

gives only the approximate ending time of the daytime and nighttime periods for which the max and min temperature guidance, respectively, are valid.

3. X/N - MAXIMUM/MINIMUM TEMPERATURE

KALB	AVN	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	18	00
X/N						49					30				61				43		61

The max/min surface temperature forecasts are displayed for projections of 24, 36, 48, 60, and 72 hours after the initial data time (0000 or 1200 UTC). Although the forecasts are presented at consecutive 12-h intervals, each forecast is actually valid for a daytime or nighttime period. For the AVN-based MOS guidance, daytime is defined as 7 a.m. to 7 p.m. Local Standard Time (LST). Nighttime is defined as 7 p.m. to 8 a.m. LST. Thus, the valid date in the appropriate column of the DT and HR lines must be converted by the forecaster to his/her local date. This local date then denotes the appropriate daytime or nighttime for the max or min temperature forecast. For the 0000 UTC forecast cycle, the temperatures are shown in max/min (X/N) order and are valid for today's max, tonight's min, tomorrow's max, tomorrow night's min, and the day after tomorrow's max. For the 1200 UTC cycle, the temperatures are shown in min/max (N/X) order and are valid for tonight's min, tomorrow's max, tomorrow night's min, the day after tomorrow's max, and the night after tomorrow night's min. Each temperature forecast is presented to the nearest whole degree Fahrenheit, and three characters are allowed. A missing forecast is indicated by a 999.

4. TMP - SURFACE TEMPERATURE

KALB	AVN	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	18	00
...																					
TMP	32	30	30	41	47	47	38	34	32	32	34	47	58	60	54	50	48	47	49	57	53

Time-specific 2-m temperature forecasts are valid every 3 hours from 6 to 60 hours, and then every 6 hours to 72 hours after 0000 and 1200 UTC. These forecasts are valid at 0600, 0900, ..., 2100, 0000 UTC, and so forth. Each temperature forecast is presented to the nearest whole degree Fahrenheit; a missing forecast is indicated by a 999. Only three characters are available for the temperature forecasts. Thus, two consecutive forecasts of 100 degrees or more or of -10 degrees or less appear with no spaces between them.

5. DPT - SURFACE DEW POINT

KALB	AVN	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	18	00
...																					
DPT	25	23	23	24	23	23	24	26	28	28	30	32	34	37	39	41	43	43	45	45	44

Time-specific 2-m dew point forecasts are valid every 3 hours from 6 to 60 hours, and then every 6 hours to 72 hours after 0000 and 1200 UTC. These forecasts are valid at 0600, 0900, ..., 2100, 0000 UTC, and so forth. Each dew point forecast is presented to the nearest whole degree Fahrenheit; a missing forecast is indicated by a 999. Three characters are available for the dew

time of the 6-h period. The probability is given to the nearest percent. Values range from 0 to 100%. A missing forecast value is indicated by 999.

9. P12 - PROBABILITY OF PRECIPITATION IN A 12-H PERIOD

KALB	AVN 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	18	00
P12							0				6				0				17	25	

The P12 forecasts are for the probability of 0.01 inches or more of liquid-equivalent precipitation (PoP) occurring during a 12-h period. For nearly all stations, the 12-h PoP's are valid for intervals of 12-24, 24-36, 36-48, 48-60, and 60-72 hours after the initial data times (0000 and 1200 UTC). For stations in Hawaii, however, the 12-h PoP's are valid for intervals of 6-18, 18-30, 30-42, 42-54, and 54-66 hours after 0000 and 1200 UTC. In the message, the forecast values are displayed under the ending time of the 12-h period. The probability is given to the nearest percent. Values range from 0 to 100%. A missing forecast value is indicated by 999.

10. Q06 - QUANTITATIVE PRECIPITATION AMOUNT IN A 6-H PERIOD

KALB	AVN 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	18	00
Q06							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Guidance for liquid-equivalent precipitation amount (QPF) accumulated during a 6-h period is presented in categorical form. These forecasts are available for projections of 6-12, 12-18, 18-24, 24-30, 30-36, 36-42, 42-48, 48-54, 54-60, 60-66, and 66-72 hours after the initial data time (0000 and 1200 UTC). The forecasts are displayed beneath the hour indicating the end of the 6-h period. The QPF guidance is a categorical forecast of liquid-equivalent precipitation equaling or exceeding certain specified amounts in the 6-h periods. The categories are as follows:

- QPF Categories
 0 = no precipitation expected;
 1 = 0.01 - 0.09 inches;
 2 = 0.10 - 0.24 inches;
 3 = 0.25 - 0.49 inches;
 4 = 0.50 - 0.99 inches;
 5 = ≥ 1.00 inches.

Missing forecasts are denoted by 9.

