FIRE WEATHER

Florida

Operating Plan

Operating Plan for Fire Weather Services in Florida

April 2012 update

- NWS contact information
- New red flag warning criteria
- Update wording for fire danger statements
- Updated red flag warning decision tree
- Freshened some links (Florida Forest Service)

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Land Management Agency Indices,

I. Introduction and General Program Information

Despite ongoing land development, Florida remains composed of a large segment of forests and undeveloped land. Preserves, parks, refuges and other publicly and privately owned land is found throughout the state from the panhandle to the Florida Keys. Proper management of this land and its resources is vital to the economy of the state and the preservation of the health and ecological balance of the environment.

With a goal of protecting life, property and economic interests, land management agencies are concerned with the control of wildfire, as well as the use of fire as a management tool. Critical to this mission is access to timely and accurate weather information in decision making for wildfire prevention, fire control, prescribed burning, and smoke management. This operating plan will be reviewed annually and revised as needed.

This will be the governing document for fire weather procedures and cooperation among the following agencies:

National Weather Service
U.S. Fish and Wildlife Service
Department of Defense
Florida Park Service
Bureau of Indian Affairs
U.S. Forest Service
National Park Service
Florida Forest Service
U.S. Department of Agriculture

This Operating Plan conforms to the Interagency Agreement for Meteorological Services, July 21, 2008.
http://radar.srh.noaa.gov/fire/docs/2008_National_Agreement.pdf
(Note: this agreement is no longer listed at the end of the Florida AOP. Please refer to link above for text of the national agreement.)

The National Weather Service Fire Weather Program (*Ref NWS Directive 10-4)*

The objective of the National Weather Service fire weather services program is to provide fire weather products and services to the fire and land management community for the protection of life and property, promotion of firefighter safety, resource allocation, and stewardship of America's public lands.

Under the supervision of the Meteorologist-In-Charge at National Weather Service offices, forecasters are provided training in fire weather meteorology. Forecast support is provided 24 hours per day year round. At least one meteorologist at each National Weather Service office is designated fire weather program leader, responsible for interagency liaison and NWS contact concerning land management agency meteorological needs within each weather offices county area of responsibility. A designated program leader from the NWS Florida offices will maintain the Florida Fire Weather Operations Plan. The state operating plan will be reviewed annually in concert with the land management agencies, NWS regional and national headquarters and NWS Florida and regional focal points and revised as needed.

See pages 10 through 17 for forecast office locations, telephone contact and facsimile numbers, internet addresses, and the names of meteorologists-in-charge, warning coordination meteorologists, and designated program leaders.

II. Service Area and Organizational Directory

Forecast area

Fire weather forecasts are provided for the state of Florida through the year. Florida is partitioned into numerous forecast zones (**See** page 9). Seven National Weather Service forecast offices provide local forecast support for designated zones, or specified land management entities within the state (pp 7-8). These offices are located at Miami, Key West, Melbourne, Ruskin (Tampa Bay), Jacksonville, Tallahassee, and Mobile, Alabama.

Most designated zones are counties, however some counties have two or more forecast zones to better define forecast differences between inland and coastal areas. Typically zones are grouped differently from day to day dependent upon forecast weather. Site specific forecasts are provided daily for at least one location in each of Florida's 67 counties. These forecasts are a component of the National Fire Danger Rating System (NFDRS) to compute fuel moisture and burning indices and to assess wild land fire danger.
(for NFDRS forecast format see pages 30-33).

NWS forecast offices at Jacksonville, Tallahassee, and Mobile also have additional forecast areas of responsibility for areas bordering Florida into Georgia, Alabama, and Mississippi.

The NWS Fire Weather Program Leaders (FWPLs) along with the Meteorologist-In-Charge (MIC) or other WFO management team member will identify fire weather users within the WFO area of fire weather responsibility. MICs should ensure an updated list of users and points of contact are included in the WFO station duty manual or other appropriate reference. WFO FWPLs, along with other designated staff, should lead the fire weather outreach and coordination efforts and thus are the "user service representatives" for the NWS fire weather program at the local level. These representatives must maintain regular contact with fire and land management agencies, helping them assess meteorological needs and informing them of NWS products and services available to meet their needs. Fire and land management personnel should be encouraged to visit the WFO to become familiar with all NWS office personnel and operations. Likewise, WFO staff should take advantage of opportunities to visit land management agencies and operational sites (prescribed burns, Remote Automated Weather Station (RAWS) platforms, etc.).

