

NEW ETA MOS GUIDANCE

CAFTI - February 12, 2002

<http://www.nws.noaa.gov/mdl/synop/index.htm>

ETA MOS GUIDANCE

First Phase

- **Guidance to 60 Hours**
- **Limited Weather Elements**
- **Limited Predictors**
- **Limited Spatial Coverage (1200 + CONUS Sites)**
- **Alphanumeric/BUFR Products**

ETA-BASED MOS GUIDANCE

First Phase

- Max/Min temperature **☞**
- Temperature/dew point **☞**
- Wind direction/speed **☞**
- PoP/QPF **☞ ☞**
- Total sky cover
- Thunderstorms/severe weather

ETA-BASED MOS GUIDANCE

Sample Message

KALB ETA MOS GUIDANCE 10/24/2000 0000 UTC

DT	/OCT	24						/OCT	25							/OCT	26								
HR	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12						
X/N							49				30				61							43			
TMP	32	30	30	41	47	47	38	34	32	32	34	47	58	60	54	50	48	47	49						
DPT	25	23	23	24	23	23	24	26	28	28	30	32	34	37	39	41	43	43	45						
CLD	CL	CL	CL	CL	CL	CL	CL	CL	SC	SC	CL	CL	CL	CL	CL	CL	CL	SC	SC						
WDR	32	32	32	31	31	32	32	00	00	00	36	15	16	15	16	16	16	16	18						
WSP	08	08	08	11	12	09	02	00	00	00	01	04	10	08	04	06	08	06	11						
P06			0		0		0		3		5		0		0		9		14						
P12							0				6				0				17						
Q06			0		0		0		0		0		0		0		0		0						
Q12							0				0				0				0						
T06		0/	7		0/	1		0/	2		0/	4		2/	1		1/	1		2/	1	18/	3	4/	2
T12					0/	7					0/	3					4/	2				14/	4		

ETA-Based MOS Temperature and Dewpoint Forecasts

Wei Yan

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Temperature/Dewpoint Predictands

- Temperature/Dewpoint (shelter height)
 - ▶ Valid every 3 hours from 6 to 60 hours after initial model time of 0000 or 1200 UTC
- Daytime max / nighttime min temperature
 - ▶ Valid for four 12-h periods following the initial model time of 0000 or 1200 UTC

Temperature/Dewpoint Guidance Predictors

- Model Forecasts
 - ▶ Temperature and relative humidity at 2 m and in lower tropospheric layers
 - ▶ Thickness and thermal stability in lower troposphere
 - ▶ u- and v-wind components in the lower troposphere
- Observations at 01 UTC or 13 UTC
 - ▶ Used for the 6- through 39-h projections
- Geoclimatic Variables
 - ▶ Sine/Cosine day of year and twice day of year

