



# Point/Area Forecast Matrices (PFM/AFM) User's Guide



## WHAT ARE THE POINT FORECAST MATRICES?

The PFM displays forecast weather parameters in 3, 6, and 12 hour intervals out to 7 days in the future. To see what the different values mean, refer to the associated red numbers on the back side of this page.

FOUS55 KBYZ 161733 (1)  
PFMBYZ

POINT FORECAST MATRICES (2)  
NATIONAL WEATHER SERVICE BILLINGS, MT  
1133 AM MDT TUE SEP 16 2003

BILLINGS-170533- (3)  
1133 AM MDT TUE SEP 16 2003

DATE (4)	TUE 09/16/03									WED 09/17/03									THU 09/18/03																										
UTC 3HRLY	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09																				
MDT 3HRLY	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03																				
MAX/MIN (5)	59									36									46									31									60								
TEMP (6)	57	59	56	50	43	38	36	39	44	46	44	40	35	32	31	41	55	60	57	57	59	56	50	43	38	36	39	44	46	44	40	35	32	31	41	55	60	57							
DEWPT (7)	39	39	39	38	38	37	36	36	35	35	34	32	30	28	28	29	30	31	31	31	39	39	39	38	38	37	36	36	35	35	34	32	30	28	28	29	30	31	31						
RH (8)	51	47	53	63	82	96	100	89	70	65	68	73	82	85	88	62	38	33	37	37	51	47	53	63	82	96	100	89	70	65	68	73	82	85	88	62	38	33	37						
WIND DIR (9)	NE	NE	NE	N	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	W	W	W	W	W	W	NE	NE	NE	N	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	W	W	W	W							
WIND SPD (10)	10	10	10	11	14	14	14	14	21	21	17	17	17	17	11	11	10	10	10	10	10	10	10	10	10	10	10	10	11	14	14	14	14	21	21	17	17	17	11	11	10	10	10	10	
CLOUDS (11)	BK	BK	OV	OV	OV	OV	BK	BK	BK	BK	BK	BK	BK	BK	BK	SC	SC	FW	FW	FW	BK	BK	OV	OV	OV	OV	OV	BK	BK	BK	BK	BK	BK	BK	SC	SC	FW	FW	FW						
POP 12HR (12)	60									80									50									30									0								
QPF 12HR (13)	0.03									0.21									0.04									0.03									0								
SNOW 12HR (14)	00-00									00-00									00-00																										
RAIN SHWRS (15)																																													
SNOW (15)										D D C C C C C C																																			
RAIN (15)	L L D D D D C C C C C C																																												
OBVIS (16)										F F PF																																			
WIND CHILL (17)										36 29 27 31 36 38 36 31 25 23 22 34																																			
MIN CHILL (18)	37									36 27 27 36 25 22 24																																			
DATE (19)	FRI 09/19/03									SAT 09/20/03									SUN 09/21/03									MON 09/22/03																	
UTC 6HRLY	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00					
MDT 6HRLY	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00				
MIN/MAX	40	66	42	62	38	68	40	70																																					
TEMP	46	40	61	63	49	42	59	59	45	38	63	64	48	40	65	66																													
DEWPT	33	34	40	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM																													
PWIND DIR (20)	W	W	NW	NW	NW	NW	W	W																																					
WIND CHAR (21)	GN	GN	BZ	BZ	GN	GN	BZ	GN																																					
AVG CLOUDS (22)	SC	BK	BK	BK	BK	BK	BK	BK	BK	BK	FW	FW	FW	FW	FW	FW																													
POP 12HR	0	0	0	30	30	0																																							
RAIN SHWRS										C C C C																																			