National Weather Service county zone assignments for Florida fire weather forecasts . (see map page 9)

Counties of NWS forecast office responsibility and corresponding zone number

Mobile, AL
inland Escambia 1
coastal Escambia 2
inland Santa Rosa 3
coastal Santa Rosa 4
inland Okaloosa 5
coastal Okaloosa 6 (including Eglin AFB Okaloosa portion)

Tallahassee
inland Walton 7 central Walton 8 south Walton 108 (including Eglin AFB Walton portion)

Holmes 9
Washington 10
Jackson 11
Inland Bay 12 coastal Bay 112
Calhoun 13
Inland Gulf 14 coastal Gulf 114
Inland Franklin 15 coastal Franklin 115
Gadsden 16
Leon 17
Inland Jefferson 18 coastal Jefferson 118
Madison 19
Liberty 26
Inland Wakulla 27 coastal Wakulla 127
Inland Taylor 28 coastal Taylor 128
Lafayette 29
Inland Dixie 34 (including Apalachicola National Forest) coastal Dixie 134

Jacksonville
Hamilton 20
Suwannee 21
Columbia 22
Baker 23
Nassau 24
Duval 25
Union 30
Bradford 31
Clay 32
St Johns 33
Gilchrist 35
Alachua 36
Putnam 37
Flagler 38
Marion 40
(including all of Osceola and Ocala National Forests)

Key West
Monroe upper keys 76 Monroe middle keys 77 Monroe lower keys 78

Counties of NWS forecast office responsibility and corresponding zone number

Melbourne

interior Volusia 41
coastal Volusia 141
north Lake (except Ocala NF) 44
south Lake 144
Orange 45
Seminole 46
north Brevard 147
south Brevard 47
Osceola 53
Indian River 54
Okeechobee 58
St Lucie 59
Martin 64

