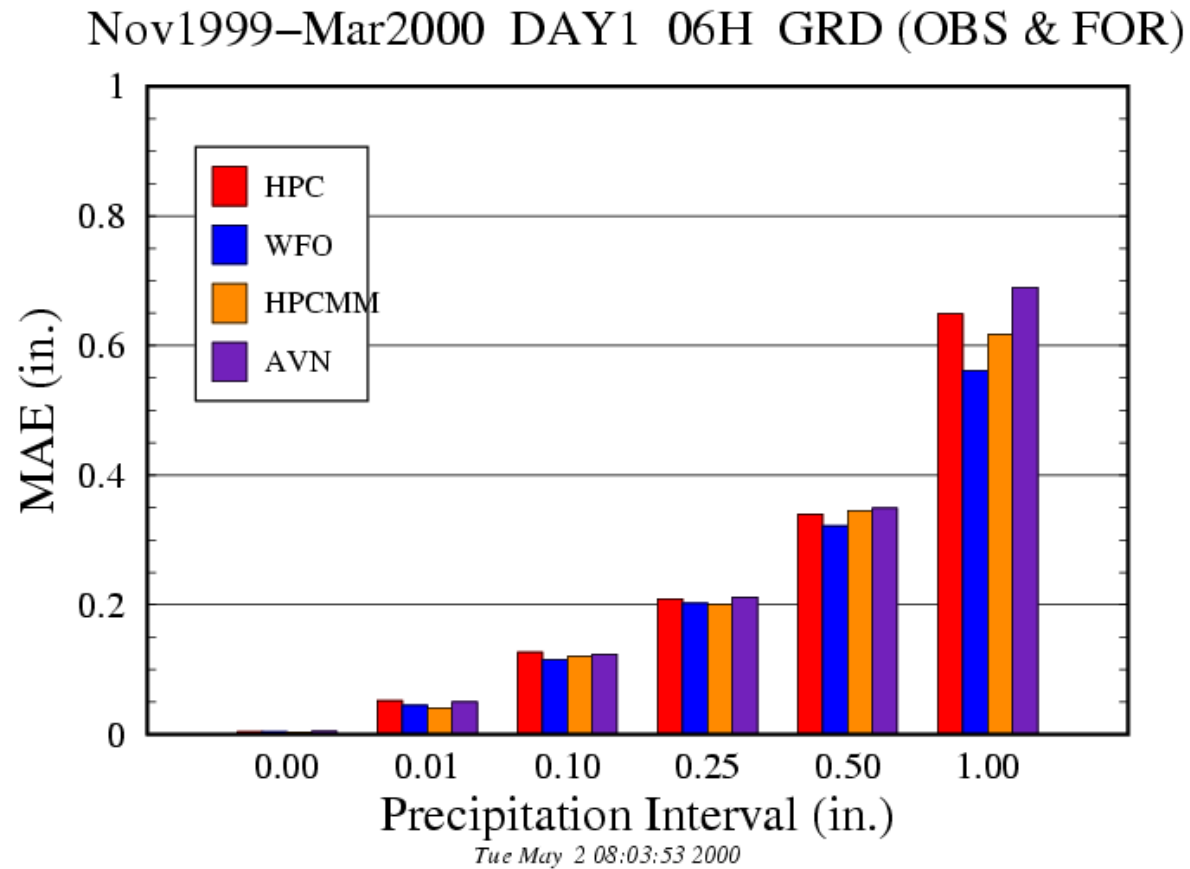
Nov1999–Mar2000 DAY1 06H GRD (FOR)



