U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
OFFICE OF SCIENCE AND TECHNOLOGY
METEOROLOGICAL DEVELOPMENT LABORATORY

MDL OFFICE NOTE 02-2

AFOS-ERA VERIFICATION OF GUIDANCE AND LOCAL AVIATION/PUBLIC WEATHER FORECASTS--NO. 24 (APRIL 1995 - SEPTEMBER 1995)

Valery J. Dagostaro, J. Paul Dallavalle, and Jennifer L. Offutt

March 2002

AFOS-ERA VERIFICATION OF GUIDANCE AND LOCAL AVIATION/PUBLIC WEATHER FORECASTS--NO. 24 (APRIL 1995 - SEPTEMBER 1995)

Valery J. Dagostaro, J. Paul Dallavalle, and Jennifer L. Offutt

1. INTRODUCTION

The Techniques Development Laboratory, now known as the Meteorological Development Laboratory (MDL), periodically produces verification results for MDL's automated guidance and National Weather Service (NWS) local forecasts made at Weather Service Forecast Offices (WSFO's). This office note continues a series of documents presenting seasonal verification results. Here, we present verification statistics for the warm season months of April 1995 through September 1995 for maximum/minimum (max/min) temperature, probability of precipitation (PoP), cloud amount, surface wind, ceiling height, and visibility. Specific details about the local and objective forecasts and the verifying observations are summarized in Table 1.1. It's important to consider this information when interpreting the verification scores. For example, the objective max/min temperature forecast system is based on calendar day observations for Alaska, but on daytime/nighttime periods for the conterminous U.S. For Alaska, the definitions of the official local max/min temperature forecasts and verifying observations, in turn, differ from those of the guidance. Dagostaro and Dallavalle (1991) provide more specific information about the forecasts, observations, and verification procedure for each weather element.

For this season, the objective guidance was based on forecast equations developed by use of the Model Output Statistics (MOS) technique (Glahn and Lowry 1972) and applied to forecast fields from the Nested Grid Model (NGM) (Hoke et al. 1989) and the Limited-area Fine-mesh Model (LFM) (Gerrity 1977; Newell and Deaven 1981). Additional information about the objective guidance prediction equations is available from the references listed in Table 1.2. Details regarding the local data collection in the conterminous U.S. and Alaska are described briefly in Dagostaro and Dallavalle (1991). For additional information about the local data collection process, see Ruth and Alex (1987). The central data collection and data processing system is described in Dagostaro (1985).

Verification statistics are provided for the 102 stations in the conterminous U.S. and Alaska listed in Table 1.3. The scores are those recommended in the NWS National Verification Plan (National Weather Service 1982). Definitions of the categories used for verification are given in Table 1.4. For the aviation weather elements, we verified the local forecasts associated with the FT issuance times of approximately 0900 and 1800 UTC. Objective guidance for the aviation weather elements, as well as all local and guidance forecasts for the public weather elements, were verified for the 0000 and 1200 UTC forecast cycles. Because verification data or forecast projections for Alaska differ from those of the conterminous U.S., data for the six Alaskan stations were verified separately from those of the conterminous U.S.

For most weather elements, verification results are presented for all stations in the conterminous U.S. combined, followed by results for each of

the four NWS regions in the conterminous U.S. and for the Alaska Region. Following this convention, max/min temperature scores are presented in Tables 2.1 - 2.12. For PoP, scores are presented in Tables 3.1 - 3.10 for the conterminous U.S. stations combined and for the four NWS regions in the conterminous U.S. PoP verification scores were unavailable for Alaskan stations (see section 2.) Tables 4.1 - 4.12 show cloud amount verification scores. For wind speed and direction, objective guidance verification results are presented in Tables 5.1 - 5.12, while the analogous local scores are given in Tables 5.13 - 5.24. Verification results for the 42-h significant wind speed are presented for the conterminous U.S. stations combined and for the Alaska Region in Tables 5.25 - 5.28. For ceiling height, Tables 6.1 - 6.4 contain the objective forecast results for the conterminous U.S. stations combined and for the Alaska Region, while Tables 6.5 - 6.8 contain ceiling height scores for the local forecasts. Tables 7.1 - 7.8 show objective and local visibility forecast results for the conterminous U.S. stations combined and for the Alaska Region.

2. SUMMARY (APRIL 1995 - SEPTEMBER 1995)

During the 1995 warm season, the NGM-based MOS was the official objective guidance for stations in the conterminous U.S., and LFM-based MOS was the official objective guidance for stations in Alaska. Please note that for some weather elements, forecast definitions for LFM and NGM MOS differ slightly.

Eighteen stations were commissioned as ASOS sites during the warm season. The stations listed below were commissioned on the following dates: May 1, 1995 - Billings, Montana; June 1, 1995 - El Paso, Texas, and San Antonio, Texas; July 1, 1995 - Detroit, Michigan; Kansas City, Missouri; Meridian, Mississippi; and Milwaukee, Wisconsin; August 1, 1995 - Albany, New York; Atlanta, Georgia; and Grand Rapids, Michigan; and September 1, 1995 - Fresno, California; Las Vegas, Nevada; Lubbock, Texas; Providence, Rhode Island; Rapid City, South Dakota; Reno, Nevada; and Spokane, Washington. Because the ASOS cloud amount observations are incomplete, we set to missing the observed cloud amount data for those stations after they were commissioned. Observed cloud amount data were also set to missing for the AEV ASOS sites listed in Table 1.3 that were commissioned prior to the 1995 warm season.

Dagostaro and Dallavalle (1997) documented data problems associated with the change in format of the hourly surface observations on January 1, 1995 and the use of old data collection software. We continued to eliminate 42-h significant wind and precipitation amount observations for some stations until we were sure that the correct data collection software was in use.

During the 1995 warm season, we continued to replace the locally-collected LFM MOS PoP guidance for the Alaska sites with centrally-archived values whose valid times matched those of the local forecasts and verifying observations (see Dagostaro and Dallavalle 1997). However, neither the guidance nor the local PoP forecasts were verified due to a continuing problem with the precipitation amount observations for Alaska caused by the change in the hourly observation format on January 1, 1995.

3. REFERENCES

Dagostaro, V. J., 1985: The national AFOS-era verification data processing system. TDL Office Note 85-9, National Weather Service, NOAA, U.S. Department of Commerce, 47 pp.

_____, and J. P. Dallavalle, 1991: AFOS-era verification of guidance and local aviation/public weather forecasts--No. 11 (October 1988 - March 1989). TDL Office Note 91-2, National Weather Service, NOAA, U.S. Department of Commerce, 64 pp.

_____, and _____, 1997: AFOS-era verification of guidance and local aviation/public weather forecasts--No. 23 (October 1994 - March 1995). TDL Office Note 97-3, National Weather Service, NOAA, U.S. Department of Commerce, 53 pp.

Gerrity, J. P., Jr., 1977: The LFM model--1976: A documentation. NOAA Technical Memorandum NWS NMC-60, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 68 pp.

Glahn, H. R., and D. A. Lowry, 1972: The use of Model Output Statistics (MOS) in objective weather forecasting. J. Appl. Meteor., 11, 1203-1211.

Hoke, J. E., N. A. Phillips, G. J. DiMego, J. J. Tuccillo, and J. G. Sela, 1989: The regional analysis and forecast system of the National Meteorological Center. Wea. Forecasting, 4, 323-334.

National Weather Service, 1982: National Verification Plan. National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 81 pp.

Newell, J. E., and D. G. Deaven, 1981: The LFM-II model--1980. NOAA Technical Memorandum NWS NMC-66, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 20 pp.

Ruth, D. P., and C. L. Alex, 1987: AFOS-era forecast verification. NOAA Techniques Development Laboratory Computer Program NWS TDL CP 87-2, National Weather Service, NOAA, U.S. Department of Commerce, 50 pp.

Table 1.1. Forecasts and observations in the NWS verification data.

Weather Element	Type of Data	Data Source[1]	Projections From Forecast Cycle	Forecast Cycle (UTC)	Comments
Max temp	LFM MOS	FMAK1	24, 48 36, 60	0000 1200	Calendar day max temperature forecast for Alaska; guidance no longer available for the conterminous U.S.
	NGM MOS	FWC	24, 48 36, 60	0000 1200	Daytime max temperature forecast.
	Local Fcst	FP	24, 48 36, 60	0000 1200	Daytime max temperature for all stations. In the conterminous U.S., actual daytime period depends on time zone. For Alaska, forecasts are valid for 12-h periods ending at 30 (42) and 54 (66) hours after 0000 (1200) UTC.
	Obs	SAO			Corresponds closely to the local and NGM MOS definitions of the max for all stations.
Min temp	LFM MOS	FMAK1	36, 60 24, 48	0000 1200	Calendar day min temperature forecast for Alaska; guidance no longer available for the conterminous U.S.
	NGM MOS	FWC	36, 60 24, 48	0000 1200	Nighttime min temperature forecast.
	Local Fcst	FP	36, 60 24, 48	0000 1200	Nighttime min temperature for all stations. In the conterminous U.S., actual nighttime period depends on time zone. For Alaska, forecasts are valid for 12-h periods ending at 30 (42) and 54 (66) hours after 1200 (0000) UTC.
	Obs	SAO			Corresponds closely to the local and NGM MOS definitions of the min for all stations.
PoP	LFM MOS	FMAK1	30, 42, 54	0000, 1200	For Alaska, forecasts are for 12-h periods ending at the indicated projections. Guidance for the conterminous U.S. is no longer available.
	NGM MOS	FWC	24, 36, 48	0000, 1200	Forecasts are for 12-h periods ending at the indicated projections.
	Local Fcst	FP	24, 36, 48	0000, 1200	Same as the guidance. For Alaska, the local forecasts are valid 30, 42, and 54 hours from the forecast cycle.
	Obs	SAO			Precipitation amount for 12-h periods that match those of the local forecasts.

Table 1.1. Continued.

