



UPDATED MRF MOS GUIDANCE

Evolving Objective Medium-Range Forecasts

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WHY UPDATE NOW?

MRF MOS GUIDANCE

- **NWS Strategic Plan**
 - ▶ **“Extend weather forecasts to 7 days.”**
 - ▶ **“Provide weather, water, and climate forecasts in probabilistic terms.”**
- **Increased demand for more detail**
 - ▶ **Stations, elements, projections**
- **Numerous Global Spectral Model enhancements since 1995**
- **Observing system changes**

NEW MRF MOS GUIDANCE

A Different Look

- **Available for 1000+ Sites in CONUS, AK, HI, PR**
- **New Weather Element Definitions**
 - ▶ **Wind, Clouds, Precip Type**
- **Additional Weather Elements**
 - ▶ **Temperature, Dew Point, QPF**
 - ▶ **Thunderstorms, Snowfall**

MRF MOS ELEMENTS

Ready for Approval

- **Daytime Max / Nighttime Min Temperature**
 - ▶ ~24 - 192 hrs; every 12 hrs
- **Temperature / Dew Point (2m Shelter)**
 - ▶ 18 - 192 hrs; every 6 hrs
- **PoP / PQPF**
 - ▶ 12-h and 24-h periods; every 12 hrs
 - ▶ $\geq 0.01, 0.10, 0.25, 0.50, 1.00, 2.00$ and 3.00 in

EQUATION DEVELOPMENT

MRF MODEL ARCHIVE

- **NCEP Re-analysis Archive**
 - ▶ **Jan 1992 - Mar 1997, Every 5th Day**
- **New Archive April 1997 to present**
- **Temporal resolution:**
 - ▶ **Every 12-h to 384 h**
- **Grid resolution:**
 - ▶ **95.25 KM at 60 N out to 192 h**

EQUATION DEVELOPMENT

SEASONS TESTED

- **WARM SEASON (APRIL - SEPTEMBER)**
 - ▶ **MAR. 16 - OCT. 15**
 - ▶ **1992-1996, 1997, 1998**
 - ▶ **Removed 6/16/98 - 7/21/98**
 - ▶ **Max/Min, PoP/QPF probabilities**
- **COOL SEASON (OCTOBER - MARCH)**
 - ▶ **SEP. 16 - APR. 15**
 - ▶ **1992/93 - 1996/97, 1997/98 , 1998/99**
 - ▶ **Max/Min, Temp, Dew Pt, PoP/QPF probabilities**

EQUATION DEVELOPMENT

TESTING STRATEGY

- **Develop test equations**
 - ▶ Reserve dates for independent data.
- **Make forecasts on independent data**
- **Verify for a sample of ~ 335 stations**
 - ▶ ~ 200 stations vs operational MOS
 - ▶ Verify vs direct model output, climate
- **Test results on TDL Web Site**
 - ▶ www.nws.noaa.gov/tdl/synop/results.htm

EQUATION DEVELOPMENT

FINAL DEVELOPMENT

- **Make Categorical Forecasts**
- **Add 1999 Warm Season to Sample**
- **Add full 1998/1999 Cool Season to Sample**
- **Develop final equations**
- **Prepare Operational Products**

NEW MRF MOS

DISSEMINATION

- **New Alphanumeric Message**
 - ▶ **Distribute in addition to current guidance**
- **Binary Formats: BUFR, GRIB**
- **Guidance available through AWIPS, NOAAPORT, Family of Services, Military**

NEW MRF MOS

IMPLEMENTATION STRATEGY

- **DRG - REQUEST WMO HEADERS**
- **APR/MAY 2000:**
 - ▶ **WARM SEASON TEMP, PoP, PQPF**
- **OCT 2000:**
 - ▶ **WIND, CLOUD, TSTM, PTYPE**
- **APR 2001:**
 - ▶ **DISCONTINUE "OLD" (FOX/FMR) MESSAGE**

CONCLUSIONS

- **Updated MRF MOS will soon be available**
 - ▶ **More stations, new elements**
- **New elements add detail to MRF MOS**
- **Test results show comparable or improved accuracy and skill**
- **TPB's are drafted**