Fire Weather
Area Forecast Matrices
User's Guide to Decoding the AFW

What are the Area Forecast Matrices?

The Area Forecast Matrices (AFW) is a table that displays the forecasted weather parameters in 3, 6 and 12 hour intervals out to 7 days in the future. Below is a sample AFW, along with a description of each parameter's code (***blue*** *colored numbers*).

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     FOUS54 KGSP 282208
     AFWGSP

     Experimental Fire Weather Area Forecast Matrices
     National Weather Service Greenville-Spartanburg SC
     508 PM EST Fri Feb 28 2025

(1)  NCZ033-010915-
     Avery-
     Including the cities of Ingalls, Banner Elk, and Newland
     508 PM EST Fri Feb 28 2025

(2)  Date           02/28/25      Sat 03/01/25            Sun 03/02/25            Mon
     UTC 3hrly     21 00 03 06 09 12 15 18 21 00 03 06 09 12 15 18 21 00 03 06 09 12
     EST 3hrly     16 19 22 01 04 07 10 13 16 19 22 01 04 07 10 13 16 19 22 01 04 07

(3)  Min/Max                    39          50          17          37          21
(4)  Temp             44 41 43 42 39 46 49 46 35 27 22 19 17 26 35 37 30 26 24 23 23
(5)  Dewpt            19 22 24 29 31 31 24 19 18 16 12 10  8  5  5  6 10 11 11  9  9
(6)  Max/Min RH                 73          33          69          27          56
(7)  RH               37 45 47 58 72 55 37 34 51 63 64 68 68 42 28 27 42 54 55 54 53
(8)  Wind Dir          W NW NW  W NW NW NW NW NW NW NW NW NW NW NW NW NW NW NW NW SW
(9)  Wind Dir Deg     27 29 29 28 29 29 29 30 31 32 32 32 32 31 29 29 31 31 30 30 24
(10) Wind Spd          5  6 10 11 11 17 20 19 19 14 13 10  6  5  5  5  4  3  2  1  1
     Wind Gust        23 27 37 39 35 44 46 47 46 42 39 31 25 23 20 20 17 14 13 12 11
(11) Clouds           CL CL CL FW SC SC SC SC SC SC FW FW FW CL CL FW CL CL FW FW SC
(12) Clouds(%)         3  3  4  6 26 31 29 41 46 27 20 14  9  4  3  6  4  4  8 14 39
(13) Vsby             10  9  9  9  9  9  9  9  9
(14) ADI               6 10 19 21 23 75 87 82 36 30 22 14 15 27 58 70  6
(15) LVORI             2  2  2  2  3  1  1  1  1  2  3  3  3  2  1  1  2
(16) Stability         6  5  5  5  3  4  4  4  4  4  4  5  3  2  2  2  6
(17) PoP 12HR                   0           0           0           0           0
(18) QPF 12HR                   0           0           0           0           0
(19) Chc Thndr (%)     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
(20) DSI                                    2                       2
(21) Mix Hgt                900   900  4200  4500  2500  1600  4500  4500
(22) T Wind Dir               W     W     W    NW    NW    NW    NW    NW
(23) T Wind Spd              18    25    32    31    27    18    12    13
(24) Ceiling               None  None  None  None  None  None  None  None  None  None
(25) Pressure             26.80 26.74 26.75 26.79 26.91 26.98 27.04 27.02 27.05 27.06
```

Key to Decoding the AFW:

(1) **Area Location** The zone for which this AFW has been issued and the date/UTC time the forecast expires.

(2) **DATE** The forecast date and t im e groups. Forecast times/dates listed, both in UTC and local time in 3 hour increments.

(3) **MAX/MIN** Maxim um and m inim um tem peratures. The afternoon issuances will be labeled MIN/MAX. Forecast of maximum and minimum temperatures in degrees F. This is forecast out 7 days. Will be an integer (31 or -5).

(4) **TEMP** The temperature (degrees F) valid at the indicated hour. TEMP is forecast at 3-hour intervals out to 60 hours, then at 6-hour intervals on to day 7.

(5) **DEWPT** The dew point temperature (deg F) for the same time periods corresponding to TEMP.

(6) **MIN/MAX RH** The maximum and minimum relative humidity in the 12 hour time periods in percentages ranging from 0-100%. This is forecast for 7 days.

(7) **RH** The relative humidity for the same time period as its corresponding TEMP and DEWPT. It is available out to 60 hours.

(8) **WIND DIR** The forecast wind direction (*from which the wind blows*) at the indicated hour, using the 8 compass Areas (N, NE, E, SE, S, SW, W, NW). Calm wind will be listed as zeroes (00) in place of a direction. Available in 3-hour intervals out to day 7.

(9) **WIND DIR DEG** The forecast wind direction (*from which the wind blows*) at the indicated hour, using 2-digit degrees in multiples of ten. (i.e.…05 = 50 degrees; 13 = 130 degrees). Calm wind will be listed as zeroes (00) in place of a direction. Available in 3-hour intervals out to 60 hours.

(10) **WIND SPD** and **WIND GUST** The forecast wind speeds in miles per hour (mph) as the indicated hour. If calm winds are forecast, then zeroes (00) will be listed in place of a speed. Wind Speed is available in 3-hour intervals out to day 7. A WIND GUST row will appear whenever the forecasted wind gusts exceed the sustained wind speed (WIND SPD) by at least 10 mph.

(11) **CLOUDS**. This is the sky coverage at the indicated hour. Clouds are available in 3-hour intervals out 60 hours. Clouds are divided into 5 categories:

AFW Cloud Code	Commonly Called	% Sky in Cloud Cover
CL	Clear or Sunny	0%-6%
FW	Few	7%-31%
SC	Scattered	32%-69%
B1	Mostly Cloudy	70%-75%
B2	Considerable Clouds	76%-94%
OV	Overcast	95%-100%

(12) **CLOUDS (%)**, This is the sky coverage expressed in percentage of the sky covered during the indicated hour. Cloud percentage is available in 3-hour intervals out 60 hours.

(13) **VSBY** The minimum surface visibility, and if restricted below 7 miles, the obstruction causing the restriction. The value reported is the minimum value for the zone

grouping, in order to capture the lowest values. Visibility values of 7 to 10 miles are considered unrestricted.

(14) **ADI** Atmospheric Dispersion Index. A measure of dispersions based on mixing height, stability, and wind. ADI is forecast at 3-hour intervals out to 60 hours.

ADI	Character of Dispersion
Greater than 100	Very Good: but may indirectly indicate hazardous conditions.
61-100	Good: typical case burning weather values are in this range.
41-60	Generally Good: climatological afternoon values in most inland forested areas of the US fall within this range.
21-40	Fair: stagnation may be indicated if accompanied by persistent low wind speeds.
13-20	Generally Poor: stagnation, if persistent, although better than average for a night value.
7-12	Poor: stagnant at day, but near or above average at night.
1-6	Very poor: very frequent at night; represents the majority of nights in many locations.

(15) **MAX LVORI** Low Visibility Occurrence Risk Index. A measure of the potential for thick fog based on, dispersion and relative humidity. LVORI is forecast at 3-hour intervals out to 60 hours.

LVORI	Accidents with Fog or Smoke Reported
1	Lowest proportion of accidents with smoke and/or fog reported
2	Physical or statistical reasons for not including in category 1
3	Higher proportion of accidents than category 1, by about 30% to 50%
4	Significantly higher than category 1, by a factor of 2.
5	Significantly higher than category 1, by a factor of 3 to 10.
6	Significantly higher than category 1, by a factor of 10 to 20.
7	Significantly higher than category 1, by a factor of 20 to 40.
8	Significantly higher than category 1, by a factor of 40 to 75.
9	Significantly higher than category 1, by a factor of 75 to 125.
10	Significantly higher than category 1, by a factor of 150.

(16) **STABILITY** Turner-Pasquil Stability Class. Stability as a function of mixing height, wind, and solar radiation. Essential for thick fog based on dispersion and relative humidity. STABILITY is forecast at 3-hour intervals out to 60 hours.

CLASS	Stability
A	Very Unstable.
B	Moderately Unstable.

C	Slightly Unstable.
D	Near Neutral.
E	Slightly Stable.
F	Moderately Stable.

(17) **POP 12HR** The probability of precipitation, and is defined as the likelihood (in percent) of a measurable precipitation event (*0.01 inch or more*) at the given Area. The 12HR refers to the 12 hour valid time ending at indicated hour. Forecast out to day 7.

(18) **QPF 12HR** The total amount of liquid precipitation (*in inches*) expected during the 12 hour period ending at the indicated hour.

(19) **Chc Thndr (%)**

(20) **DSI** Davis Stability Index. This is an index of afternoon stability based on the surface to 850 mb temperature lapse rate and categorized from 1 to 4. DSI is included at 24-hr intervals out to 60 hours.

DSI	SFC to 850 mb Lapse Rate	Stability
1	Less than 10	Stable
2	10-14	Conditionally Unstable
3	15-17	Unstable
4	Greater than 17	Absolutely Unstable

(21) **MIX HGT** Mixing Height. The height to which the atmosphere mixes vertically, in feet above ground level. MIX HGT is forecast at 3-hour intervals out to 60 hours.

(22) **T WIND DIR** Transport Wind Direction. The average direction of the wind from the surface to the mixing height using the 8 compass Areas (N, NE, E, SE, S, SW, W, NW). T WIND DIR is forecast at 3-hour intervals out to 60 hours.

(23) **T WIND SPD** Transport Wind Speed. The average speed of the wind from the surface to the mixing height, using 2-digit degrees in multiples of ten. (i.e.…05 = 50 degrees; 13 = 130 degrees). T WIND SPD is forecast at 3-hour intervals out to 60 hours.

(24) **CEILING** The height of the lowest layer of clouds causing the sky to be broken or overcast, in feet above the ground. CEILING is forecast at 3-hour intervals out to 60 hours.

(25) **PRESSURE** The station pressure in inches of mercury. PRESSURE is forecast at 3hour intervals out to 60 hours.

Updates and Corrections: The AFW will be updated and corrected when the on-duty forecast team believes the current forecast is not representative, or when format or content errors are detected. When the AFW is updated, all forecast parameters prior to the update time (to the nearest 3 hour period) are removed from the product. Occasionally, a forecast may need a correction. In these instances, the automated AFW product is replaced with the corrected version.

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