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- (1) - This is the **WMO Identification Code** for the product, the **issuing office identifier** and the **issuance date and time in UTC**.
- (2) - This is the **product name, issuing office information, and data and time of product issuance in local time**.
- (3) - This is the **area or point location** the forecast is for, and the **date and time in UTC that the forecast product expires**.
- (4) - **Forecast Date and Time group**. The forecast times and dates are listed, both in UTC and in local time, with 3 hour increments for most products.
- (5) - **MAX/MIN**: - (Alternatively labeled as MIN/MAX for afternoon issuance) A forecast of maximum or minimum temperatures in degrees Fahrenheit (F). The nighttime MIN and daytime MAX may be displayed as single integer (e.g., -2, 8, 53, 102) as a range (e.g., 54 56 60) if the MAX/MIN temperatures are expected to vary across the area. In area forecasts, the middle number within the range is the representative single digit value for that area. MAX/MIN is forecast out through Day 7.
- (6) - **TEMP**: The expected temperature in degrees F valid at the indicated hour. The temperature is right justified in the column below the hour to which it refers. TEMP is forecast at 3-hour intervals through 60 hours, then 6-hour intervals through Day 7.
- (7) - **DEWPT**: The expected dew point temperature in degrees F for the same time periods as its corresponding temperature forecast. DEWPT is located directly below the temperature line.
- (8) - **RH**: The relative humidity (RH) is the expected RH for the same time periods as its corresponding temperature and dew point forecast. The RH row is located directly below the "DEWPT" row. RH is available at 3-hour increments through 60 hours.
- (9) - **WIND DIR** : A snapshot of the expected forecast direction that the wind is coming from at the indicated hour, using the 8 points of a compass (i.e., N, NE, E, SE, S, SW, W, NW). If a calm wind is forecast, double zeros (00) will be listed in place of a wind direction. WIND DIR is located below the hour to which it refers. WIND DIR is available in 3-hour increments out to 60 hours.
- (10) **WIND SPD and WIND GUST** A snapshot of the sustained wind speed in miles per hour (MPH) forecast to occur at the indicated hour. If a calm wind is forecast, double zeros (00) will be listed in place of a wind speed. WIND SPD is valid in 3-hour increments out to 60 hours. A wind gust row will appear in the 3HRLY block whenever forecasted wind gusts exceed the sustained wind speed (WIND SPD) by at least 10 MPH.
- (11) **CLOUDS**: The amount of sky coverage during the indicated hour. CLOUDS is divided into five category codes ranging from clear to overcast. Each code represents an equivalent percentage of sky cover in percent. CLOUDS parameter is included in 3-hour time intervals out to 60 hours. (See Table)
- (12) **POP 12HR**: Probability of Precipitation (POP), is defined as the likelihood, expressed as a percent, of a measurable precipitation event (.01 of an inch) at any given point within the forecast area(s) covered by the PFM. The "12HR" refers to the 12-hour valid time ending at 6:00 a.m. or 6:00 p.m. local time (0600 or 1800).
- (13) **QPF 12HR**: This parameter, quantitative precipitation forecast (QPF) represents the total amount of liquid precipitation, in inches, expected during a 12-hour period ending at 6:00 a.m., or 6:00 p.m. local time at any point in the forecast area.
- (14) **SNOW 12HR**: The expected range of total snowfall accumulation (in whole inches) forecast to occur at the specific point during a 12-hour period ending at 6:00 a.m. or 6:00 p.m. local time. SNOW 12HR will only appear during the locally defined winter period. The snow parameter contains 1 to 5 alphanumeric characters which are right justified in the column below the hour defining the ending time of the precipitation period. SNOW 12HR may appear as a one or two digit number (1, 4, 12), or as a specified range (2-4, 8-12). When no snowfall is forecast during the locally specified winter period, double zeros (00-00) will appear in the row. Snowfall that is not measurable (less than 0.1 inch of frozen precipitation) is referred to as a trace. A trace of snow is depicted by a "T." SNOW 12HR is forecast out to 36 hours.
- (15) **PRECIPITATION TYPE AND CATEGORY**: The PFM may list several types of precipitation. Precipitation types only appear in the PFM if they are forecast to occur at any point within the zones(s) during the seven day forecast. (See Table)
- (16) **OBVIS**: If an obstruction to visibility (OBVIS) is forecast for the zone, a row labeled OBVIS will be listed underneath any forecast of precipitation. If no precipitation is forecast, then OBVIS will be listed under the row labeled AVG CLOUDS. In the Figure 19 example, "K" implies that smoke is restricting visibility during the 6-hour period from 3:00 a.m. - 9:00 a.m. EST on Monday 2/12/01. OBVIS is forecast at 3-hour intervals through 60 hours. (See Table)
- (17) **WIND CHILL**: Wind Chill is included seasonally based upon locally defined criteria. The decision on whether to include or exclude these parameters is determined by the local WFO criteria. The Wind Chill is forecast out to 60 hours.
- (18) **MIN CHILL 6HR**: When WIND CHILL values appear in the PFM, a 6-hour minimum wind chill may appear on the following row. These values indicate the minimum wind chill index forecast to occur during the 6-hour period ending at the time indicated at the top of the column. MIN CHILL 6HR is forecast out to 60 hours.
- (19) **Forecast Date and Time group** for the extended forecast periods from 60 hours through Day 7. The data is generally in a 6 hourly increment.
- (20) In the 6HRLY block, **PWIND DIR** is the "predominant" wind direction for the zone(s) during the 12-hour period between 6:00 a.m. and 6:00 p.m., or 6:00 p.m. and 6:00 a.m. local time. PWIND DIR is valid beyond 60 hours through Day 7.
- (21) **WIND CHAR**: Used beyond 60 hours through Day 7 of the forecast and denote the character of the wind for the 12-hour period between 6:00 a.m. and 6:00 p.m., or 6:00 p.m. and 6:00 a.m. WIND CHAR is comprised of range categories used in conjunction with deterministic wind speeds. Each range category is equated to a descriptive wind term, i.e., a "wind character" to best describe the MAXIMUM SUSTAINED wind speed during the 12 hour period.
- (22) **AVG CLOUDS**: Valid for 6-hour increments beyond 60 hours through Day 7 and indicates the average amount of all clouds during the 6-hour period ending on the hour indicated at the top of the column.