Temperature/Dewpoint Guidance Testing

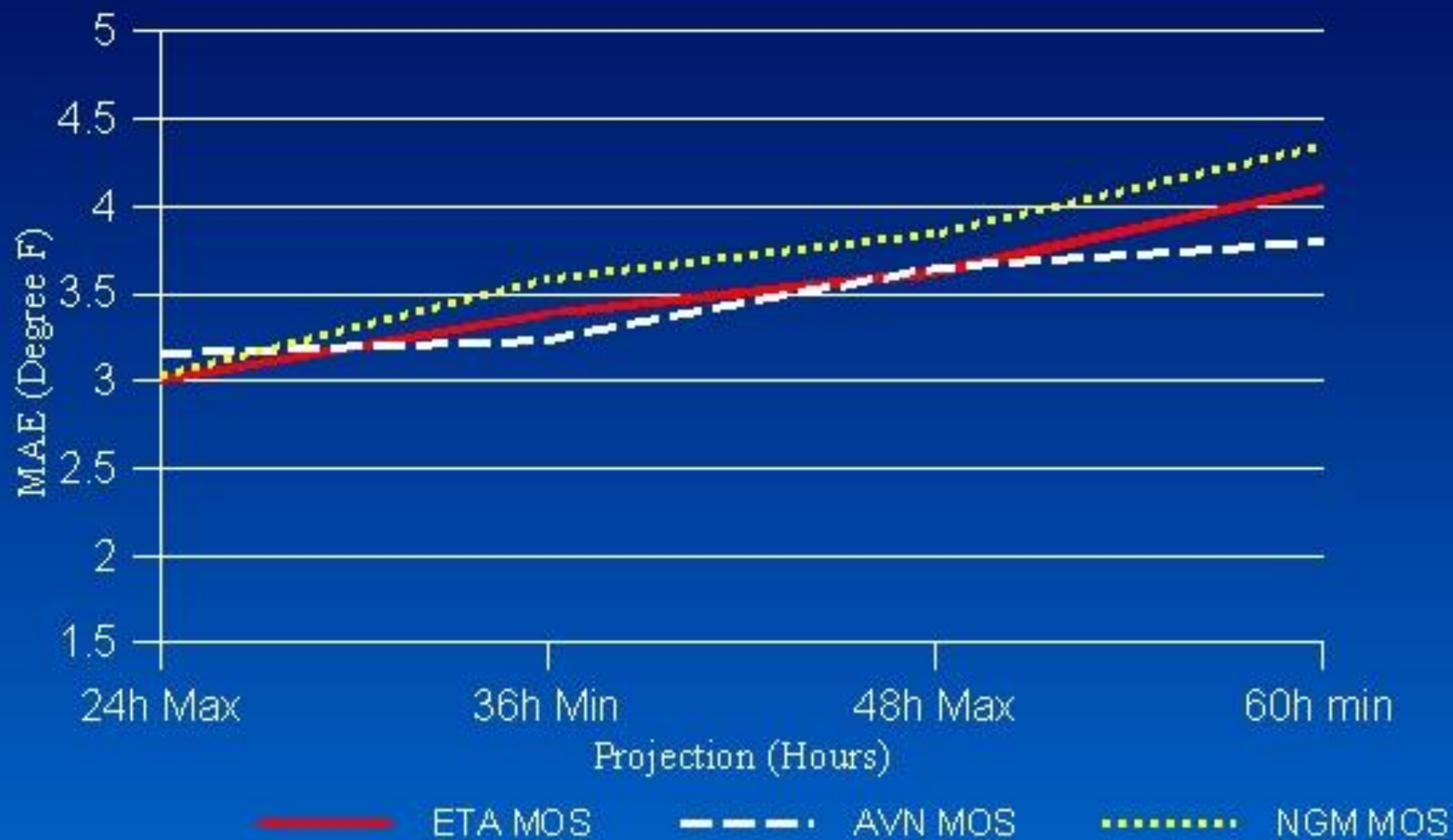
- Develop test equations
- Make forecasts on independent data
- Verify ~300 stations clustered by regions
 - ▶ NE US, NC US, NW US, SE US, SC US, SW US

Testing Samples

- Cool season (Oct. - Mar.) developmental data
 - ▶ 1997, 1998, 1999
- Warm season (Apr. - Sept.) developmental data
 - ▶ 1997, 1998, 1999, 2000
- Cool season independent data
 - ▶ October 1, 2000 - March 31, 2001
- Warm season independent data
 - ▶ April 1, 2001 - September 30, 2001