Weather Element	Type of Data	Data Source[1]	Projections From Forecast Cycle	Forecast Cycle (UTC)	Comments
Precipitation type[2]	LFM MOS	FMAK1	18, 30, 42	0000, 1200	For Alaska, guidance is for frozen and unfrozen precipitation (freezing is considered unfrozen but is not verified). There is no guidance for the conterminous U.S.
	NGM MOS	FWC	18, 30, 42	0000, 1200	Forecasts are valid at specific hours corresponding to the indicated projections. Guidance is for freezing, frozen, and liquid precipitation (mixed frozen and liquid is considered liquid).
	Local Fcst	MEF	18, 30, 42	0000, 1200	Forecasts of freezing, frozen, and liquid precipitation (mixed frozen and liquid is considered frozen) for all stations. Forecasts are valid at specific hours corresponding to the indicated projections.
	Obs	SAO			Obs are collected at the verifying time and ± 1 hour of the verifying time.
Snow amount[2]	LFM MOS				For Alaska, appropriate guidance is not available; no guidance for the conterminous U.S.
	NGM MOS	FWC	24	0000, 1200	Categorical forecasts of snow amount for the 12-h period ending at the indicated projection.
	Local Fcst	MEF	24	0000, 1200	Snow amount forecast in inches for the 12-h period ending at the indicated projection.
	Obs	SSM			12-h snow amount.
Cloud amount	LFM MOS	FMAK1	12, 18, 24	0000, 1200	Categorical forecasts of opaque sky cover for Alaska; no guidance for the conterminous U.S.
	NGM MOS	FWC	12, 18, 24	0000, 1200	Categorical forecasts of opaque sky cover.
	Local Fcst	MEF	12, 18, 24	0000, 1200	Categorical forecasts of sky cover.
	Obs	SAO			Observed total sky cover (includes thin clouds) at the verifying hour.
Wind speed	LFM MOS	FMAK2	12, 18, 24, 42	0000, 1200	For Alaska, forecasts are valid at specific hours after 0000 or 1200 UTC; no guidance for the conterminous U.S.
	NGM MOS	FWC	12, 18, 24, 42	0000, 1200	Forecasts are valid at the indicated hours after 0000 or 1200 UTC.
	Local Fcst	FT	3, 9, 15	0900, 1800	Aviation terminal forecasts are valid for variable time periods. Forecasts valid for the "projections" at left are verified. Approximate FT issuance times, at left, depend on time zone where station is located.
		MEF	42	0000, 1200	A yes/no forecast of ≥ 22 kt wind speed valid at the specific hour after 0000 or 1200 UTC.
	Obs	SAO			Observed values collected at the stations for the specific hour and ± 3 hours (highest sustained wind) correspond to the valid times of the local aviation terminal forecasts. Observed values corresponding to the 42-h significant wind are based on 0000 or 1200 UTC. Verifying obs corresponding to the guidance are from MDL hourly archives.

Table 1.1. Continued

Weather Element	Type of Data	Data Source[1]	Projections From Forecast Cycle	Forecast Cycle (UTC)	Comments
Wind direction	LFM MOS	FMAK2	12, 18, 24	0000, 1200	For Alaska, forecasts are valid at specific hours after 0000 or 1200 UTC; no guidance for the conterminous U.S.
	NGM MOS	FWC	12, 18, 24	0000, 1200	Forecasts are valid at the indicated hours after 0000 or 1200 UTC.
	Local Fcst	FT	3, 9, 15	0900, 1800	Same as for local aviation terminal forecasts of wind speed.
	Obs	SAO			Observed values collected at the stations for the specific hour correspond to the valid time of the local forecasts. Verifying obs corresponding to the guidance are from MDL hourly archives.
Ceiling height	LFM MOS	FMAK2	12, 18, 24	0000, 1200	Categorical value. Definitions of categories match the official definitions of LIFR and IFR, but differ slightly from the official definitions of MVFR and VFR; no guidance for the conterminous U.S.
	NGM MOS	FWC	12, 15, 18, 24	0000, 1200	Categorical value. Definitions of categories match the official definitions of LIFR, IFR, MVFR, and VFR.
	Local Fcst	FT	3, 6, 9, 15	0900, 1800	Forecasts are converted to categorical values. See wind speed for FT valid times and issuance times.
	Persis	SAO			Persistence observations used for comparison with the local forecasts are collected at the stations and are the latest hourly obs available at the scheduled FT release time. Since March 1987, persistence obs used for comparison with the MOS guidance are from hourly obs taken at 0900 (2100) UTC for the 0000 (1200) UTC cycle. These latter obs are collected at MDL.
	Obs	SAO			Observations taken at specific hours. Obs corresponding to the valid times of the local forecasts are collected at the stations. Verifying obs that correspond to the valid times of the MOS guidance are from hourly obs collected at MDL.
Visibility	LFM MOS	FMAK2	12, 18, 24	0000, 1200	See ceiling height.
	NGM MOS	FWC	12, 15, 18, 24	0000, 1200	See ceiling height.
	Local Fcst	FT	3, 6, 9, 15	0900, 1800	See ceiling height.
	Persis	SAO			See ceiling height.
	Obs	SAO			See ceiling height.

[1]Data sources are as follows:
FMAK1, FMAK2 - bulletins contain LFM-based MOS guidance for all weather elements for stations in Alaska; LFM-based MOS guidance for the conterminous U.S. is no longer available
FWC - FWC bulletin contains NGM-based MOS guidance for all weather elements for stations in the conterminous U.S. only
FP - Coded city forecast (FPUS4) bulletin containing official local public weather element forecasts in the conterminous U.S.; data in Alaska are obtained from the FPAK4 bulletin
FT - Aviation terminal forecast containing official local forecasts for aviation weather elements
MEF - Manually entered forecast product containing official local forecasts of some weather elements
SAO - Surface airways observation containing verifying observations corresponding to local and MOS forecasts for most weather elements
SSM - Surface synoptic report containing verifying observations of snow amount

[2]Precipitation type and snow amount forecasts are not verified for the warm season months of April through September.

Table 1.2. National Weather Service Technical Procedures Bulletins (TPB's) containing information about MOS guidance.

Geographical Area	Subject	Forecast Model	TPB No.
Conterminous U.S.	max/min temperature	NGM	387
	PoP	NGM	409
	precipitation type	NGM	421
	snow amount	NGM	420
	cloud amount	NGM	387
	surface wind	NGM	399
	ceiling height	NGM	414
	visibility	NGM	431
Alaska	max/min temperature	LFM	329
	PoP	LFM	329
	cloud amount	LFM	329
	surface wind	LFM	329
	ceiling height	LFM	338
	visibility	LFM	338

Table 1.3. Ninety-six stations in the conterminous U.S. and six stations in Alaska used for verification of MOS guidance and local forecasts of max/min temperature, probability of precipitation, cloud amount, surface wind, ceiling height, and visibility.

DCA	Washington, D.C.	ORF	Norfolk, Virginia
PWM[1]	Portland, Maine	CON	Concord, New Hampshire
BOS	Boston, Massachusetts	PVD[1]	Providence, Rhode Island
ALB[1]	Albany, New York	BTV	Burlington, Vermont
BUF	Buffalo, New York	SYR[1]	Syracuse, New York
LGA	New York (LaGuardia), New York	EWR	Newark, New Jersey
RDU	Raleigh-Durham, North Carolina	CLT	Charlotte, North Carolina
CLE	Cleveland, Ohio	CMH	Columbus, Ohio
PHL	Philadelphia, Pennsylvania	AVP	Scranton, Pennsylvania
PIT	Pittsburgh, Pennsylvania	ERI	Erie, Pennsylvania
CAE	Columbia, South Carolina	CHS	Charleston, South Carolina
CRW[1]	Charleston, West Virginia	BKW	Beckley, West Virginia
BHM	Birmingham, Alabama	MOB	Mobile, Alabama
AMA[1]	Amarillo, Texas	MLB[2]	Melbourne, Florida
LIT	Little Rock, Arkansas	FSM[1]	Fort Smith, Arkansas
MIA	Miami, Florida	TPA	Tampa, Florida
ATL[1]	Atlanta, Georgia	SAV	Savannah, Georgia
MSY	New Orleans, Louisiana	SHV	Shreveport, Louisiana
JAN[1]	Jackson, Mississippi	MEI[1]	Meridian, Mississippi
ABQ	Albuquerque, New Mexico	TCC[3]	Tucumcari, New Mexico
OKC[1]	Oklahoma City, Oklahoma	TUL[1]	Tulsa, Oklahoma
MEM	Memphis, Tennessee	BNA	Nashville, Tennessee
DFW	Dallas-Ft. Worth, Texas	ABI	Abilene, Texas
LBB[1]	Lubbock, Texas	ELP[1]	El Paso, Texas
SAT[1]	San Antonio, Texas	IAH	Houston, Texas
DDC[1]	Dodge City, Kansas	IND	Indianapolis, Indiana
DEN[1]	Denver, Colorado	GJT	Grand Junction, Colorado
ORD	Chicago (O'Hare), Illinois	SPI	Springfield, Illinois
DSM	Des Moines, Iowa	ALO	Waterloo, Iowa
TOP[1]	Topeka, Kansas	ICT[1]	Wichita, Kansas
SDF[1]	Louisville, Kentucky	LEX	Lexington, Kentucky
DTW[1]	Detroit, Michigan	GRR[1]	Grand Rapids, Michigan
MSP	Minneapolis, Minnesota	DLH	Duluth, Minnesota
STL	St. Louis, Missouri	MCI[1]	Kansas City, Missouri
OMA	Omaha, Nebraska	LBF	North Platte, Nebraska
BIS	Bismarck, North Dakota	FAR	Fargo, North Dakota
FSD	Sioux Falls, South Dakota	RAP[1]	Rapid City, South Dakota
MKE[1]	Milwaukee, Wisconsin	MSN	Madison, Wisconsin
CYS	Cheyenne, Wyoming	CPR	Casper, Wyoming
PHX[1]	Phoenix, Arizona	TUS	Tucson, Arizona
LAX[4]	Los Angeles, California	SAN	San Diego, California
SFO	San Francisco, California	FAT[1]	Fresno, California
BOI	Boise, Idaho	PIH	Pocatello, Idaho
GTF[1]	Great Falls, Montana	BIL[1]	Billings, Montana
RNO[1]	Reno, Nevada	LAS[1]	Las Vegas, Nevada
PDX	Portland, Oregon	MFR	Medford, Oregon
SLC	Salt Lake City, Utah	CDC	Cedar City, Utah
SEA	Seattle-Tacoma, Washington	GEG[1]	Spokane, Washington
ANC[5]	Anchorage, Alaska	BET[5]	Bethel, Alaska
FAI[5]	Fairbanks, Alaska	OME[5]	Nome, Alaska
JNU[5]	Juneau, Alaska	YAK[5]	Yakutat, Alaska

[1]Cloud amount observations were not used after the station was commissioned as an ASOS site.
[2]MLB had no data for the cloud amount and 42-h significant wind verifications. Data were also not available for the local surface wind, ceiling height, and visibility verifications.
[3]TCC had no data for the max/min temperature and PoP verifications. Data also were not available for the cloud amount and 42-h significant wind verifications for the 1200 UTC cycle, the local ceiling height, visibility, and surface wind verifications for the FT release time of approximately 0900 UTC, the MOS surface wind verification for the 1200 UTC cycle, and the MOS ceiling height and visibility verifications for the 0000 and 1200 UTC cycles.
[4]LAX was not included in the max/min temperature and PoP verifications.
[5]This station had no precipitation amount observations.