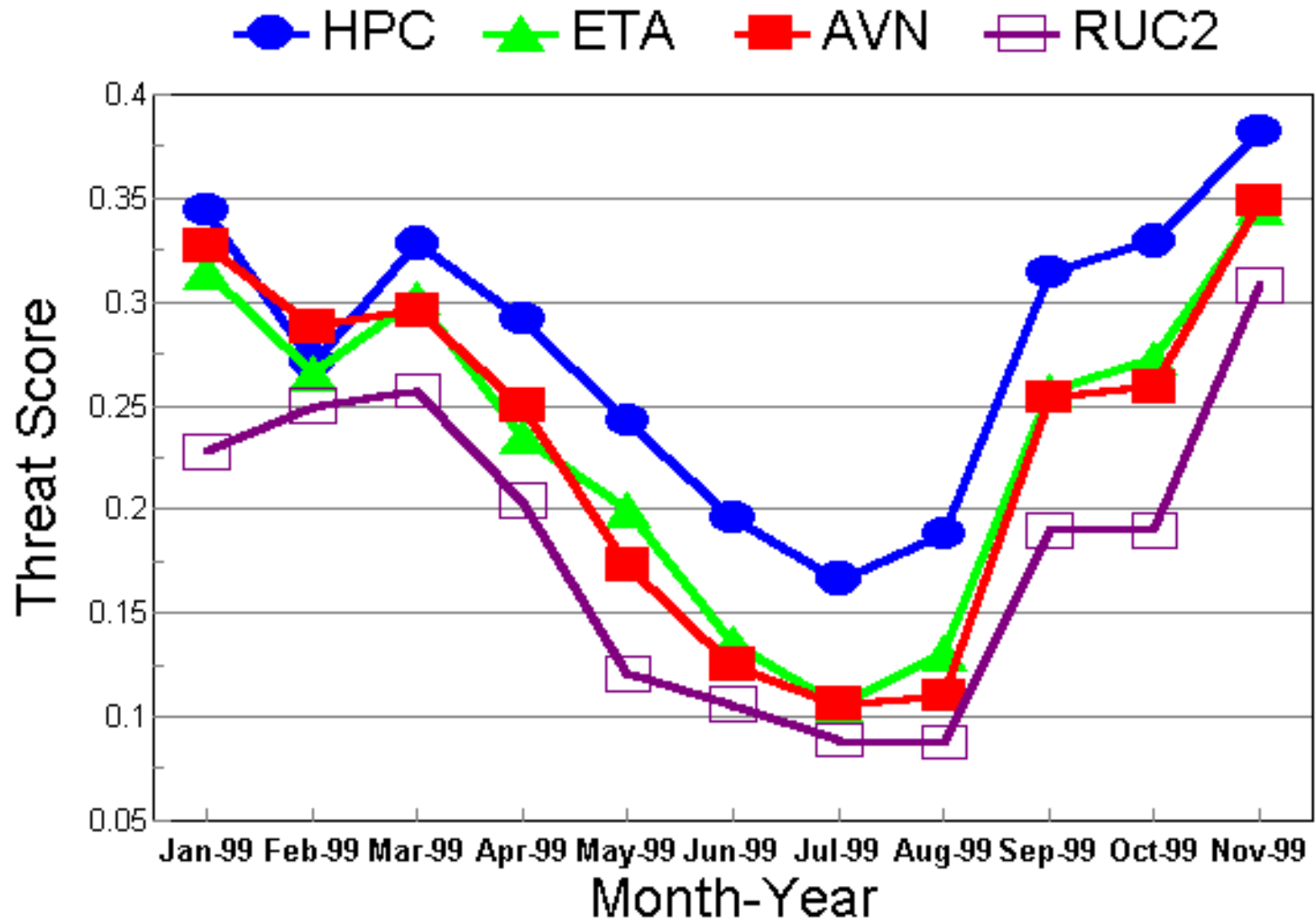
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# WR Follow-on Assessment (cont.)