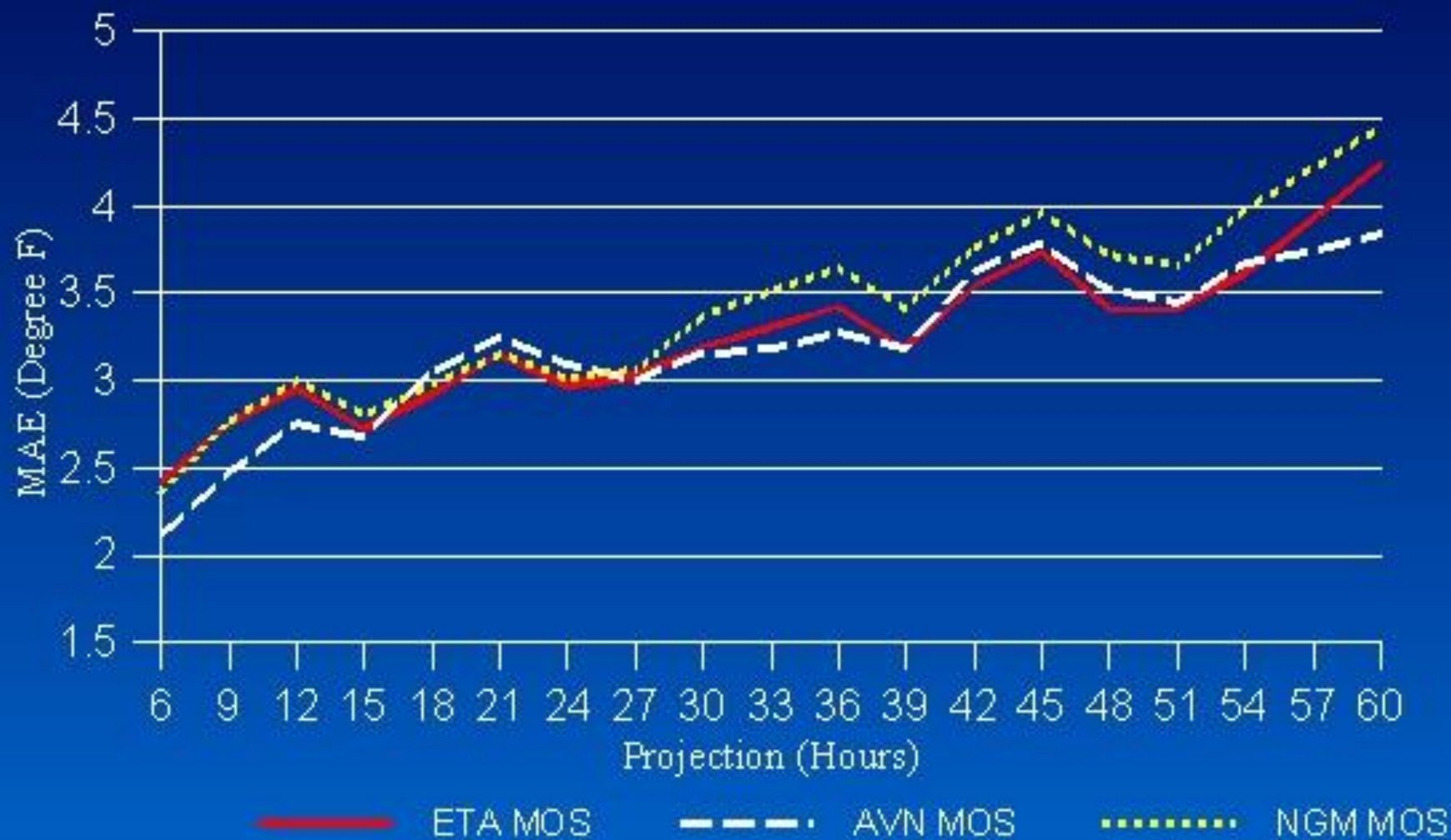
Max/Min Temperature Verification 00z

Cool Season (2000-2001)