Table 1.4. Definitions of categories used for verification.

Category	Precipitation Type	Snow Amount* (in)	Cloud Amount	Wind Speed (kt)	Wind Direction (degrees)	Ceiling Height (ft)	Visibility (mi)
1	ZL, ZR, any combination of precipitation types that includes ZL or ZR	<2	CLR, -SCT, -BKN, -OVC, -X	≤12	340-20	≤400	<1
2	IC, IP, IPW, S, SG, SP, SW, any combination of frozen and liquid	2-3	SCT	13-17	30-60	500-900	1-2 3/4
3	L, R, RW	4-5	BKN	18-22	70-110	1000-3000	3-5
4		≥6	OVC, X	23-27	120-150	≥3100	>5
5				28-32	160-200		
6				≥33	210-240		
7					250-290		
8					300-330		

*Scores based on cumulative snow amount categories of ≥ 2, ≥ 4, and ≥ 6 inches are noted in the verification tables.

Table 2.1. Comparative verification of local and NGM MOS max/min temperature forecasts for 94 stations in the conterminous U.S., 0000 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Today's Max	LOCAL		0.0	2.6	1.3	--	--	80.8
	NGM MOS	16040	-0.1	2.7	1.5	--	--	79.4
Tonight's Min	LOCAL		-0.3	2.6	0.5	0.46	0.24	74.1
	NGM MOS	16045	-0.3	2.6	0.6	0.43	0.22	72.9
Tomorrow's Max	LOCAL		0.0	3.3	3.1	--	--	69.4
	NGM MOS	15974	-0.1	3.4	3.4	--	--	67.7
Tomorrow Night's Min	LOCAL		-0.4	3.1	1.5	0.45	0.26	62.4
	NGM MOS	15980	-0.1	3.1	1.5	0.39	0.28	63.0

Table 2.2. Same as Table 2.1 except for the 1200 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Tonight's Min	LOCAL		-0.4	2.5	0.4	0.52	0.21	76.7
	NGM MOS	16261	-0.1	2.4	0.5	0.47	0.27	76.6
Tomorrow's Max	LOCAL		0.0	2.9	1.9	--	--	75.7
	NGM MOS	16192	0.3	3.1	2.5	--	--	73.3
Tomorrow Night's Min	LOCAL		-0.3	2.8	1.0	0.48	0.20	68.7
	NGM MOS	16204	0.0	2.8	1.0	0.45	0.11	68.7
Day After Tomorrow's Max	LOCAL		0.0	3.6	4.6	--	--	62.6
	NGM MOS	16132	0.2	3.8	5.2	--	--	60.3

Table 2.3. Comparative verification of local and NGM MOS max/min temperature forecasts for 24 stations in the Eastern Region, 0000 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Today's Max	LOCAL	4162	-0.1	2.6	1.0	--	--	76.9
	NGM MOS		-0.2	2.7	1.1	--	--	76.3
Tonight's Min	LOCAL	4158	-0.5	2.5	0.2	0.58	0.29	77.1
	NGM MOS		-0.5	2.5	0.3	0.54	0.26	77.0
Tomorrow's Max	LOCAL	4152	-0.1	3.2	2.6	--	--	65.9
	NGM MOS		-0.2	3.3	2.4	--	--	65.9
Tomorrow Night's Min	LOCAL	4148	-0.3	3.2	1.4	0.56	0.18	62.9
	NGM MOS		0.0	3.2	1.3	0.60	0.12	64.0

Table 2.4. Same as Table 2.3 except for the 1200 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Tonight's Min	LOCAL	4230	-0.6	2.4	0.2	0.59	0.19	79.2
	NGM MOS		-0.4	2.3	0.2	0.55	0.33	80.4
Tomorrow's Max	LOCAL	4224	-0.1	2.9	1.3	--	--	72.3
	NGM MOS		0.2	2.9	1.8	--	--	71.6
Tomorrow Night's Min	LOCAL	4223	-0.3	2.8	0.5	0.59	0.20	72.1
	NGM MOS		0.1	2.7	0.5	0.59	0.16	73.1
Day After Tomorrow's Max	LOCAL	4218	0.0	3.7	4.5	--	--	56.0
	NGM MOS		0.2	3.7	5.0	--	--	55.2

Table 2.5. Comparative verification of local and NGM MOS max/min temperature forecasts for 25 stations in the Southern Region, 0000 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Today's Max	LOCAL	4203	0.3	2.3	1.4	--	--	76.5
	NGM MOS		0.2	2.5	1.5	--	--	73.7
Tonight's Min	LOCAL	4214	-0.2	2.4	0.7	0.14	0.50	70.4
	NGM MOS		-0.2	2.5	0.8	0.14	0.00	68.8
Tomorrow's Max	LOCAL	4180	0.3	2.9	2.7	--	--	63.4
	NGM MOS		0.2	3.1	3.3	--	--	58.4
Tomorrow Night's Min	LOCAL	4194	-0.3	2.8	1.0	0.00	1.00	61.5
	NGM MOS		-0.2	2.9	1.5	0.14	0.50	59.2

Table 2.6. Same as Table 2.5 except for the 1200 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Tonight's Min	LOCAL	4262	-0.3	2.3	0.7	0.14	0.50	73.0
	NGM MOS		-0.2	2.3	0.5	0.29	0.33	72.4
Tomorrow's Max	LOCAL	4223	0.2	2.7	1.8	--	--	69.2
	NGM MOS		0.5	2.9	2.9	--	--	63.8
Tomorrow Night's Min	LOCAL	4243	-0.2	2.6	0.9	0.14	0.00	65.3
	NGM MOS		-0.1	2.7	1.2	0.14	0.50	63.7
Day After Tomorrow's Max	LOCAL	4206	0.2	3.2	3.3	--	--	56.9
	NGM MOS		0.3	3.3	3.8	--	--	52.7

Table 2.7. Comparative verification of local and NGM MOS max/min temperature forecasts for 28 stations in the Central Region, 0000 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Today's Max	LOCAL	4759	-0.1	2.8	1.7	--	--	83.5
	NGM MOS		-0.2	3.0	1.8	--	--	82.6
Tonight's Min	LOCAL	4761	-0.3	2.8	0.5	0.43	0.10	77.3
	NGM MOS		-0.3	2.9	0.8	0.41	0.14	75.9
Tomorrow's Max	LOCAL	4745	-0.2	3.8	4.6	--	--	71.8
	NGM MOS		-0.2	3.9	5.0	--	--	70.5
Tomorrow Night's Min	LOCAL	4745	-0.5	3.4	2.1	0.47	0.28	65.4
	NGM MOS		-0.2	3.4	1.8	0.33	0.40	67.2

Table 2.8. Same as Table 2.7 except for the 1200 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Tonight's Min	LOCAL	4811	-0.4	2.7	0.4	0.53	0.21	79.6
	NGM MOS		-0.1	2.7	0.6	0.47	0.20	79.3
Tomorrow's Max	LOCAL	4798	-0.2	3.3	2.9	--	--	78.8
	NGM MOS		0.3	3.4	3.1	--	--	77.3
Tomorrow Night's Min	LOCAL	4795	-0.3	3.1	1.3	0.44	0.21	71.9
	NGM MOS		0.1	3.1	1.3	0.40	0.00	72.2
Day After Tomorrow's Max	LOCAL	4780	-0.2	4.2	6.8	--	--	66.2
	NGM MOS		0.3	4.4	7.3	--	--	63.5

Table 2.9. Comparative verification of local and NGM MOS max/min temperature forecasts for 17 stations in the Western Region, 0000 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Today's Max	LOCAL		0.1	2.4	1.0	--	--	83.8
	NGM MOS	2916	-0.2	2.6	1.3	--	--	81.5
Tonight's Min	LOCAL		-0.1	2.5	0.7	0.50	0.36	64.7
	NGM MOS	2912	0.0	2.6	0.7	0.43	0.33	62.4
Tomorrow's Max	LOCAL		0.1	3.1	2.0	--	--	73.7
	NGM MOS	2897	-0.2	3.2	2.3	--	--	72.7
Tomorrow Night's Min	LOCAL		-0.3	2.9	1.2	0.44	0.30	54.0
	NGM MOS	2893	0.0	2.9	1.2	0.31	0.17	54.8

Table 2.10. Same as Table 2.9 except for the 1200 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Tonight's Min	LOCAL		-0.1	2.4	0.4	0.50	0.22	69.1
	NGM MOS	2958	0.1	2.4	0.5	0.43	0.25	67.8
Tomorrow's Max	LOCAL		0.0	2.8	1.4	--	--	78.9
	NGM MOS	2947	0.1	3.0	2.1	--	--	75.8
Tomorrow Night's Min	LOCAL		-0.3	2.8	1.2	0.56	0.18	58.1
	NGM MOS	2943	0.0	2.8	0.9	0.50	0.11	57.7
Day After Tomorrow's Max	LOCAL		0.2	3.4	3.1	--	--	67.9
	NGM MOS	2928	0.2	3.5	3.7	--	--	66.7

Table 2.11. Comparative verification of local and LFM MOS max/min temperature forecasts for 6 stations in the Alaska Region, 0000 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Today's Max	LOCAL		0.4	3.2	1.7	--	--	68.3
	LFM MOS	1012	0.8	3.3	1.9	--	--	67.9
Tonight's Min	LOCAL		-0.3	3.3	2.6	0.00	1.00	59.2
	LFM MOS	1017	-0.7	3.2	1.7	0.00	1.00	63.0
Tomorrow's Max	LOCAL		-0.1	3.8	4.2	--	--	55.3
	LFM MOS	1015	0.0	3.9	4.0	--	--	55.5
Tomorrow Night's Min	LOCAL		-0.6	3.8	3.1	0.20	0.50	48.9
	LFM MOS	1018	-1.1	3.6	2.6	0.00	1.00	53.5

Table 2.12. Same as Table 2.11 except for the 1200 UTC cycle.

Forecast Projection	Forecast Type	Number of Cases	Mean Algebraic Error (°F)	Mean Absolute Error (°F)	Percent of Absolute Errors >10°F	Probability of Detection (32°F)	False Alarm Ratio (32°F)	Improvement Over Climate
Tonight's Min	LOCAL		-0.7	3.1	1.8	0.00	*	63.5
	LFM MOS	993	-1.0	3.1	0.9	0.00	*	65.2
Tomorrow's Max	LOCAL		-0.2	3.5	3.0	--	--	62.8
	LFM MOS	990	-0.3	3.7	3.4	--	--	59.7
Tomorrow Night's Min	LOCAL		-0.9	3.6	3.6	0.00	1.00	52.7
	LFM MOS	992	-1.3	3.5	2.2	0.00	1.00	57.6
Day After Tomorrow's Max	LOCAL		-0.3	4.2	5.1	--	--	49.8
	LFM MOS	989	-0.4	4.3	5.4	--	--	47.8
						--	--	

* Events of $\leq$ 32°F were observed but not forecast.