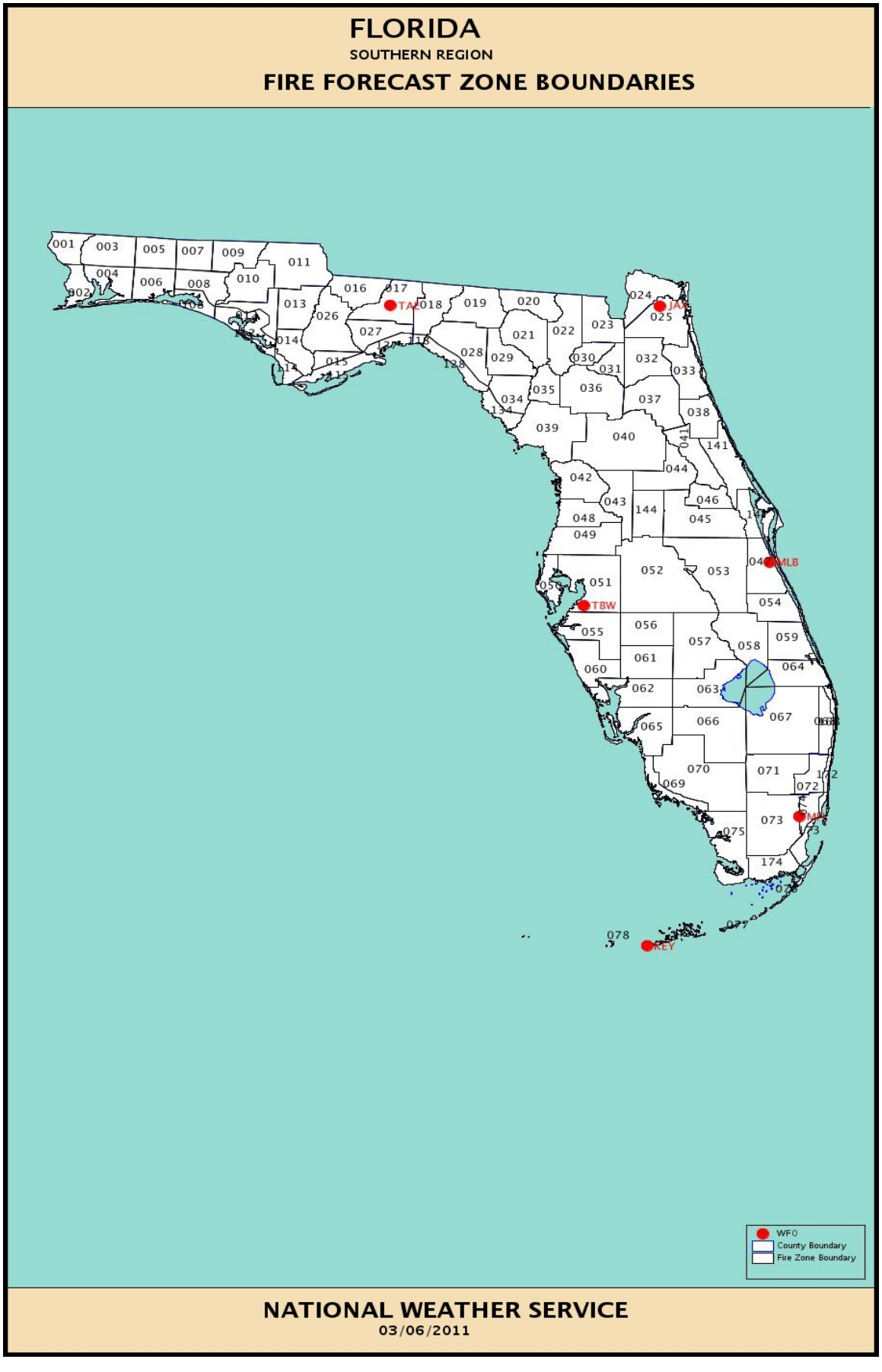
Tampa Bay Ruskin

Levy 39
Citrus 42
Sumter 43
Hernando 48
Pasco 49
Pinellas 50
Hillsborough 51
Polk 52
Manatee 55
Hardee 56
Highlands 57
Sarasota 60
Desoto 61
Charlotte 62
Lee 65

Miami

Glades 63
Hendry 66
inland Palm Beach 67
metro Palm Beach 68
coastal Collier 69
inland Collier 70
inland Broward 71
metro Broward 72
inland Miami Dade 73
metro Miami Dade 74
mainland Monroe 75
(including all of Everglades National Park and Big Cypress National Preserve)
coastal Palm Beach 168
coastal Broward 172
coastal Miami Dade 173
far south Miami Dade 174

http://www.nws.noaa.gov/mirs/public/prods/maps/map_images/state-maps/zone/fl_zone.jpg



Southern Region Headquarters
National Weather Service

Mailing Address: **NWS - Southern Region**
Headquarters Fire Weather Program Leader

Paul Witsaman W/SR11x2 819
Taylor Street Room 10A06 Fort
Worth, TX 76102

Telephone Number: **817- 978-1100 X116 8AM - 4PM CST Mon-Fri (Except Federal Holidays) paul.witsaman@noaa.gov**

Internet home page:

www.srh.noaa.gov/

Meteorologists:

Paul Witsaman: Regional Fire Weather Program Leader
Corey Pieper: Incident Meteorologist

Mobile/Pensacola National Weather Service

Mailing Address: National Weather Service 8400 Airport Blvd. Bldg 11

Mobile, AL 36608

Telephone: 251-633-6443 8AM - 4PM CST Mon-Fri (Except Federal Holidays) 251-607-9773 Fax

Internet Page:

www.srh.noaa.gov/mob

Meteorologists:

Jeff Cupo: Meteorologist In Charge
John Purdy Fire Weather Program Leader
Jeff Garmon Warning Coordination Meteorologist

Counties of Responsibility:

Florida: Escambia, Okaloosa, Santa Rosa, Eglin Air Force Base (Okaloosa)

Alabama: Baldwin, Butler, Choctaw, Clarke, Conecuh, Covington, Crenshaw, Escambia Mobile, Monroe, Washington, Wilcox

Mississippi: George, Greene, Perry, Stone, Wayne

Tallahassee National Weather Service

Mailing Address:
National Weather Service Love Building
Florida State University

Tallahassee, FL 32306-4509

Telephone: 850-942-8833
24 Hour 850-942-8850 Fax

Internet Page:

www.srh.noaa.gov/tlh

Meteorologists:

Vacant Meteorologist in Charge
Tim Barry Fire Weather Program Leader
Jeff Evans Warning Coordination Meteorologist
Todd Lericos Science Operations Officer

Counties of Responsibility:

Florida: Bay, Calhoun, Dixie, Franklin, Gadsen, Gulf, Holmes, Jackson, Jefferson, Lafayette, Leon Liberty, Madison, Taylor, Wakulla, Walton, Washington, All Apalachicola National Forest, Eglin AFB (Walton).