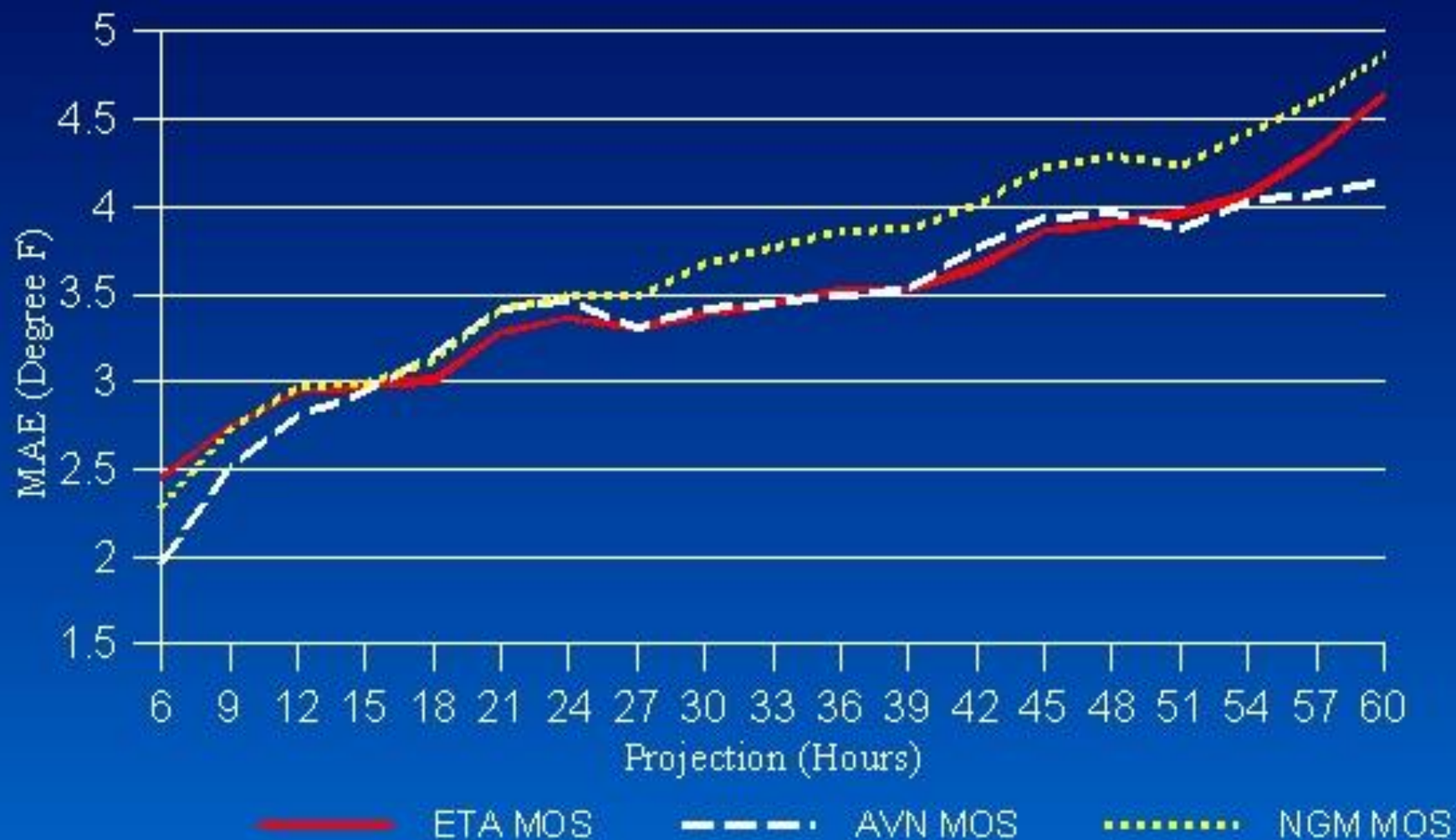
Temperature Verification 00z

Cool Season (2000-2001)



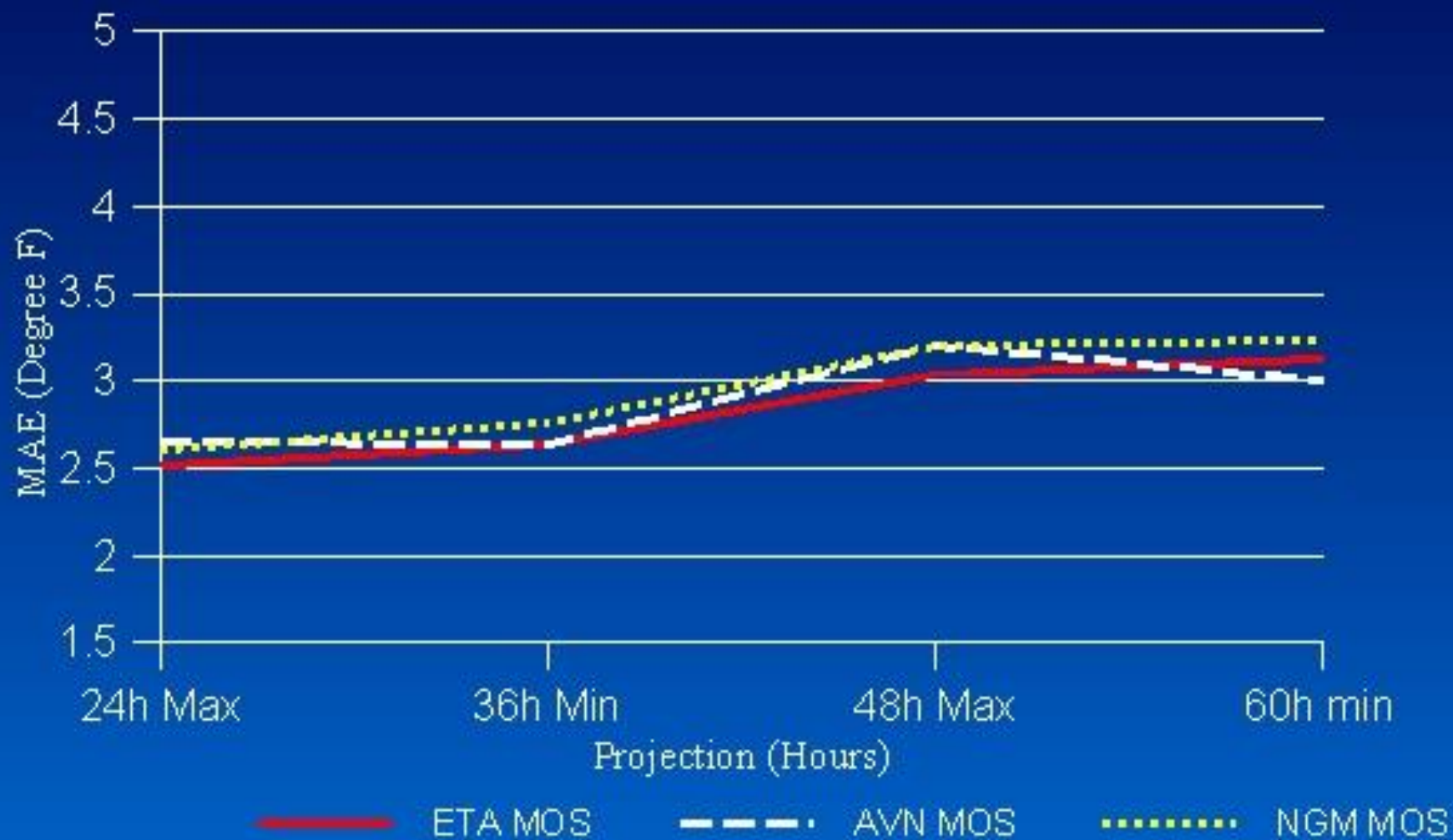
Dew Point Verification 00z

Cool Season (2000-2001)