Table 3.1. Comparative verification of local and NGM MOS PoP forecasts for 94 stations in the conterminous U.S., 0000 UTC cycle.

Forecast Projection (h)	Type of Forecast	Brier Score	Local % Imp. Over Guid.	% Imp. Over Clim.	No. of Cases	Changes GE 20% to Guidance: Guid. Brier Score	Changes GE 20% to Guidance: Local % Imprv.	Changes GE 20% to Guidance: No. of Changes
12-24 (1st period)	LOCAL	0.0991		34.8				
	NGM MOS	0.1002	1.0	34.1	16128	0.2000	2.8	2099
24-36 (2nd period)	LOCAL	0.1085		27.6				
	NGM MOS	0.1102	1.5	26.5	16128	0.2105	1.6	1822
36-48 (3rd period)	LOCAL	0.1148		24.0				
	NGM MOS	0.1147	-0.1	24.0	16110	0.2094	1.7	1724

Table 3.2. Same as Table 3.1 except for the 1200 UTC cycle.

Forecast Projection (h)	Type of Forecast	Brier Score	Local % Imp. Over Guid.	% Imp. Over Clim.	No. of Cases	Changes GE 20% to Guidance: Guid. Brier Score	Changes GE 20% to Guidance: Local % Imprv.	Changes GE 20% to Guidance: No. of Changes
12-24 (1st period)	LOCAL	0.1021		31.6				
	NGM MOS	0.1034	1.3	30.7	16325	0.2015	2.1	2473
24-36 (2nd period)	LOCAL	0.1077		28.5				
	NGM MOS	0.1083	0.5	28.2	16305	0.2006	0.3	1926
36-48 (3rd period)	LOCAL	0.1173		21.4				
	NGM MOS	0.1173	0.1	21.3	16309	0.2162	-1.5	1752

Table 3.3. Comparative verification of local and NGM MOS PoP forecasts for 24 stations in the Eastern Region, 0000 UTC cycle.

Forecast Projection (h)	Type of Forecast	Brier Score	Local % Imp. Over Guid.	% Imp. Over Clim.	No. of Cases	Changes GE 20% to Guidance: Guid. Brier Score	Changes GE 20% to Guidance: Local % Imprv.	Changes GE 20% to Guidance: No. of Changes
12-24 (1st period)	LOCAL	0.1069		36.8				
	NGM MOS	0.1081	1.1	36.0	4185	0.2058	5.0	576
24-36 (2nd period)	LOCAL	0.1160		28.4				
	NGM MOS	0.1165	0.4	28.1	4184	0.1964	-5.0	498
36-48 (3rd period)	LOCAL	0.1209		27.9				
	NGM MOS	0.1224	1.2	27.0	4183	0.2162	4.5	484

Table 3.4. Same as Table 3.3 except for the 1200 UTC cycle.

Forecast Projection (h)	Type of Forecast	Brier Score	Local % Imp. Over Guid.	% Imp. Over Clim.	No. of Cases	Changes GE 20% to Guidance: Guid. Brier Score	Changes GE 20% to Guidance: Local % Imprv.	Changes GE 20% to Guidance: No. of Changes
12-24 (1st period)	LOCAL	0.1077		33.4				
	NGM MOS	0.1087	0.9	32.8	4251	0.2057	2.7	673
24-36 (2nd period)	LOCAL	0.1151		31.8				
	NGM MOS	0.1154	0.3	31.6	4248	0.2047	3.7	511
36-48 (3rd period)	LOCAL	0.1239		22.7				
	NGM MOS	0.1221	-1.5	23.8	4249	0.2091	-7.5	510

Table 3.5. Comparative verification of local and NGM MOS PoP forecasts for 25 stations in the Southern Region, 0000 UTC cycle.

Forecast Projection (h)	Type of Forecast	Brier Score	Local % Imp. Over Guid.	% Imp. Over Clim.	No. of Cases	Changes GE 20% to Guidance: Guid. Brier Score	Changes GE 20% to Guidance: Local % Imprv.	Changes GE 20% to Guidance: No. of Changes
12-24 (1st period)	LOCAL	0.1074		27.7				
	NGM MOS	0.1066	-0.7	28.2	4180	0.1794	-7.3	548
24-36 (2nd period)	LOCAL	0.1048		20.0				
	NGM MOS	0.1066	1.7	18.7	4189	0.2137	3.7	480
36-48 (3rd period)	LOCAL	0.1241		15.7				
	NGM MOS	0.1233	-0.7	16.3	4178	0.2111	-1.4	491

Table 3.6. Same as Table 3.5 except for the 1200 UTC cycle.

Forecast Projection (h)	Type of Forecast	Brier Score	Local % Imp. Over Guid.	% Imp. Over Clim.	No. of Cases	Changes GE 20% to Guidance: Guid. Brier Score	Changes GE 20% to Guidance: Local % Imprv.	Changes GE 20% to Guidance: No. of Changes
12-24 (1st period)	LOCAL	0.1003		23.3				
	NGM MOS	0.1031	2.7	21.2	4228	0.1995	6.0	657
24-36 (2nd period)	LOCAL	0.1160		21.2				
	NGM MOS	0.1174	1.2	20.2	4215	0.2028	2.5	530
36-48 (3rd period)	LOCAL	0.1107		15.2				
	NGM MOS	0.1115	0.8	14.6	4224	0.2176	5.2	451

Table 3.7. Comparative verification of local and NGM MOS PoP forecasts for 28 stations in the Central Region, 0000 UTC cycle.

Forecast Projection (h)	Type of Forecast	Brier Score	Local % Imp. Over Guid.	% Imp. Over Clim.	No. of Cases	Changes GE 20% to Guidance: Guid. Brier Score	Changes GE 20% to Guidance: Local % Imprv.	Changes GE 20% to Guidance: No. of Changes
12-24 (1st period)	LOCAL	0.1050		38.7				
	NGM MOS	0.1068	1.7	37.7	4822	0.2047	5.3	760
24-36 (2nd period)	LOCAL	0.1207		31.9				
	NGM MOS	0.1227	1.7	30.7	4815	0.2118	4.0	639
36-48 (3rd period)	LOCAL	0.1255		26.3				
	NGM MOS	0.1238	-1.4	27.3	4814	0.1909	-2.3	551

Table 3.8. Same as Table 3.7 except for the 1200 UTC cycle.

Forecast Projection (h)	Type of Forecast	Brier Score	Local % Imp. Over Guid.	% Imp. Over Clim.	No. of Cases	Changes GE 20% to Guidance: Guid. Brier Score	Changes GE 20% to Guidance: Local % Imprv.	Changes GE 20% to Guidance: No. of Changes
12-24 (1st period)	LOCAL	0.1137		35.4				
	NGM MOS	0.1122	-1.4	36.3	4869	0.1931	-7.1	867
24-36 (2nd period)	LOCAL	0.1156		31.7				
	NGM MOS	0.1155	-0.1	31.7	4866	0.1900	-5.9	678
36-48 (3rd period)	LOCAL	0.1346		23.6				
	NGM MOS	0.1349	0.2	23.4	4864	0.2149	-5.6	626

Table 3.9. Comparative verification of local and NGM MOS PoP forecasts for 17 stations in the Western Region, 0000 UTC cycle.

Forecast Projection (h)	Type of Forecast	Brier Score	Local % Imp. Over Guid.	% Imp. Over Clim.	No. of Cases	Changes GE 20% to Guidance: Guid. Brier Score	Changes GE 20% to Guidance: Local % Imprv.	Changes GE 20% to Guidance: No. of Changes
12-24 (1st period)	LOCAL	0.0667		34.1				
	NGM MOS	0.0688	2.9	32.1	2941	0.2197	9.8	215
24-36 (2nd period)	LOCAL	0.0830		26.6				
	NGM MOS	0.0856	3.0	24.4	2940	0.2331	4.0	205
36-48 (3rd period)	LOCAL	0.0751		25.2				
	NGM MOS	0.0764	1.7	23.9	2935	0.2404	11.3	198

Table 3.10. Same as Table 3.9 except for the 1200 UTC cycle.

Forecast Projection (h)	Type of Forecast	Brier Score	Local % Imp. Over Guid.	% Imp. Over Clim.	No. of Cases	Changes GE 20% to Guidance: Guid. Brier Score	Changes GE 20% to Guidance: Local % Imprv.	Changes GE 20% to Guidance: No. of Changes
12-24 (1st period)	LOCAL	0.0777		31.3				
	NGM MOS	0.0821	5.4	27.4	2977	0.2228	17.3	276
24-36 (2nd period)	LOCAL	0.0724		27.2				
	NGM MOS	0.0734	1.3	26.3	2976	0.2201	5.0	207
36-48 (3rd period)	LOCAL	0.0887		22.5				
	NGM MOS	0.0901	1.5	21.3	2972	0.2391	12.0	165

Table 4.1. Comparative verification of local and NGM MOS forecasts of four categories of cloud amount (clear, scattered, broken, and overcast) for 79 stations in the conterminous U.S., 0000 UTC cycle

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	0.77	1.40	1.52	0.77	58.6	0.445
	NGM MOS	0.74	1.51	1.18	0.89	53.6	0.373
	No. Obs.	4509	2479	1721	3809		
18	LOCAL	0.63	1.32	1.59	0.57	49.2	0.320
	NGM MOS	0.70	1.32	1.18	0.79	53.6	0.375
	No. Obs.	3225	3754	2387	3304		
24	LOCAL	0.65	1.32	1.73	0.58	45.4	0.277
	NGM MOS	0.69	1.42	1.17	0.80	49.4	0.322
	No. Obs.	3527	3399	2168	3397		

Table 4.2. Same as Table 4.1 except for 78 stations for the 1200 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	0.78	1.20	1.56	0.67	53.7	0.385
	NGM MOS	0.75	1.40	1.12	0.79	51.8	0.353
	No. Obs.	3578	3442	2220	3432		
18	LOCAL	0.65	1.64	2.08	0.68	49.0	0.316
	NGM MOS	0.88	1.39	1.08	0.90	55.8	0.375
	No. Obs.	5562	2270	1453	3357		
24	LOCAL	0.72	1.53	1.75	0.64	46.6	0.291
	NGM MOS	0.75	1.56	1.18	0.86	52.1	0.353
	No. Obs.	4562	2505	1736	3858		

