

## **Experimental Area Fire Weather Forecast Matrix (AFW) Product Description Document (PDD)**

### Part I – Mission Connection

a. Product Description – Land management agencies in Georgia, North Carolina and South Carolina have expressed a need for easily accessible tabular forecast data similar to the Point Fire Weather Forecast Matrix (PFW), except that it encompass an entire fire weather zone instead of just a point. The requirement is for something similar to the existing Area Forecast Matrix (AFM), but with fire weather/smoke management parameters included. It would be tailored to facilitate fire behavior applications in the planning stage by land managers. An area fire weather matrix would satisfy this need well because it would allow agency specialists to quickly run sample fire behavior models for planning purposes for random areas outside of PFW forecast points. The experimental product will be called the Area Fire Weather Forecast Matrix (AFW) and would be generated routinely for all 56 zones in the WFO Greenville-Spartanburg (GSP) county warning area. (CWA) This additional data will help land management agencies to ensure the safety of fire crews as well as better plan prescribed burns and other projects in a cost and resource effective manner. The AFW would allow a land manager to get a three hourly view of the forecast for each fire weather zone. The AFW would be a critical part of the "fire weather forecast funnel", between the FWF and the PFW. Land management officials with the North Carolina Division of Forest Resources were quite enthusiastic about the possible development of the AFW.

Our plan is to deliver the AFW to customers via the WFO GSP website. At this time, there is no requirement to send this product out through AWIPS. The web delivery of the product for fire weather customers will include a disclaimer at the top of the page stating *“This experimental product is for planning and review purposes only and is not to be substituted for an official fire weather spot forecast. The data displayed are calculated by averaging data throughout a given zone and only approximates weather conditions at any given location. This is especially so in highly varying terrain. Please relay any comments you have to your local NWS office.*

An example of the experimental AFW can be seen at:

<http://www.erh.noaa.gov/gsp/fire/afw/afw.php>.

b. Product Type: experimental

c. Purpose – Based on recent fire agency request, WFO Greenville-Spartanburg will generate AFW’s for 56 zones within their forecast area and post the product on the GSP website.

d. Audience – For all land management and fire agencies in Georgia, North Carolina and South Carolina including local, state and federal levels.

e. Presentation Format – The experimental AFW’s will be available to customers from standardized web pages. The experimental AFW’s will have a standardized basic format, but additional local parameters may be added in the future based on customer need.

f. Feedback Method – Experimental AFW’s will be formally tested with customers from July 1, 2011 to December 1, 2011. The MIC at WFO GSP will gather customer comments during this period to determine the success of the experimental products. ERH MSD will then determine if the experimental AFW should be tested at other sites.