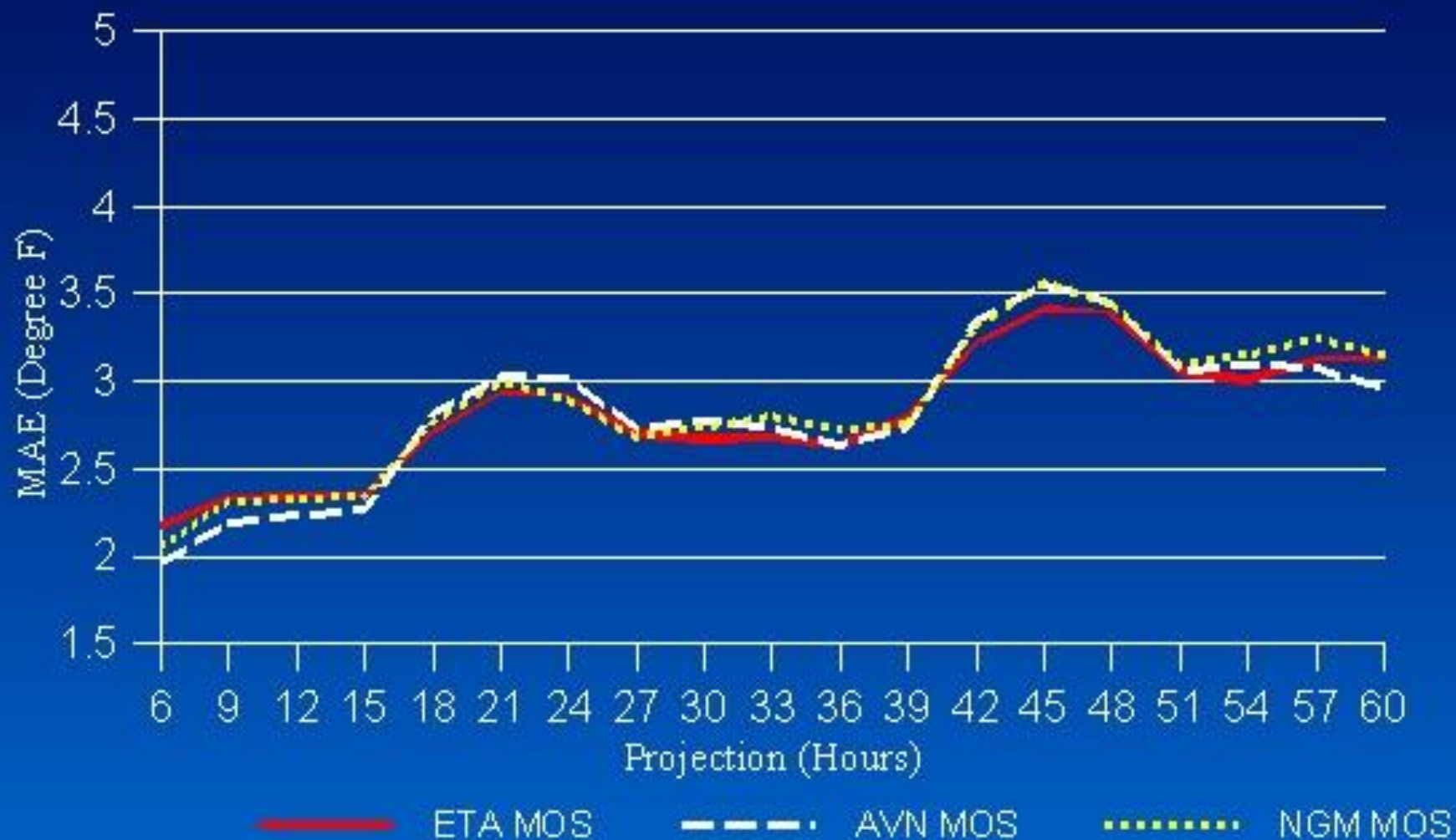
Max/Min Temperature Verification 00z

Warm Season (2001)