## CNRFC2 – MAE

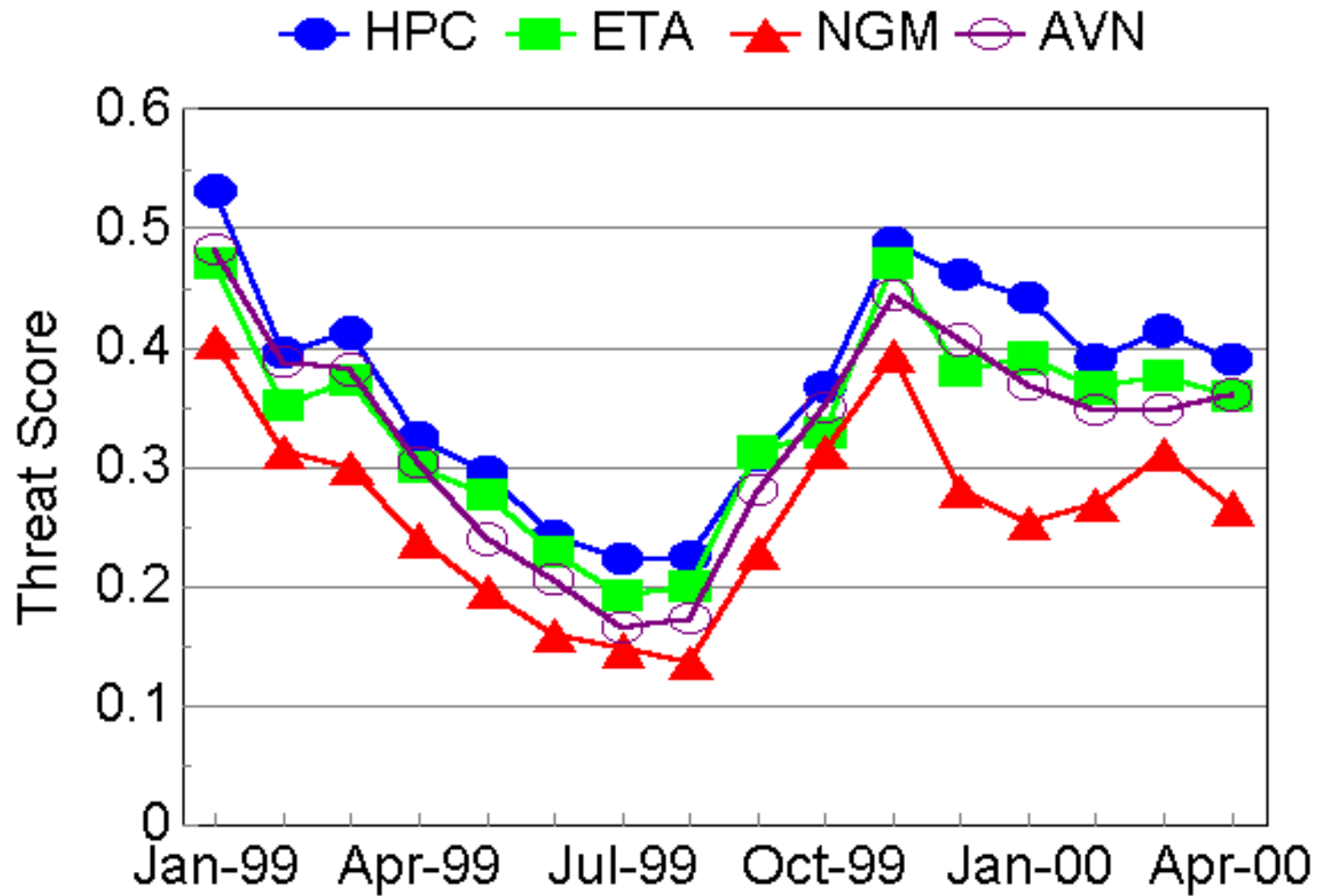


# HPC Verification

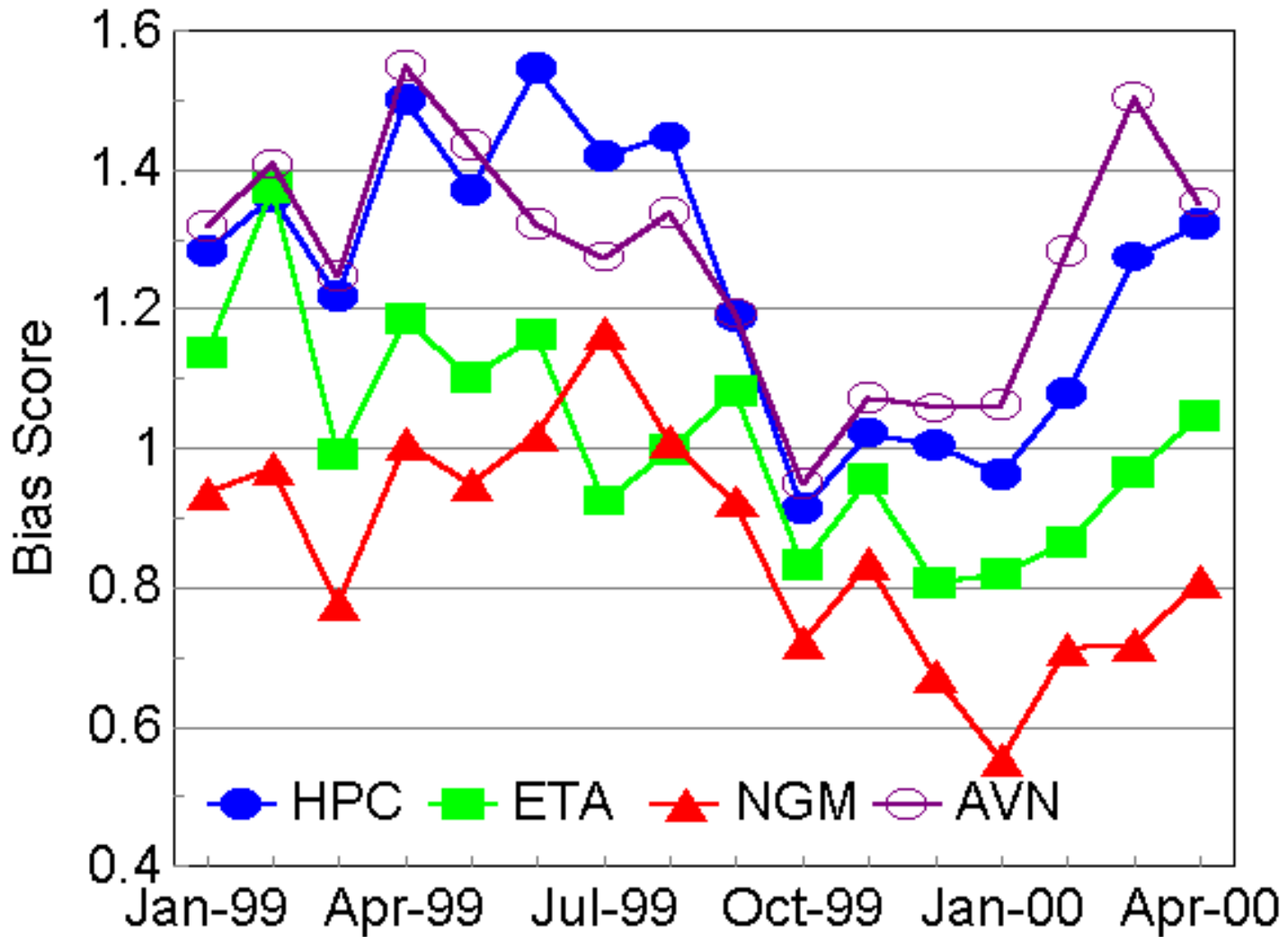




# HPC Verification (cont.)



# HPC Verification (cont.)



## Future Plans

- Two Month OT&E from 15 June to 15 August 2000
- Operational Implementation of the NPVU on 29 September 2000
- Participate in QPF Verification research with EMC, other gov't agencies, & universities
- PQPF