Wind Speed Characteristics Table	Precipitation Type	Obstructions to Visibility
<b>LT</b> Light < 8 mph <b>GN</b> Gentle 8 - 14 mph <b>BZ</b> Breezy 15 - 22 mph <b>WY</b> Windy 23 - 30 mph <b>VW</b> Very Windy 31 - 39 mph <b>SD</b> Strong/Damaging = 40 mph	<b>RAIN</b> Rain <b>RAIN SHWRS</b> Rain Showers <b>SPRINKLES</b> Sprinkles <b>TSTMS</b> Thunderstorms <b>DRIZZLE</b> Drizzle <b>SNOW</b> Snow <b>SNOWSHWRS</b> Snow Showers <b>FLURRIES</b> Snow Flurries <b>SLEET</b> Ice Pellets <b>FRZNG RAIN</b> Freezing Rain <b>FRZNG DRZL</b> Freezing Drizzle	<b>F</b> Fog <b>PF</b> Patchy Fog <b>F+</b> Dense Fog <b>PF+</b> Patchy Dense Fog <b>H</b> Haze <b>BS</b> Blowing Snow <b>K</b> Smoke <b>BD</b> Blowing Dust <b>VA</b> Volcanic Ash
Clouds/Sky Cover	POP Codes Stratiform or Convective	POP Codes Convective Only
<b>CL</b> Clear/Sunny 0%= 6% <b>FW</b> Mostly Clear/Mostly Sunny > 6% and = 31% <b>SC</b> Partly Cloudy/Partly Sunny >31% and = 69% <b>BK</b> Mostly Cloudy >69% and = 94% <b>OV</b> Cloudy >94% and = 100%	<b>S</b> Slight Chance (= 20%) <b>C</b> Chance (30%-50%) <b>L</b> Likely (60%-70%) <b>O</b> Occasional/Periods of (80%-100%) <b>D</b> None (80%-100%)	<b>IS</b> Isolated (= 20%) <b>SC</b> Scattered (30%-50%) <b>NM</b> Numerous (60%-70%) <b>EX</b> None (80%-100%)