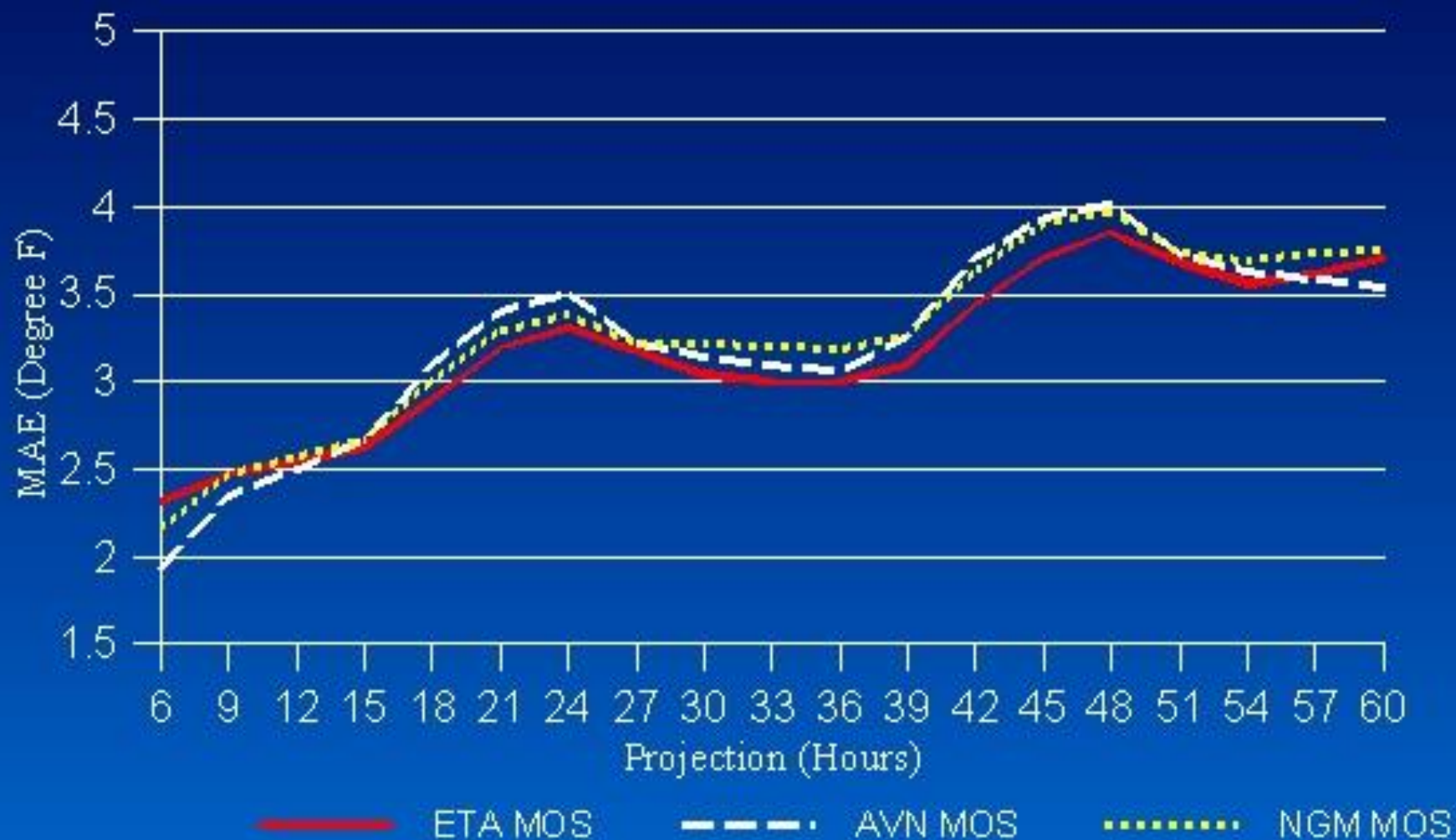
Temperature Verification 00z

Warm Season (2001)



Dew Point Verification 00z

Warm Season (2001)



Temperature/Dewpoint Guidance

Overall Results

- For cool season, Eta MOS temperatures are generally more (less) accurate than AVN MOS during daytime (nighttime) hours.
- For warm season, Eta MOS temperatures are generally more accurate than AVN MOS
- Eta MOS dewpoints are generally more accurate than AVN MOS dewpoints
- From 51- to 60-h, Eta MOS guidance uses 48-h variables; thus, AVN MOS is usually superior beyond 48-h
- Eta and AVN MOS are superior to NGM MOS