11. Q12 - QUANTITATIVE PRECIPITATION AMOUNT IN A 12-H PERIOD

KALB	AVN 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	18	00

T12 0/ 7 0/ 3 4/ 2 14/ 4 10/ 3

The T12 line represents forecasts for the probability of thunderstorms (to the left of the diagonal) and the conditional probability of severe thunderstorms (to the right of the diagonal) occurring during a 12-h period. The 12-h probability forecasts are valid for intervals of 6-18, 18-30, 30-42, 42-54, and 54-66 hours after the initial data times (0000 and 1200 UTC). In the message, the pair of forecast values is displayed under the ending time of the 12-h period. The thunderstorm probability is given to the nearest whole percent. Values range from 0 to 100%. A missing forecast value is indicated by 999. The conditional severe thunderstorm probability is given to the nearest whole percent. Values range from 0 to 98%. A missing forecast value is given by 99. Both the thunderstorm and conditional severe storm probabilities are available year-round for stations in the contiguous U.S. These probabilities represent the likelihood of the event within a box approximately 47 km on a side and containing the station specified. Forecasts are unavailable for stations in Alaska, Hawaii, or Puerto Rico because reports from the National Lightning Detection Network used to define the thunderstorm predictand were unavailable for locations in those areas.

14. POZ - PROBABILITY OF FREEZING PRECIPITATION (CONDITIONAL)

KALB	AVN 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	18	00
POZ	0	0	5	9	11	9	15	13	7	10	5	0	0	0	0	1	0	1	0	0	0

Conditional probability of freezing precipitation (given that precipitation is occurring) forecasts are available for specific times every 3 hours from 6 to 60 hours and then every 6 hours to 72 hours after 0000 and 1200 UTC. Freezing precipitation is defined as the occurrence of freezing rain or drizzle, ice pellets (sleet), or any mixture of freezing rain, drizzle, or ice pellets with other precipitation types. The probabilities are given to the nearest whole percent, and values range from 0 to 100%. Missing values are indicated by 999. These probabilities are used in producing the categorical TYP forecast described in Section 16. The POZ guidance is transmitted during the period of September 1 - May 31. Because of the rarity of the freezing rain event, many stations do not have forecast equations for the POZ category. In these cases, the POZ line is not in the message at any time of the year.

15. POS - PROBABILITY OF SNOW (CONDITIONAL)

KALB	AVN 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	18	00
POS	84	90	95	90	75	47	35	16	20	5	6	0	0	0	0	1	1	1	0	0	0

Conditional probability of snow (given that precipitation is occurring) forecasts are available for specific times every 3 hours from 6 to 60 hours and then every 6 hours to 72 hours after 0000 and 1200 UTC. Snow is defined as the occurrence of a pure snow event, that is, snow, snow showers, snow grains, or snow pellets or any combination of those elements. Snow mixed with rain is considered a liquid precipitation event. The probabilities are given to the nearest whole percent, and values range from 0 to 100%. Missing values are indicated by 999. These probabilities are used in producing the categorical TYP forecast described in Section 16. The POS guidance is transmitted only during the period of September 1 - May 31. Although the conditional

probability of liquid precipitation is not given in the message, the probability can be inferred since the sum of the probability of freezing precipitation, snow, and liquid precipitation is 100%.

16. TYP - PRECIPITATION TYPE FORECASTS (CONDITIONAL)

KALB	AVN 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	18	00
	...																				
TYP	S	S	S	S	S	S	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R

The TYP line represents forecasts of precipitation type (if precipitation occurs) for specific times every 3 hours from 6 to 60 hours, and then every 6 hours to 72 hours after the initial hour of 0000 or 1200 UTC. The forecast is indicated by one character where "Z" represents freezing precipitation (freezing rain, freezing drizzle, ice pellets (sleet), or any report of these elements mixed with other precipitation types), "S" represents snow (snow, snow grains, snow pellets, or snow showers), and "R" represents liquid precipitation (rain, drizzle, or a mixture of rain or drizzle with snow). A missing forecast is denoted by "X". The precipitation type guidance is transmitted only during the period of September 1 - May 31.

17. SNW - SNOWFALL AMOUNT CATEGORICAL FORECAST

KALB	AVN 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	18	00
	...																				
SNW							0						0								

Categorical forecasts of snowfall amount are available in the message for 24-h periods ending approximately 36 and 60 hours after 0000 UTC and approximately 24, 48, and 72 hours after 1200 UTC. Since observations from the cooperative observer network are used to define the event, the valid times are approximations. The categories are denoted as follows:

- Snowfall Amount Categories
 0 = no snow or a trace expected;
 1 = > a trace to < 2 inches expected;
 2 = 2 to < 4 inches;
 4 = ≥ 4 to < 6 inches;
 6 = ≥ 6 to < 8 inches;
 8 = ≥ 8 inches.