G. Example:

FIRE WEATHER AREA FORECAST MATRICES  
 NATIONAL WEATHER SERVICE GREENVILLE-SPARTANBURG SC  
 541 PM EDT SAT JUN 4 2011

NCZ033-050915-  
 AVERY-  
 INCLUDING THE CITIES OF...NEWLAND  
 541 PM EDT SAT JUN 4 2011

DATE	06/04/11								SUN 06/05/11								MON 06/06/11								TUE																																															
UTC 3HRLY	21	00	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	06	09	12																																										
EDT 3HRLY	17	20	23	02	05	08	11	14	17	20	23	02	05	08	11	14	17	20	23	02	05	08	11	14	17	20	23	02	05	08																																										
MIN/MAX									60								82								58								79								55																															
TEMP	73	67	62	60	65	75	81	81	73	65	61	58	62	72	78	78	71	63	58	56	55	56	54	52	53	55																																														
DEWPT	56	57	56	57	59	61	60	60	60	59	58	56	58	58	56	55	56	54	52	53	55																																																			
MAX/MIN RH									92								50								96								46								92																															
RH	54	70	80	89	81	61	50	51	62	79	91	95	85	60	46	46	59	73	80	90	80																																																			
WIND DIR	W	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW																																										
WIND DIR DEG	29	30	30	30	30	30	30	32	30	31	31	31	30	31	32	31	31	33	33	33	30	28																																																		
WIND SPD	4	2	2	3	4	8	9	12	6	4	4	4	5	8	8	8	5	3	2	1	1																																																			
CLOUDS	FW	CL	CL	CL	FW	SC	SC	SC	B1	B1	SC	SC	FW	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC																																										
CLOUDS(%)	15	1	0	4	19	26	33	49	66	55	45	34	24	29	35	33	31	29	26	31	37																																																			
VSBY	8	8	8	6	8	8	8																																																																	
POP 12HR									0								40								20								10								10																															
QPF 12HR									0								0.08								0								0								0																															
RAIN SHWRS																	C								C								S								S																															
TSTMS																	C								C								S								S																															
OBVIS									PF																																																															
LAL									1								1								3								2								1								1								1															
HAINES									5								5								5								4								4								4								5															
DSI																	2																																2																							
MIX HGT									1700								1600								5600								6400								2900								2500								6300								8300							
T WIND DIR									NW								N								NW								NW								N								NE								N								N							
T WIND SPD									13								18								16								18								18								8								5								6							
ADI									7								65								79								58								32								29								49								53							
MAX LVORI									6								8								4								3								8								9								4								3							
STABILITY									G								F								B								B								F								F								B								B							
CEILING									17700								25000								14100								16400								18000								26700								27700								24500							
PRESSURE									27.34								27.34								27.30								27.28								27.27								27.26								27.26								27.23							

DATE	06/07 WED				06/08/11 THU				06/09/11 FRI				06/10/11 SAT				06/11/11							
UTC 6HRLY	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12
EDT 6HRLY	14	20	02	08	14	20	02	08	14	20	02	08	14	20	02	08	14	20	02	08	14	20	02	08
MAX/MIN	81	60	85	60	83	60	82	59	79															
TEMP	80	74	63	66	84	76	63	65	82	75	63	65	81	74	62	64	78	72						
DEWPT	53	58	59	60	60	61	57	60	59	62	59	60	61	62	59	60	60	60						
MIN/MAX RH	39	97	44	97	46	98	51	99	52															
RH	39	57	85	82	45	58	82	83	46	64	88	84	51	66	90	86	53	66						
WIND DIR	SW	SW	SE	SW	W	NW	N	SW	W	NW	NW	NW	NW	NW	NE	E	NE	NE						
WIND SPD	4	3	2	2	2	2	2	2	3	3	3	3	3	4	3	4	4	4	3					
AVG CLOUDS	SC	SC	SC	FW	SC	SC	SC	SC	SC	SC	SC	SC	SC	B1	B1	B1	SC	B1	B1					
POP 12HR	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20						
RAIN SHWRS	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S					
TSTMS	S	S	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS					

\$\$

BELOW IS A WEATHER ELEMENT KEY FOR THIS PRODUCT.  
(NOTE...WINDS DO NOT REFLECT LOCAL TERRAIN EFFECTS.)

DAY 1 THROUGH 3...

MAX/MIN TEMP OR MIN/MAX TEMP (F) .....MAXIMUM/MINIMUM AIR TEMPERATURE  
TEMP (F) .....AIR TEMPERATURE  
DEWPT (F) .....DEW POINT TEMPERATURE  
MIN/MAX RH OR MAX/MIN RH (%) .....MAXIMUM/MINIMUM HUMIDITY  
RH (%) .....RELATIVE HUMIDITY  
WIND DIR (8 POINT COMPASS) .....20 FT. WIND DIRECTION  
WIND DIR DEG (DEGREES) .....20 FT. WIND DIRECTION IN TENS OF DEGREES  
RELATIVE TO DUE NORTH.