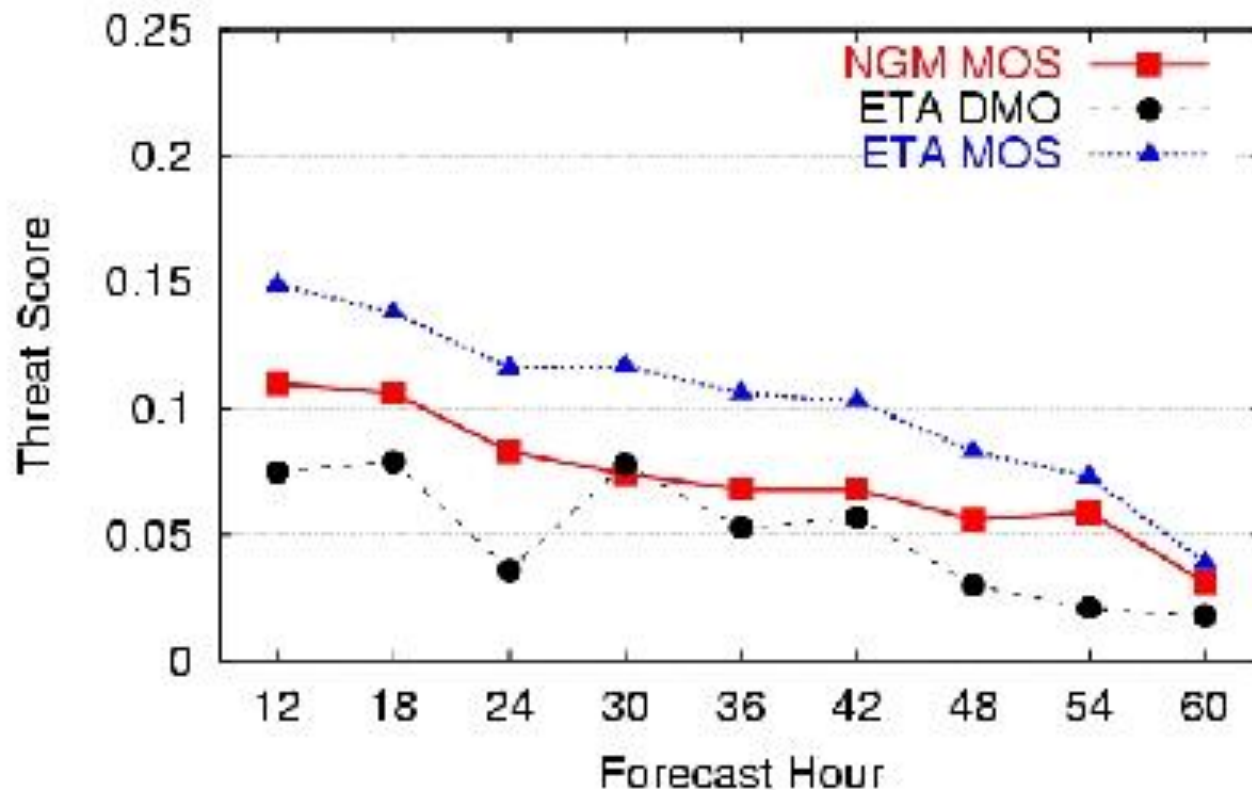
Eta MOS QPF Guidance

Warm Season Threat Scores

Joe Maloney
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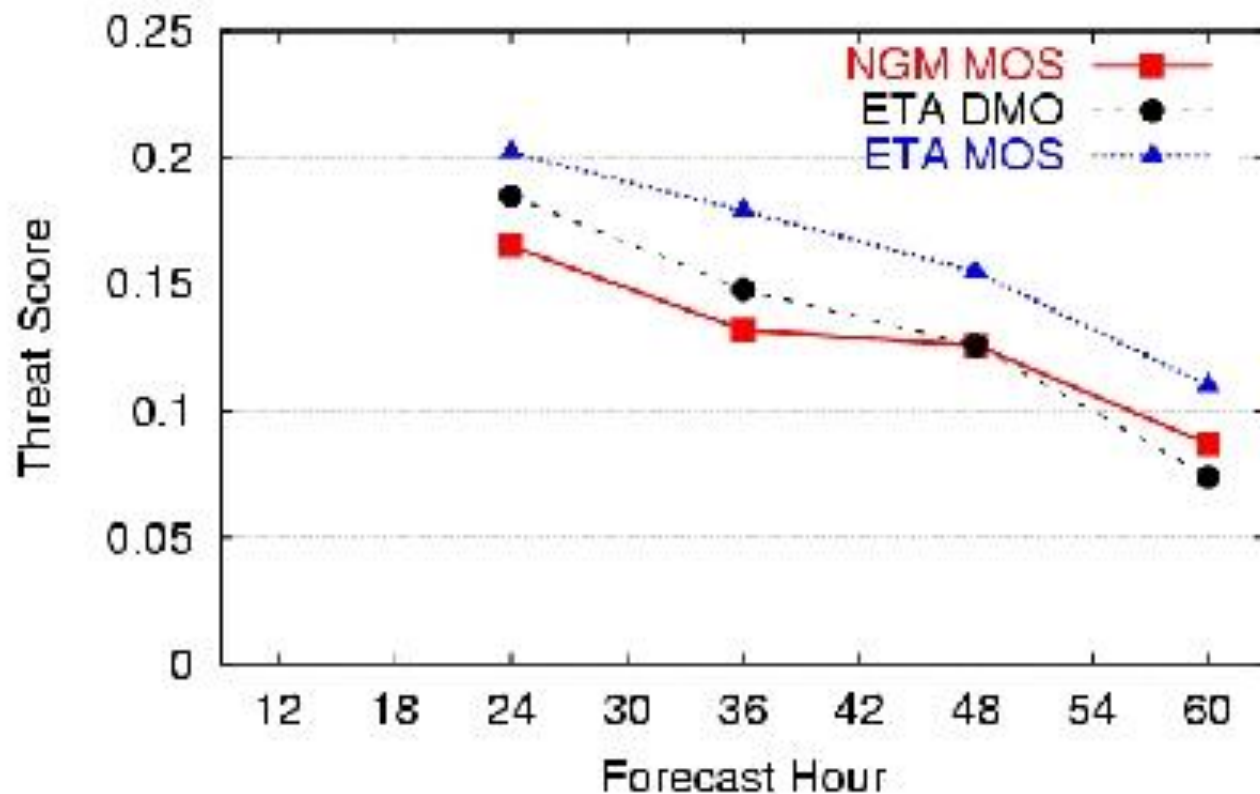
Warm Season QPF Verification