Table 4.3. Comparative verification of local and NGM MOS forecasts of four categories of cloud amount (clear, scattered, broken, and overcast) for 21 stations in the Eastern Region, 0000 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	0.69	1.63	1.69	0.72	53.0	0.375
	NGM MOS	0.78	1.55	1.10	0.90	54.4	0.377
	No. Obs.	1180	629	478	1265		
18	LOCAL	0.48	1.29	1.69	0.56	46.8	0.281
	NGM MOS	0.64	1.29	1.28	0.74	51.9	0.346
	No. Obs.	647	1089	722	1094		
24	LOCAL	0.58	1.40	1.74	0.66	43.9	0.262
	NGM MOS	0.74	1.48	1.08	0.82	48.9	0.315
	No. Obs.	956	848	612	1132		

Table 4.4. Same as Table 4.3 except for the 1200 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	0.68	1.24	1.73	0.69	50.0	0.340
	NGM MOS	0.75	1.48	1.08	0.81	50.1	0.332
	No. Obs.	974	861	628	1149		
18	LOCAL	0.62	1.67	2.19	0.70	47.4	0.304
	NGM MOS	0.89	1.42	1.00	0.93	55.6	0.377
	No. Obs.	1417	577	428	1160		
24	LOCAL	0.71	1.60	1.96	0.62	44.9	0.273
	NGM MOS	0.74	1.63	1.16	0.87	51.6	0.342
	No. Obs.	1192	629	486	1301		

Table 4.5. Comparative verification of local and NGM MOS forecasts of four categories of cloud amount (clear, scattered, broken, and overcast) for 19 stations in the Southern Region, 0000 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	0.75	1.36	1.44	0.69	55.4	0.402
	NGM MOS	0.74	1.50	1.03	0.82	49.6	0.319
	No. Obs.	1004	743	456	699		
18	LOCAL	0.61	1.32	1.22	0.47	48.5	0.266
	NGM MOS	0.78	1.30	0.92	0.72	54.2	0.352
	No. Obs.	607	1148	732	562		
24	LOCAL	0.59	1.31	1.70	0.41	42.9	0.223
	NGM MOS	0.65	1.41	1.08	0.73	47.5	0.277
	No. Obs.	755	965	545	625		

Table 4.6. Same as Table 4.5 except for 18 stations for the 1200 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	0.70	1.27	1.45	0.53	50.9	0.330
	NGM MOS	0.74	1.39	0.97	0.73	50.0	0.310
	No. Obs.	763	975	563	621		
18	LOCAL	0.58	1.80	1.79	0.58	45.6	0.260
	NGM MOS	0.94	1.23	0.98	0.90	53.7	0.324
	No. Obs.	1391	630	376	522		
24	LOCAL	0.69	1.53	1.55	0.52	43.1	0.239
	NGM MOS	0.70	1.46	1.13	0.86	50.1	0.328
	No. Obs.	1015	752	462	692		

Table 4.7. Comparative verification of local and NGM MOS forecasts of four categories of cloud amount (clear, scattered, broken, and overcast) for 23 stations in the Central Region, 0000 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	0.79	1.28	1.55	0.83	61.5	0.480
	NGM MOS	0.62	1.50	1.43	0.91	53.2	0.370
	No. Obs.	1198	724	470	1243		
18	LOCAL	0.52	1.37	1.91	0.61	48.3	0.317
	NGM MOS	0.50	1.41	1.38	0.86	52.3	0.359
	No. Obs.	918	977	589	1152		
24	LOCAL	0.51	1.38	1.91	0.64	44.9	0.274
	NGM MOS	0.50	1.46	1.39	0.85	50.0	0.331
	No. Obs.	955	933	583	1157		

Table 4.8. Same as Table 4.7 except for the 1200 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	0.71	1.20	1.64	0.76	54.7	0.399
	NGM MOS	0.63	1.41	1.35	0.80	52.1	0.359
	No. Obs.	975	949	601	1168		
18	LOCAL	0.59	1.72	2.64	0.69	48.9	0.322
	NGM MOS	0.79	1.54	1.34	0.90	56.8	0.395
	No. Obs.	1562	607	342	1186		
24	LOCAL	0.69	1.54	1.90	0.65	45.6	0.282
	NGM MOS	0.63	1.58	1.36	0.89	51.5	0.347
	No. Obs.	1215	730	476	1271		

Table 4.9. Comparative verification of local and NGM MOS forecasts of four categories of cloud amount (clear, scattered, broken, and overcast) for 16 stations in the Western Region, 0000 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	0.86	1.33	1.35	0.87	66.5	0.525
	NGM MOS	0.84	1.46	1.17	0.91	57.9	0.404
	No. Obs.	1127	383	317	602		
18	LOCAL	0.81	1.33	1.64	0.59	54.7	0.375
	NGM MOS	0.86	1.29	1.21	0.84	57.1	0.401
	No. Obs.	1053	540	344	496		
24	LOCAL	0.94	1.15	1.51	0.45	51.0	0.332
	NGM MOS	0.89	1.28	1.11	0.72	51.5	0.337
	No. Obs.	861	653	428	483		

Table 4.10. Same as Table 4.9 except for the 1200 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	1.03	1.06	1.32	0.59	61.0	0.465
	NGM MOS	0.88	1.28	1.07	0.77	55.8	0.397
	No. Obs.	866	657	428	494		
18	LOCAL	0.83	1.30	1.64	0.72	55.4	0.364
	NGM MOS	0.92	1.34	1.04	0.84	57.2	0.374
	No. Obs.	1192	456	307	489		
24	LOCAL	0.82	1.42	1.47	0.83	54.6	0.362
	NGM MOS	0.92	1.58	1.03	0.76	56.0	0.368
	No. Obs.	1140	394	312	594		

Table 4.11. Comparative verification of local and LFM MOS forecasts of four categories of cloud amount (clear, scattered, broken, and overcast) for 6 stations in the Alaska Region, 0000 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	0.63	0.88	1.50	0.98	56.8	0.338
	LFM MOS	0.68	1.10	0.93	1.07	57.9	0.337
	No. Obs.	145	173	170	536		
18	LOCAL	0.57	1.15	1.26	0.95	52.0	0.281
	LFM MOS	0.78	0.79	0.91	1.16	52.0	0.248
	No. Obs.	129	151	228	496		
24	LOCAL	0.60	1.04	1.16	0.97	47.4	0.217
	LFM MOS	1.03	0.79	0.90	1.13	51.9	0.273
	No. Obs.	93	190	269	472		

Table 4.12. Same as Table 4.11 except for the 1200 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Percent Correct	Skill Score
12	LOCAL	1.24	0.76	1.09	1.00	56.9	0.362
	LFM MOS	1.36	0.68	0.88	1.13	55.3	0.327
	No. Obs.	87	190	267	462		
18	LOCAL	0.70	0.84	1.15	1.08	51.5	0.286
	LFM MOS	1.02	0.85	0.87	1.13	53.4	0.314
	No. Obs.	123	195	225	443		
24	LOCAL	0.55	0.89	1.60	0.97	52.0	0.265
	LFM MOS	0.88	0.89	0.92	1.10	58.0	0.334
	No. Obs.	144	169	168	532		

Table 5.1. Verification of NGM MOS surface wind forecasts for 96 stations in the conterminous U.S., 0000 UTC cycle.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	NGM	25	0.493	3087	3.8	2.7	3133	0.344	91.1	0.00	0.98 15195	1.29 836	1.61 132	2.67 15	0.50 4	0.33 3
18	NGM	28	0.441	6822	3.3	1.8	6851	0.389	79.4	0.16	0.98 13175	1.05 2466	1.28 539	1.27 108	1.00 18	2.50 2
24	NGM	32	0.415	6537	3.8	2.5	6584	0.334	79.1	0.05	0.95 13375	1.22 1961	1.38 494	1.61 96	1.95 19	2.67 3

Table 5.2. Same as Table 5.1 except for 95 stations for the 1200 UTC cycle.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	NGM	29	0.454	6502	3.7	2.4	6544	0.357	80.1	0.05	0.95 13527	1.17 1986	1.38 499	1.93 95	1.52 21	1.67 3
18	NGM	30	0.440	3541	4.1	3.0	3602	0.308	89.1	0.06	0.97 14996	1.43 904	1.24 203	1.37 27	3.00 3	0.25 4
24	NGM	29	0.441	3195	4.0	3.0	3257	0.318	90.7	0.07	0.98 15363	1.30 846	1.60 133	3.07 14	1.50 4	0.67 3

Table 5.3. Verification of NGM MOS surface wind forecasts for 24 stations in the Eastern Region, 0000 UTC cycle.

Fcst Proj (h)	Type of Fcst.	Direction: Mean Abs. Error (deg)	Direction: Skill Score	Direction: No. of Cases	Speed: Mean Abs. Error (kt)	Speed: Mean Alg. Error (kt)	Speed: No. of Cases	Contingency Table: Skill Score	Contingency Table: Percent Fcst. Correct	Contingency Table: Threat Score (>27 kt)	Bias by Category: 1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	NGM	22	0.475	867	3.3	2.3	876	0.351	91.7	0.00	0.98 3906	1.43 203	1.35 26	1.00 3	0.00 1	0.00 1
18	NGM	27	0.420	1805	3.0	1.6	1808	0.373	79.3	0.33	0.98 3343	1.03 661	1.25 113	1.17 18	3.00 1	* 0
24	NGM	31	0.403	1168	3.6	2.6	1185	0.320	87.3	0.00	0.96 3750	1.49 280	1.43 46	1.43 7	0.50 4	** 0

Table 5.4. Same as Table 5.3 except for the 1200 UTC cycle.

Fcst Proj (h)	Type of Fcst.	Direction: Mean Abs. Error (deg)	Direction: Skill Score	Direction: No. of Cases	Speed: Mean Abs. Error (kt)	Speed: Mean Alg. Error (kt)	Speed: No. of Cases	Contingency Table: Skill Score	Contingency Table: Percent Fcst. Correct	Contingency Table: Threat Score (>27 kt)	Bias by Category: 1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	NGM	28	0.448	1090	3.3	2.1	1099	0.317	88.8	0.00	0.99 3814	1.17 286	1.18 45	1.29 7	0.25 4	* 0
18	NGM	29	0.408	699	3.8	2.9	710	0.248	92.5	0.00	0.98 3890	1.42 153	1.47 17	1.25 4	0.00 1	* 0
24	NGM	25	0.463	813	3.2	2.2	823	0.332	92.1	0.00	0.98 3974	1.28 205	1.28 25	0.50 2	0.00 1	0.00 1

* This category was neither forecast nor observed.
** This category was forecast but was not observed.