A missing forecast is denoted by 9; forecasts are disseminated only for the period of September 1 - May 31.

18. CIG - CEILING HEIGHT CATEGORICAL FORECASTS

KALB	AVN 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	18	00
	...																				
CIG	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

Forecasts of seven categories of ceiling height (see the following table) are available for specific times valid every 3 hours from 6 to 60 hours and then every 6 hours to 72 hours after 0000 and 1200 UTC. The forecasts are displayed beneath the time of the day for which they are valid. Values of 1 through 7 are allowed for the categorical guidance; a value of 9 denotes a missing forecast. The categories are as follows:

Ceiling Height Categories

- 1 = ceiling height of < 200 feet;
- 2 = ceiling height of 200 - 400 feet;
- 3 = ceiling height of 500 - 900 feet;
- 4 = ceiling height of 1000 - 3000 feet;
- 5 = ceiling height of 3100 - 6500 feet;
- 6 = ceiling height of 6600 - 12,000 feet;
- 7 = ceiling height of > 12,000 feet or unlimited ceiling.

The categorical guidance is prepared by using probability forecasts of the same categories.

19. VIS - VISIBILITY CATEGORICAL FORECASTS

KALB	AVN 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	18	00
VIS	7	7	7	7	7	7	7	7	7	7	5	7	7	7	7	5	5	2	5	6	7

Forecasts of seven categories of visibility (see the following table) are available for specific times valid every 3 hours from 6 to 60 hours and then every 6 hours to 72 hours after 0000 and 1200 UTC. The forecasts are displayed beneath the time of the day for which they are valid. Values of 1 through 7 are allowed for the categorical guidance; a value of 9 denotes a missing forecast. The categories are as follows:

Visibility Categories

- 1 = visibility \leq 1/4 mi;
- 2 = visibility of > 1/4 mi to \leq 1/2 mi;
- 3 = visibility of > 1/2 mi to < 1 mi;
- 4 = visibility of 1 to < 3 mi;
- 5 = visibility of 3 to 5 mi;
- 6 = visibility of 6 mi;
- 7 = visibility of > 6 mi.

The categorical guidance is prepared by using probability forecasts of the same categories.

20. OBV - OBSTRUCTION TO VISION CATEGORICAL FORECASTS

KALB	AVN 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	18	00
OBV	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	HZ	HZ	FG	HZ	HZ	N

Forecasts of five categories of obstruction to vision (see the following table) are available for specific times valid every 3 hours from 6 to 60 hours and then every 6 hours to 72 hours after 0000 and 1200 UTC. The forecasts are displayed in plain language beneath the time of the day for which they are valid. The categories are denoted by the letters "N", "HZ", "BR", "FG", and

"BL"; a value of "X" denotes a missing forecast. The categories are as follows:

Obstruction to Vision Categories

N = none of the following;

HZ = haze, smoke, dust;

BR = mist (fog with visibility \geq 5/8 mi);

FG = fog or ground fog (visibility $<$ 5/8 mi);

BL = blowing dust, sand, snow.

The categorical guidance is prepared by using probability forecasts of the same categories. In the equation development, cases of fog or mist were not stratified by the occurrence of precipitation. Thus, a forecast of fog can be coincidental with a forecast of precipitation. Lower visibilities caused exclusively by precipitation occurrence are not indicated by the obstruction to vision guidance.

21. AVAILABILITY

The 0000 and 1200 UTC AVN MOS guidance is available at approximately 0430 and 1630 UTC, respectively, in 10 alphanumeric messages transmitted to NWS AWIPS and Family of Services (FOS) circuits: six containing guidance for stations in the contiguous U.S., Puerto Rico, and the Virgin Islands; three containing guidance for Alaskan sites; and one containing guidance for stations in Hawaii. The following two-line WMO headers are used:

WMO Header - Region

FOPA20 KWNO - Pacific Region
MAVPA0

FOUS21 KWNO - Northeast U.S.
MAVNE1

FOUS22 KWNO - Southeast U.S.
MAVSE1

FOUS23 KWNO - North Central U.S.
MAVNC1

FOUS24 KWNO - South Central U.S.
MAVSC1

FOUS25 KWNO - Rocky Mountain Region
MAVRM1

FOUS26 KWNO - West Coast Region
MAVWC1

FOAK37 KWNO - Southeast Alaska (Juneau)
MAVAJK

FOAK38 KWNO - Central Alaska (Anchorage)
MAVAFC

FOAK39 KWNO - Northern Alaska (Fairbanks)
MAVAFG

The messages for a subset of the stations in the above collectives are also sent to AFWA for dissemination on military communication circuits. Twenty-seven messages contain guidance for stations in the contiguous U.S., three

messages contain guidance for Alaskan sites, one message contains guidance for Hawaiian sites, and one message contains guidance for stations in Puerto Rico. The following WMO headers are used:

WMO Header - Region

FOUS30 KWNO - Contiguous U.S.
MAVFxx, where xx=01 through 27

FOAK30 KWNO - Alaska
MAVFxx, where xx=50, 51, or 52

FOPA30 KWNO - Hawaii
MAVF70

FOCA30 KWNO - Puerto Rico
MAVF80

22. STATION LIST

As of August 2001, the AVN MOS guidance was available for 1060 stations in the ten bulletins transmitted to AWIPS and on the NWS FOS. Guidance for another 346 sites will be added in late 2001. As of September 2001, the AVN MOS guidance is available for 273 stations in the messages transmitted to AFWA. The user may check the following home pages for the station lists and corresponding WMO headers:

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

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

The first address provides station lists for the AWIPS/FOS messages; the second address provides station lists for the military bulletins.

Figure 1. Sample 0000 UTC message.

KALB	AVN	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	18	00	49	30	61	43	61												
X/N																																						
TMP	32	30	30	41	47	47	38	34	32	32	34	47	58	60	54	50	48	47	49	57	53																	
DPT	25	23	23	24	23	23	24	26	28	28	30	32	34	37	39	41	43	43	45	45	44																	
CLD	CL	CL	CL	CL	CL	CL	CL	CL	SC	SC	CL	CL	CL	CL	CL	CL	CL	SC	SC	SC	SC																	
WDR	32	32	32	31	31	32	32	00	00	00	36	15	16	15	16	16	16	16	18	18	19																	
WSP	08	08	08	11	12	09	02	00	00	00	01	04	10	08	04	06	08	06	11	12	8																	
P06			0		0		0		3		5		0		0		9		14	15	20																	
P12							0				6				0				17		25																	
Q06			0		0		0		0		0		0		0		0		0	0	0																	
Q12							0				0				0				0		1																	
T06		0/	7	0/	1	0/	2	0/	4	2/	1	1/	1	2/	1	18/	3	4/	2	22/	3																	
T12				0/	7			0/	3			4/	2		14/	4		10/	3																			
POZ	0	0	5	9	11	9	15	13	7	10	5	0	0	0	0	1	0	1	0	0	0																	
POS	84	90	95	90	75	47	35	16	20	5	6	0	0	0	0	1	1	1	0	0	0																	
TYP	S	S	S	S	S	S	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R																	
SNW											0								0																			
CIG	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7																	
VIS	7	7	7	7	7	7	7	7	7	5	7	7	7	7	5	5	1	5	6	7																		
OBV	N	N	N	N	N	N	N	N	N	N	HZ	N	N	N	N	HZ	HZ	FG	HZ	HZ	N																	

Figure 2. Sample 1200 UTC message.

KALB	AVN	MOS	GUIDANCE												11/24/2000												1200 UTC																	
DT	/NOV 24											/NOV 25											/NOV 26											/NOV 27										
HR	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	06	12	38	47	37	51	38																		
N/X																																												
TMP	61	59	55	50	46	42	39	43	45	44	39	39	39	41	40	43	48	48	47	43	39																							
DPT	55	53	49	44	38	34	31	31	31	31	33	33	35	37	38	41	43	44	43	41	38																							
CLD	SC	BK	BK	OV	SC	SC	SC	BK	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV																							
WDR	17	17	20	24	26	30	31	34	01	01	00	00	05	09	13	13	13	12	14	16	15																							
WSP	12	10	08	08	05	05	05	02	02	02	00	00	03	03	07	03	03	02	05	04	03																							
P06			26		30		16		8		23		29		44		55		54	45	51																							
P12							36				23				51				70		65																							
Q06			1		0		0		0		0		0		1		1		2	1	1																							
Q12							1				0				1				3		2																							
T06		9/	2	2/	0	2/	4	1/	2	0/	0	2/	0	7/	0	8/	1	5/	2	8/	3																							
T12				9/	1			2/	4			1/	0		12/	1		10/	3																									
PZP	0	0	4	2	5	2	10	15	8	3	3	2	3	4	4	6	0	1	5	0	1																							
PSN	0	0	0	0	1	4	4	6	6	5	1	3	3	6	8	5	7	8	8	6	3																							
TYP	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R																							
SNW							0								0						0																							
CIG	7	4	4	4	7	7	7	7	7	6	5	5	4	5	4	4	4	4	4	4	4																							
VIS	7	7	7	7	7	7	7	7	7	7	7	2	2	1	2	5	7	7	7	2	2																							
OBV	N	N	N	N	N	N	N	N	N	N	N	FG	FG	FG	FG	HZ	N	N	N	FG	FG																							