EXAMPLE: 09 = 90 DEGREES = EAST; 18 = 180 DEGREES = SOUTH;  
27 = 270 DEGREES = WEST; 36 = 360 DEGREES = NORTH

WIND SPD (MPH) .....20 FT. WIND SPEED  
WIND GUST (MPH) .....20 FT. WIND GUST  
WIND CHILL .....WIND CHILL TEMPERATURE  
HEAT INDX .....HEAT INDEX  
CLOUDS (CAT) .....CLOUD COVER CATEGORY  
EXAMPLE: CL = CLEAR; FW = FEW; SC = SCATTERED;  
B1 = MOSTLY CLOUDY; B2 = CONSIDERABLE CLOUDS; OV = OVERCAST  
CLOUDS (%) .....CLOUD COVER AS A PERCENTAGE  
POP 12HR (%) .....PROBABILITY FOR ACCUMULATING PRECIPITATION  
QPF 12HR (IN) .....LIQUID EQUIVALENT PRECIPITATION AMOUNT  
WEATHER...

TYPE...

RAIN .....RAIN  
RAIN SHWRS .....RAIN SHOWERS  
TSTMS .....THUNDERSTORMS  
DRIZZLE .....DRIZZLE  
SNOW .....SNOW  
SNOWSHWRS .....SNOW SHOWERS  
SLEET .....SLEET  
FLURRIES .....FLURRIES  
FRZG RAIN .....FREEZING RAIN  
FRZG DRZL .....FREEZING DRIZZLE

COVERAGE...

S .....SLIGHT CHANCE  
C .....CHANCE  
L .....LIKELY  
O .....OCCASIONAL  
D .....DEFINITE  
AR .....AREAS  
PA .....PATCHY

OBVIS .....OBSTRUCTION TO VISIBILITY

TYPE...

F .....FOG  
PF .....PATCHY FOG  
F+ .....DENSE FOG  
H .....HAZE  
BS .....BLOWING SNOW  
K .....SMOKE  
BD .....BLOWING DUST  
AF .....VOLCANIC ASHFALL

LAL (CAT) .....LIGHTNING ACTIVITY LEVEL

HAINES (CAT) .....HAINES INDEX

DSI (CAT) .....DAVIS STABILITY INDEX

MIX HGT (FT AGL) .....MIXING HEIGHT

T WIND DIR (8 POINT COMPASS) .....TRANSPORT WIND DIRECTION

T WIND SPD (MPH) .....TRANSPORT WIND SPEED

WATCH/WARNING/ADVISORY...

EXAMPLE: W = WARNING; Y = ADVISORY; A = WATCH  
IN EFFECT FOR THE INDICATED HOUR

DAY 4 THROUGH 7...

MAX/MIN TEMP OR MIN/MAX TEMP (F) .....MAXIMUM/MINIMUM AIR TEMPERATURE  
TEMP (F) .....AIR TEMPERATURE  
DEWPT (F) .....DEW POINT TEMPERATURE  
RH (%) .....RELATIVE HUMIDITY  
WIND DIR .....20 FT. WIND DIRECTION

WIND SPD(MPH) .....20 FT. WIND SPEED  
AVG CLOUDS (CAT).....AVERAGE CLOUD COVER CATEGORY  
POP 12HR(%).....PROBABILITY FOR ACCUMULATING PRECIPITATION  
WEATHER...  
SEE DAY 1 THROUGH 3 WEATHER DESCRIPTIONS

**Part II. Technical Description**

a. Format and Science Basis: The experimental AFW is produced by running a modified AFM formatter that uses the local digital forecast data base (DFD). The product will be generated via a GFE automation script every time grids are published by a forecaster. A script will also post the AFW to the WFO GSP website. No additional grids or forecaster intervention will be required.

Product Availability: The AFW's will be generated in concert with enhanced short term forecast updates to the GFE gridded data base. No additional workload for forecasters is anticipated since the AFW will be created utilizing forecast fields already created in the local DFD.