Table 5.5. Verification of NGM MOS surface wind forecasts for 26 stations in the Southern Region, 0000 UTC cycle.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	NGM	28	0.448	624	3.9	2.4	634	0.365	93.1	0.00	0.99 4070	1.16 189	1.26 31	6.00 1	** 0	0.00 2
18	NGM	28	0.451	1768	3.3	2.0	1771	0.360	80.2	0.00	0.95 3728	1.23 556	1.37 130	1.17 23	1.50 2	0.00 1
24	NGM	30	0.423	1484	3.8	2.3	1494	0.325	81.9	0.00	0.97 3624	1.14 471	1.20 96	1.29 24	1.80 5	4.00 1

Table 5.6. Same as Table 5.5 except for 25 stations for the 1200 UTC cycle.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	NGM	26	0.472	1497	3.6	2.3	1511	0.342	82.9	0.00	0.99 3664	1.01 473	1.27 100	1.65 23	2.00 5	2.00 1
18	NGM	28	0.460	819	4.0	2.7	836	0.371	90.5	0.00	0.99 3976	1.15 261	0.98 61	1.20 5	1.00 2	0.33 3
24	NGM	34	0.392	617	3.9	2.5	628	0.362	93.3	0.00	0.99 4112	1.13 191	1.17 30	4.00 1	* 0	0.00 2

* This category was neither forecast nor observed.
** This category was forecast but was not observed.

Table 5.7. Verification of NGM MOS surface wind forecasts for 28 stations in the Central Region, 0000 UTC cycle.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	NGM	22	0.553	1155	3.8	2.7	1164	0.355	88.0	0.00	0.96 4341	1.34 324	1.78 60	1.90 10	0.50 2	* 0
18	NGM	25	0.482	2347	3.2	1.6	2357	0.419	75.6	0.23	0.98 3511	0.97 935	1.39 215	1.43 51	0.92 12	** 0
24	NGM	31	0.397	2294	3.8	2.6	2308	0.335	74.9	0.12	0.92 3739	1.18 728	1.69 167	2.33 27	2.71 7	0.50 2

Table 5.8. Same as Table 5.7 except for the 1200 UTC cycle.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	NGM	28	0.448	2244	3.6	2.4	2255	0.355	75.8	0.18	0.93 3770	1.19 735	1.61 166	2.33 27	1.00 8	1.00 2
18	NGM	28	0.450	1290	4.1	3.1	1308	0.301	85.2	0.17	0.94 4309	1.60 328	1.30 93	1.60 10	** 0	0.00 1
24	NGM	28	0.456	1288	4.2	3.2	1301	0.314	86.5	0.13	0.95 4368	1.39 333	1.82 62	3.30 10	2.50 2	** 0

* This category was neither forecast nor observed.
** This category was forecast but was not observed.

Table 5.9. Verification of NGM MOS surface wind forecasts for 18 stations in the Western Region, 0000 UTC cycle.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	NGM	34	0.372	441	4.9	3.8	459	0.248	92.5	0.00	0.99 2878	1.10 120	2.13 15	12.00 1	0.00 1	** 0
18	NGM	37	0.299	902	4.2	2.2	915	0.345	84.2	0.00	1.01 2593	0.98 314	0.93 81	1.00 16	0.33 3	1.00 1
24	NGM	35	0.351	1591	3.9	2.3	1597	0.303	70.5	0.00	0.93 2262	1.21 482	1.19 185	1.34 38	2.33 3	** 0

Table 5.10. Same as Table 5.9 except for the 1200 UTC cycle.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	NGM	33	0.369	1671	3.9	2.6	1679	0.338	70.7	0.00	0.90 2279	1.28 492	1.28 188	1.92 38	3.25 4	** 0
18	NGM	37	0.354	733	4.3	3.4	748	0.267	88.5	0.00	0.96 2821	1.53 162	1.41 32	1.25 8	** 0	* 0
24	NGM	34	0.361	477	5.2	4.3	505	0.220	91.8	0.00	0.98 2909	1.39 117	2.06 16	5.00 1	1.00 1	* 0

* This category was neither forecast nor observed.
** This category was forecast but was not observed.

Table 5.11. Verification of LFM MOS surface wind forecasts for 6 stations in the Alaska Region, 0000 UTC cycle.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	LFM	26	0.492	158	3.8	2.6	163	0.328	93.3	1.00	1.00 988	1.14 42	0.56 9	2.00 1	1.00 1	* 0
18	LFM	32	0.375	214	4.0	3.0	216	0.267	88.9	0.00	0.99 951	1.04 68	0.77 13	** 0	** 0	* 0
24	LFM	42	0.284	426	4.2	3.2	433	0.247	77.2	0.50	0.92 878	1.53 120	1.08 25	4.00 1	2.00 1	* 0

Table 5.12. Same as Table 5.11 except for the 1200 UTC cycle.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
12	LFM	36	0.375	371	3.6	2.3	373	0.307	81.0	0.00	0.97 861	1.18 122	0.64 25	10.00 1	1.00 1	* 0
18	LFM	37	0.383	250	4.0	3.0	256	0.278	87.6	0.00	0.99 920	1.17 72	0.47 15	2.50 2	** 0	* 0
24	LFM	35	0.403	192	4.6	3.6	196	0.226	91.0	0.33	0.99 968	1.18 45	0.82 11	2.00 1	1.00 1	** 0

* This category was neither forecast nor observed.
** This category was forecast but was not observed.

Table 5.13. Verification of local surface wind forecasts for 94 stations in the conterminous U.S. for the FT release time of approximately 0900 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	26	0.489	3760	3.5	2.5	3852	0.384	92.9	0.00	0.99 15398	1.25 758	0.87 129	0.41 17	0.33 3	* 0
9	LOCAL	33	0.391	8481	3.3	1.7	8567	0.358	80.3	0.04	0.99 13412	1.17 2285	0.71 473	0.27 98	0.33 18	0.00 2
15	LOCAL	36	0.350	9775	3.5	2.0	9874	0.307	76.1	0.00	0.96 13140	1.24 2432	0.95 581	0.48 117	0.67 18	0.00 3

Table 5.14. Same as Table 5.13 except for 95 stations for the FT release time of approximately 1800 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	30	0.416	9831	3.0	1.4	9903	0.408	78.6	0.14	1.00 12837	1.08 2796	0.82 659	0.51 148	0.89 19	0.50 4
9	LOCAL	40	0.336	6371	4.3	3.3	6556	0.278	85.6	0.00	0.95 14858	1.59 1160	1.23 214	0.46 56	2.75 4	1.00 2
15	LOCAL	37	0.352	4331	4.4	3.4	4536	0.274	90.2	0.00	0.98 15276	1.46 807	1.03 158	0.52 25	3.00 1	* 0

* This category was neither forecast nor observed.

Table 5.15. Verification of local surface wind forecasts for 24 stations in the Eastern Region for the FT release time of approximately 0900 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	23	0.489	909	3.2	2.4	930	0.351	94.7	*	1.00 4021	1.03 155	1.43 14	0.67 3	* 0	* 0
9	LOCAL	31	0.393	2279	3.0	1.6	2297	0.336	81.6	0.25	1.00 3519	1.08 578	0.57 88	0.25 12	0.67 3	* 0
15	LOCAL	37	0.333	2229	3.5	2.4	2256	0.268	81.9	0.00	0.97 3664	1.25 463	1.10 63	0.44 9	** 0	0.00 1

Table 5.16. Same as Table 5.15 except for the FT release time of approximately 1800 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	29	0.408	2380	2.6	0.9	2388	0.380	81.2	0.40	1.07 3364	0.79 740	0.51 103	0.50 24	0.67 3	1.00 1
9	LOCAL	40	0.327	1458	4.3	3.7	1519	0.246	89.3	0.00	0.96 3984	1.73 208	0.94 31	1.00 6	** 0	** 0
15	LOCAL	37	0.346	1046	4.5	3.9	1116	0.201	92.3	*	0.97 4063	2.12 118	1.76 17	0.17 6	* 0	* 0

* This category was neither forecast nor observed.
** This category was forecast but was not observed.

Table 5.17. Verification of local surface wind forecasts for 24 stations in the Southern Region for the FT release time of approximately 0900 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	28	0.475	873	3.6	2.5	894	0.390	93.2	0.00	0.98 4035	1.65 163	0.70 37	0.50 2	0.00 2	* 0
9	LOCAL	32	0.407	1973	3.3	2.0	1992	0.365	83.1	0.00	0.97 3633	1.29 466	0.86 105	0.28 18	1.00 2	0.00 1
15	LOCAL	36	0.324	2332	3.6	2.3	2365	0.308	78.8	0.00	0.95 3549	1.34 532	0.91 119	0.56 25	4.00 2	0.00 1

Table 5.18. Same as Table 5.17 except for 25 stations for the FT release time of approximately 1800 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	30	0.413	2448	3.2	1.9	2471	0.411	81.1	0.00	0.96 3612	1.28 586	0.97 130	0.51 41	1.67 3	** 0
9	LOCAL	36	0.318	1384	4.3	3.3	1429	0.300	87.4	0.00	0.96 3872	1.57 265	0.96 56	0.36 14	3.50 2	1.00 1
15	LOCAL	35	0.382	933	4.3	2.8	963	0.346	91.1	0.00	0.99 3920	1.20 234	0.65 49	0.57 7	** 0	* 0

* This category was neither forecast nor observed.
** This category was forecast but was not observed.

Table 5.19. Verification of local surface wind forecasts for 28 stations in the Central Region for the FT release time of approximately 0900 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	25	0.516	1453	3.4	2.3	1470	0.403	89.9	0.00	0.98 4384	1.32 320	0.90 61	0.30 10	** 0	* 0
9	LOCAL	31	0.401	2851	3.2	1.5	2868	0.366	74.8	0.00	0.96 3633	1.28 874	0.72 198	0.33 46	0.20 10	0.00 1
15	LOCAL	35	0.366	3135	3.5	1.8	3151	0.319	70.9	0.00	0.92 3595	1.39 889	0.93 223	0.37 49	0.13 8	0.00 1

Table 5.20. Same as Table 5.19 except for the FT release time of approximately 1800 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	29	0.440	3142	3.0	1.2	3162	0.409	73.9	0.19	0.95 3456	1.27 985	0.74 257	0.44 54	1.29 7	0.00 3
9	LOCAL	40	0.328	2185	4.2	3.3	2228	0.300	82.3	0.00	0.92 4253	1.88 400	1.19 81	0.26 23	1.00 1	* 0
15	LOCAL	35	0.345	1721	4.3	3.4	1783	0.279	86.0	0.00	0.95 4363	1.66 322	1.16 68	0.30 10	** 0	* 0

* This category was neither forecast nor observed.
** This category was forecast but was not observed.