6-H QPF WARM SEASON 2001
THREAT SCORE - 0.50 in.+ , 00Z CYCLE



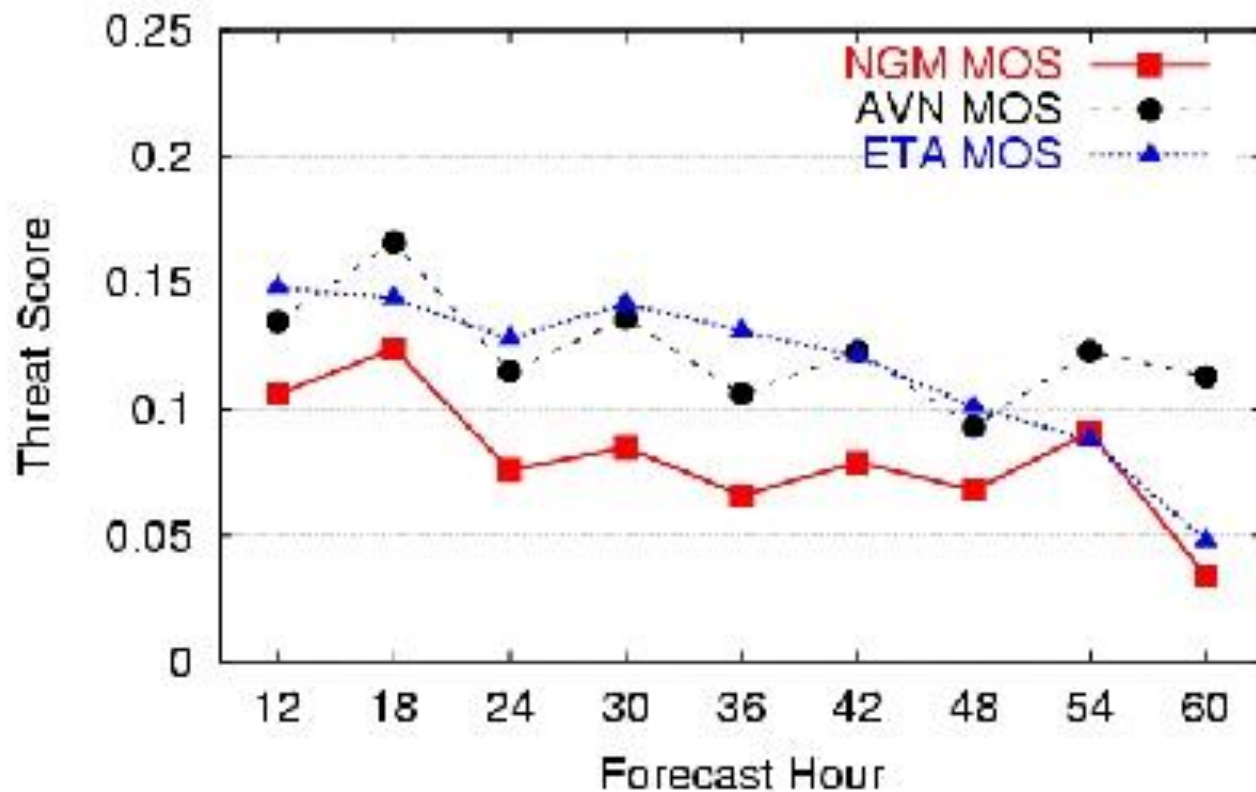
Warm Season QPF Verification

12H QPF WARM SEASON 2001
THREAT SCORE - 0.50 in.+, 00Z CYCLE



Warm Season QPF Verification

6-H QPF WARM SEASON 2001
THREAT SCORE - 0.50 in.+ , 00Z CYCLE



Warm Season QPF Verification

12H QPF WARM SEASON 2001
THREAT SCORE - 0.50 in.+ , 00Z CYCLE