Table 5.21. Verification of local surface wind forecasts for 18 stations in the Western Region for the FT release time of approximately 0900 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	32	0.389	525	4.0	2.8	558	0.324	94.8	0.00	1.01 2958	0.78 120	0.65 17	0.50 2	0.00 1	* 0
9	LOCAL	42	0.293	1378	3.9	2.1	1410	0.317	83.2	0.00	1.03 2627	0.91 367	0.65 82	0.14 22	0.00 3	* 0
15	LOCAL	38	0.299	2079	3.6	1.6	2102	0.282	72.8	0.00	1.04 2332	0.88 548	0.94 176	0.59 34	0.13 8	* 0

Table 5.22. Same as Table 5.21 except for the FT release time of approximately 1800 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	35	0.331	1861	3.4	1.7	1882	0.404	78.8	0.00	1.03 2405	0.90 485	1.02 169	0.62 29	0.17 6	* 0
9	LOCAL	42	0.304	1344	4.2	3.1	1380	0.226	83.1	0.00	0.98 2749	1.08 287	1.85 46	0.69 13	1.00 1	0.00 1
15	LOCAL	44	0.272	631	4.7	3.7	674	0.188	92.5	0.00	1.01 2930	0.85 133	0.88 24	2.50 2	0.00 1	* 0

* This category was neither forecast nor observed.

Table 5.23. Verification of local surface wind forecasts for 6 stations in the Alaska Region for the FT release time of approximately 0900 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	25	0.546	256	3.3	2.2	264	0.419	94.2	1.00	1.01 982	0.91 45	0.90 10	0.00 1	1.00 1	* 0
9	LOCAL	37	0.413	254	3.7	2.5	262	0.219	90.1	0.00	1.02 942	0.72 65	0.85 13	* 0	** 0	* 0
15	LOCAL	46	0.215	311	3.4	1.4	312	0.188	84.0	1.00	1.09 887	0.46 125	0.40 25	1.00 1	1.00 1	* 0

Table 5.24. Same as Table 5.23 except for the FT release time of approximately 1800 UTC.

		Direction			Speed											
								Contingency Table								
											Bias by Category					
Fcst Proj (h)	Type of Fcst.	Mean Abs. Error (deg)	Skill Score	No. of Cases	Mean Abs. Error (kt)	Mean Alg. Error (kt)	No. of Cases	Skill Score	Percent Fcst. Correct	Threat Score (>27 kt)	1 No. Obs	2 No. Obs	3 No. Obs	4 No. Obs	5 No. Obs	6 No. Obs
3	LOCAL	44	0.283	402	3.4	1.4	404	0.211	84.1	0.00	1.09 869	0.51 123	0.36 25	2.00 1	0.00 1	* 0
9	LOCAL	48	0.212	378	4.4	3.2	399	0.165	87.2	*	1.01 910	0.97 71	0.40 15	1.00 2	* 0	* 0
15	LOCAL	53	0.207	374	5.2	4.5	399	0.140	89.4	1.00	0.98 967	1.35 46	0.91 11	2.00 1	1.00 1	* 0

* This category was neither forecast nor observed.
** This category was forecast but was not observed.

Table 5.25. Comparative verification of local and NGM MOS 42-h significant wind forecasts for 95 stations in the conterminous U.S., 0000 UTC cycle.

Type of Verifying Observation	Type of Forecast	Bias by Category		Skill Score	Percent Forecast Correct	Threat Score ≥22 kt
		< 22 kt	≥ 22 kt			
1-min Avg	LOCAL	0.97	3.57	0.196	96.3	0.12
	NGM MOS	0.99	1.51	0.270	98.2	0.16
	No. Obs.	16015	166			
± 3-h Max	LOCAL	1.00	1.06	0.292	95.2	0.19
	NGM MOS	1.02	0.45	0.287	96.5	0.18
	No. Obs.	15622	557			

Table 5.26. Same as Table 5.25 except for 94 stations for the 1200 UTC cycle.

Type of Verifying Observation	Type of Forecast	Bias by Category		Skill Score	Percent Forecast Correct	Threat Score ≥22 kt
		< 22 kt	≥ 22 kt			
1-min Avg	LOCAL	0.98	7.73	0.065	97.2	0.04
	NGM MOS	1.00	1.15	0.132	99.4	0.07
	No. Obs.	16105	55			
± 3-h Max	LOCAL	0.99	1.32	0.114	96.0	0.07
	NGM MOS	1.02	0.20	0.083	97.8	0.05
	No. Obs.	15836	321			

Table 5.27. Comparative verification of local and LFM MOS 42-h significant wind forecasts for 6 stations in the Alaska Region, 0000 UTC cycle.

Type of Verifying Observation	Type of Forecast	Bias by Category		Skill Score	Percent Forecast Correct	Threat Score ≥22 kt
		< 22 kt	≥ 22 kt			
1-min Avg	LOCAL	0.99	12.00	0.152	98.9	0.08
	LFM MOS	0.99	6.00	0.000	99.3	0.00
	No. Obs.	999	1			
± 3-h Max	LOCAL	0.99	2.40	0.348	98.9	0.21
	LFM MOS	1.00	1.20	0.177	99.1	0.10
	No. Obs.	992	5			

Table 5.28. Same as Table 5.27 except for the 1200 UTC cycle.

Type of Verifying Observation	Type of Forecast	Bias by Category		Skill Score	Percent Forecast Correct	Threat Score ≥22 kt
		< 22 kt	≥ 22 kt			
1-min Avg	LOCAL	0.99	2.20	0.245	98.8	0.14
	LFM MOS	1.00	1.60	0.303	99.1	0.18
	No. Obs.	973	5			
± 3-h Max	LOCAL	1.00	0.92	0.252	98.3	0.15
	LFM MOS	1.00	0.67	0.192	98.4	0.11
	No. Obs.	963	12			

Table 6.1. Comparative verification of NGM MOS and persistence ceiling height forecasts for 95 stations in the conterminous U.S., 0000 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
12	NGM MOS	0.98	1.08	1.19	0.97	2.738	78.3	0.366
	PERSISTENCE	0.81	0.82	0.85	1.04	1.706	85.5	0.521
	No. Obs.	527	625	1323	10717			
15	NGM MOS	1.25	1.09	1.15	0.96	2.288	77.2	0.388
	PERSISTENCE	1.84	0.81	0.60	1.07	2.136	80.3	0.381
	No. Obs.	226	631	1876	10357			
18	NGM MOS	0.89	1.28	1.21	0.96	1.468	82.3	0.372
	PERSISTENCE	5.06	1.60	0.72	0.99	2.183	80.4	0.270
	No. Obs.	82	314	1540	11170			
24	NGM MOS	1.11	1.31	1.17	0.98	1.020	88.9	0.329
	PERSISTENCE	5.04	2.46	1.35	0.93	2.106	82.2	0.157
	No. Obs.	74	190	772	11691			

Table 6.2. Same as Table 6.1 except for the 1200 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
12	NGM MOS	0.87	1.15	1.17	0.99	0.953	89.2	0.344
	PERSISTENCE	0.64	0.96	1.30	0.98	0.679	91.7	0.510
	No. Obs.	77	205	821	12170			
15	NGM MOS	0.81	1.26	1.16	0.99	1.169	88.4	0.317
	PERSISTENCE	0.37	0.84	1.37	0.99	0.950	89.8	0.395
	No. Obs.	134	231	744	11935			
18	NGM MOS	0.82	0.97	1.05	1.00	1.679	85.8	0.317
	PERSISTENCE	0.20	0.54	1.17	1.02	1.452	86.3	0.296
	No. Obs.	253	356	869	11506			
24	NGM MOS	0.83	0.97	1.04	1.01	2.892	78.3	0.323
	PERSISTENCE	0.08	0.32	0.80	1.11	2.622	78.9	0.176
	No. Obs.	554	615	1292	10762			

Table 6.3. Comparative verification of LFM MOS and persistence ceiling height forecasts for 6 stations in the Alaska Region, 0000 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
12	LFM MOS	0.66	1.23	1.25	0.95	2.566	74.8	0.382
	PERSISTENCE	0.69	1.00	0.94	1.03	1.679	85.6	0.612
	No. Obs.	35	44	161	786			
18	LFM MOS	0.51	1.24	1.48	0.90	3.587	66.0	0.289
	PERSISTENCE	0.62	0.59	0.91	1.08	2.956	74.9	0.369
	No. Obs.	39	74	163	744			
24	LFM MOS	0.12	2.23	1.63	0.85	2.512	70.7	0.301
	PERSISTENCE	1.41	1.43	0.92	0.99	2.517	75.6	0.296
	No. Obs.	17	30	159	807			

Table 6.4. Same as Table 6.3 except for the 1200 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
12	LFM MOS	0.53	1.73	1.48	0.89	2.132	76.7	0.412
	PERSISTENCE	1.12	1.20	1.24	0.94	1.602	83.1	0.540
	No. Obs.	17	30	152	789			
18	LFM MOS	0.53	1.30	1.50	0.91	2.261	75.6	0.356
	PERSISTENCE	1.06	0.95	1.37	0.94	2.247	76.5	0.354
	No. Obs.	17	37	139	799			
24	LFM MOS	1.42	1.33	1.61	0.84	3.637	67.7	0.294
	PERSISTENCE	0.61	0.86	1.22	0.98	2.793	73.3	0.308
	No. Obs.	31	42	157	772			

Table 6.5. Comparative verification of local and persistence ceiling height forecasts for 94 stations in the conterminous U.S. for the FT release time of approximately 0900 UTC.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
3	LOCAL	0.61	0.85	1.08	1.02	1.712	86.0	0.473
	PERSISTENCE	0.66	0.78	0.84	1.04	1.510	87.7	0.508
	No. Obs.	562	655	1316	13762			
6	LOCAL	0.35	0.53	0.95	1.05	1.766	83.1	0.385
	PERSISTENCE	1.04	0.67	0.63	1.07	1.876	83.6	0.387
	No. Obs.	356	752	1760	13398			
9	LOCAL	0.21	0.39	0.81	1.05	1.104	86.4	0.368
	PERSISTENCE	3.86	1.30	0.62	1.02	1.801	83.1	0.283
	No. Obs.	96	390	1789	13994			
15	LOCAL	0.09	0.45	1.30	0.99	0.755	90.7	0.327
	PERSISTENCE	4.95	2.53	1.24	0.95	1.757	85.0	0.169
	No. Obs.	75	201	887	15114			

Table 6.6. Same as Table 6.5 except for 95 stations for the FT release time of approximately 1800 UTC.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
3	LOCAL	0.77	0.87	1.30	0.98	0.776	89.9	0.456
	PERSISTENCE	1.59	1.64	1.54	0.94	0.904	88.6	0.461
	No. Obs.	61	245	1197	14934			
6	LOCAL	0.41	0.80	1.57	0.97	0.762	90.3	0.381
	PERSISTENCE	1.28	2.01	2.05	0.92	1.113	86.4	0.312
	No. Obs.	76	199	890	15124			
9	LOCAL	0.28	0.84	1.75	0.97	0.889	89.8	0.357
	PERSISTENCE	0.73	1.78	2.30	0.92	1.308	85.2	0.247
	No. Obs.	132	224	791	15118			
15	LOCAL	0.29	0.80	1.65	0.97	1.712	84.1	0.343
	PERSISTENCE	0.27	0.78	1.62	0.98	1.979	81.1	0.210
	No. Obs.	359	510	1123	14254			

Table 6.7. Comparative verification of local and persistence ceiling height forecasts for 6 stations in the Alaska Region for the FT release time of approximately 0900 UTC.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
3	LOCAL	0.73	0.68	1.00	1.03	1.645	85.4	0.606
	PERSISTENCE	0.76	0.93	0.93	1.03	1.651	85.5	0.610
	No. Obs.	33	44	165	785			
6	LOCAL	0.44	0.50	1.02	1.07	2.625	78.7	0.451
	PERSISTENCE	0.48	0.75	0.93	1.07	2.565	79.2	0.467
	No. Obs.	52	52	161	748			
9	LOCAL	0.34	0.30	0.95	1.11	2.682	76.0	0.364
	PERSISTENCE	0.69	0.54	0.92	1.08	2.918	75.3	0.375
	No. Obs.	35	74	159	734			
15	LOCAL	0.19	0.53	0.99	1.03	1.787	79.9	0.359
	PERSISTENCE	1.56	1.33	0.96	0.98	2.501	76.0	0.305
	No. Obs.	16	30	158	817			

Table 6.8. Same as Table 6.7 except for the FT release time of approximately 1800 UTC.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
3	LOCAL	0.44	0.69	0.97	1.03	1.801	79.9	0.382
	PERSISTENCE	1.11	1.31	1.17	0.95	1.622	82.6	0.528
	No. Obs.	18	29	161	804			
6	LOCAL	0.44	0.55	1.03	1.02	1.682	80.8	0.387
	PERSISTENCE	1.19	1.15	1.27	0.94	1.776	80.1	0.449
	No. Obs.	16	33	147	809			
9	LOCAL	0.40	0.47	1.13	1.01	2.023	78.4	0.327
	PERSISTENCE	1.27	0.97	1.29	0.94	2.240	76.3	0.342
	No. Obs.	15	36	142	795			
15	LOCAL	0.26	0.53	1.13	1.03	2.648	74.0	0.276
	PERSISTENCE	0.65	0.90	1.19	0.98	2.776	73.1	0.300
	No. Obs.	31	40	160	780			

Table 7.1. Comparative verification of NGM MOS and persistence visibility forecasts for 95 stations in the conterminous U.S., 0000 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
12	NGM MOS	1.25	1.38	1.30	0.92	2.523	75.4	0.351
	PERSISTENCE	0.58	0.44	0.76	1.08	1.534	83.9	0.436
	No. Obs.	314	799	2011	12817			
15	NGM MOS	0.92	1.23	1.49	0.95	1.435	84.0	0.307
	PERSISTENCE	2.50	0.79	1.29	0.97	1.429	85.6	0.328
	No. Obs.	72	442	1177	14118			
18	NGM MOS	0.68	1.27	1.52	0.97	0.890	89.5	0.288
	PERSISTENCE	5.94	1.47	2.01	0.93	1.433	85.4	0.192
	No. Obs.	31	237	757	14876			
24	NGM MOS	1.38	1.76	1.26	0.98	0.914	89.5	0.217
	PERSISTENCE	6.38	1.89	2.04	0.93	1.483	84.9	0.145
	No. Obs.	29	181	737	14758			

Table 7.2. Same as Table 7.1 except for the 1200 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
12	NGM MOS	0.89	1.45	1.39	0.97	0.840	89.9	0.267
	PERSISTENCE	0.93	0.97	0.86	1.01	0.547	93.7	0.422
	No. Obs.	28	188	755	14919			
15	NGM MOS	0.97	1.48	1.29	0.98	0.815	90.3	0.264
	PERSISTENCE	0.72	1.27	0.83	1.01	0.641	92.7	0.328
	No. Obs.	36	145	779	14896			
18	NGM MOS	0.94	1.62	1.15	0.98	1.155	87.1	0.268
	PERSISTENCE	0.28	0.92	0.60	1.04	0.915	90.0	0.248
	No. Obs.	96	199	1082	14532			
24	NGM MOS	0.93	1.33	1.32	0.93	2.580	75.1	0.335
	PERSISTENCE	0.08	0.23	0.32	1.18	2.244	79.1	0.108
	No. Obs.	342	800	2035	12931			

Table 7.3. Comparative verification of LFM MOS and persistence visibility forecasts for 6 stations in the Alaska Region, 0000 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
12	LFM MOS	0.47	1.03	1.79	0.96	1.771	84.7	0.273
	PERSISTENCE	0.47	0.66	0.89	1.03	1.125	90.7	0.426
	No. Obs.	17	32	53	934			
18	LFM MOS	0.23	0.87	1.68	0.98	1.670	85.0	0.191
	PERSISTENCE	0.62	0.55	1.07	1.02	1.569	87.1	0.180
	No. Obs.	13	38	44	930			
24	LFM MOS	0.00	1.29	2.07	0.97	0.869	90.2	0.222
	PERSISTENCE	2.00	1.24	1.57	0.97	1.164	90.0	0.160
	No. Obs.	4	17	30	966			

Table 7.4. Same as Table 7.3 except for the 1200 UTC cycle.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
12	LFM MOS	0.00	1.33	1.38	0.99	0.753	92.1	0.254
	PERSISTENCE	0.20	1.47	1.07	0.99	0.737	92.9	0.294
	No. Obs.	5	15	29	941			
18	LFM MOS	0.17	1.30	1.70	0.97	1.137	88.4	0.243
	PERSISTENCE	0.17	0.96	0.84	1.01	0.927	91.0	0.224
	No. Obs.	6	23	37	921			
24	LFM MOS	1.00	2.08	2.19	0.91	2.321	80.5	0.198
	PERSISTENCE	0.06	0.85	0.65	1.04	1.556	87.6	0.095
	No. Obs.	17	26	48	915			

Table 7.5. Comparative verification of local and persistence visibility forecasts for 94 stations in the conterminous U.S. for the FT release time of approximately 0900 UTC.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
3	LOCAL	0.50	0.51	1.07	1.03	1.625	83.1	0.427
	PERSISTENCE	0.56	0.43	0.72	1.08	1.420	85.4	0.449
	No. Obs.	342	688	1933	13330			
6	LOCAL	0.21	0.26	0.94	1.04	1.399	84.6	0.293
	PERSISTENCE	1.35	0.50	0.90	1.03	1.496	84.8	0.340
	No. Obs.	141	585	1541	13999			
9	LOCAL	0.03	0.15	0.82	1.03	0.667	91.8	0.266
	PERSISTENCE	6.13	1.22	1.58	0.95	1.333	86.3	0.211
	No. Obs.	31	243	880	15113			
15	LOCAL	0.08	0.18	0.75	1.02	0.594	92.8	0.176
	PERSISTENCE	5.25	1.50	2.04	0.94	1.379	86.1	0.136
	No. Obs.	36	197	681	15359			

Table 7.6. Same as Table 7.5 except for 95 stations for the FT release time of approximately 1800 UTC.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
3	LOCAL	0.57	0.33	1.20	1.00	0.534	93.4	0.347
	PERSISTENCE	1.11	1.25	1.37	0.98	0.565	93.4	0.437
	No. Obs.	28	195	650	15550			
6	LOCAL	0.31	0.31	1.05	1.01	0.610	92.7	0.273
	PERSISTENCE	0.79	1.24	1.30	0.98	0.735	91.7	0.314
	No. Obs.	39	195	683	15359			
9	LOCAL	0.29	0.51	1.09	1.00	0.644	92.0	0.246
	PERSISTENCE	0.74	1.61	1.22	0.98	0.782	90.9	0.253
	No. Obs.	42	150	727	15341			
15	LOCAL	0.25	0.78	1.17	1.00	1.372	84.9	0.277
	PERSISTENCE	0.17	0.83	0.64	1.05	1.335	86.3	0.207
	No. Obs.	179	292	1388	14384			

Table 7.7. Comparative verification of local and persistence visibility forecasts for 6 stations in the Alaska Region for the FT release time of approximately 0900 UTC.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
3	LOCAL	0.67	0.42	0.96	1.03	1.035	90.8	0.403
	PERSISTENCE	0.53	0.68	0.88	1.02	1.081	91.0	0.422
	No. Obs.	15	31	50	929			
6	LOCAL	0.38	0.38	0.85	1.05	1.777	85.3	0.188
	PERSISTENCE	0.33	0.57	0.72	1.06	1.723	86.5	0.248
	No. Obs.	24	37	60	888			
9	LOCAL	0.45	0.26	1.08	1.03	1.403	88.3	0.122
	PERSISTENCE	0.55	0.62	1.08	1.02	1.430	88.0	0.171
	No. Obs.	11	34	39	914			
15	LOCAL	0.75	0.14	0.76	1.02	0.605	94.2	0.182
	PERSISTENCE	2.00	1.50	1.48	0.97	1.126	90.4	0.141
	No. Obs.	4	14	29	970			

Table 7.8. Same as Table 7.7 except for the FT release time of approximately 1800 UTC.

Projection (h)	Type of Forecast	Bias by Category 1	2	3	4	Log Score	Percent Correct	Skill Score
3	LOCAL	0.60	0.53	0.97	1.01	0.715	92.9	0.201
	PERSISTENCE	0.20	1.33	1.00	1.00	0.724	92.9	0.284
	No. Obs.	5	15	31	956			
6	LOCAL	0.75	0.33	0.73	1.03	0.881	91.2	0.131
	PERSISTENCE	0.25	0.95	0.78	1.01	0.833	92.1	0.294
	No. Obs.	4	21	40	929			
9	LOCAL	0.40	0.27	0.95	1.02	0.972	90.2	0.097
	PERSISTENCE	0.20	0.86	0.77	1.02	0.879	91.3	0.234
	No. Obs.	5	22	39	913			
15	LOCAL	0.12	0.29	0.96	1.04	1.484	87.2	0.076
	PERSISTENCE	0.06	0.68	0.66	1.04	1.574	87.6	0.083
	No. Obs.	17	28	47	916			