Georgia: Baker, Ben Hill, Berrien, Brooks, Calhoun, Clay, Colquitt, Cook, Decatur, Dougherty, Early, Grady, Irwin, Lanier, Lee, Lowndes, Miller, Mitchell, Quitman, Randolph, Seminole, Terrell, Thomas, Tift, Turner, Worth

Alabama: Coffee, Dale, Geneva, Houston, Henry

Jacksonville National Weather Service

Mailing address:

National Weather Service
13701 Fang Drive Jacksonville, FL 32218

Telephone:

904-741-4370 8AM-4PM EST Mon-Fri (Except Federal Holidays) 904-741-0078 Fax

Internet Page:

www.srh.noaa.gov/jax

Meteorologists:

Steve Letro	**Meteorologist in Charge**
Marie Trabert	**Fire Weather Program Leader**
Al Sandrik	**Warning Coordination Meteorologist**

Counties of Responsibility:

Florida: Alachua, Columbia, Hamilton, St Johns, Baker, Duval, Marion, Suwannee, Bradford, Flagler, Nassau, Union, Clay, Gilchrist, Putnam, Osceola and Ocala National Forests

Georgia: Appling, Camden, Echols, Ware, Atkinson, Charlton, Glynn, Wayne, Bacon, Clinch, Jeff Davis, Brantley, Coffee, Pierce, Okefenokee National Wildlife Refuge

Tampa Bay Area - Ruskin
National Weather Service

Mailing Address:

National Weather Service
2525 14th Avenue SE Ruskin, FL 33570

Telephone:

813-645-2323 24 hours
813-641-2619 Fax

Internet Page:

www.srh.noaa.gov/tbw

Meteorologists

Brian Lamarre	**Meteorologist In Charge**
Rick Davis	**Fire Weather Program Leader (Emergency Response Meteorologist)**
Dan Noah	**Warning Coordination Meteorologist**
Todd Barron	**IMET Trainee (Emergency Response Meteorologist)**
Jon Jelsema	**IMET**

Counties of Responsibility:

Florida: **Charlotte, Citrus, Desoto, Hardee, Hernando, Highlands, Hillsborough, Lee, Levy, Manatee, Pasco, Pinellas, Polk, Sarasota, Sumter**

Melbourne National Weather Service

Mailing Address:

National Weather Service
421 Croton Rd. Melbourne, FL 32935

Telephone:

321-255-0212 8AM-4PM EST MON-FRI (Except Federal Holidays) 321-255-0791 Fax

Internet: www.srh.noaa.gov/mlb

Meteorologists

Bart Hagemeyer	**Meteorologist In Charge**
John Pendergrast	**Fire Weather Program Leader (Incident Meteorologist)**
Scott Spratt	**Warning Coordination Meteorologist**
Tim Sedlock	**IMET trainee**

Counties of Responsibility:

Florida: Lake (Outside Ocala NF), Volusia, Seminole, Orange, Brevard, Osceola, Indian River, Saint Lucie, Martin, Okeechobee

Miami National Weather Service

Mailing Address:

National Weather Service
11691 SW 17th street
Miami, FL 33165-2149

Telephone numbers:

305-229-4525 24 hour access
305-229-4553 facsimile

Internet Page:

www.srh.noaa.gov/mfl

Meteorologists

Dr. Pablo Santos	**Meteorologist In Charge**
Joel Rothfuss	**Fire Weather Program Leader (Incident Meteorologist)**
Rob Molleda	**Warning Coordination Meteorologist**
Mike Bettwy	**IMET Trainee**

Counties of Responsibility:

FLORIDA: **Broward, Collier, Miami Dade, Glades, Hendry, Monroe (Mainland), Palm Beach, Everglades National Park, Big Cypress National Preserve**

Key West National Weather Service

Mailing address:

National Weather Service
1315 White Street

Key West, FL 33040

Telephone numbers:

305-295-1316 24 hour 305-293-9987 facsimile

Internet home page:

www.srh.noaa.gov/eyw

Meteorologists:

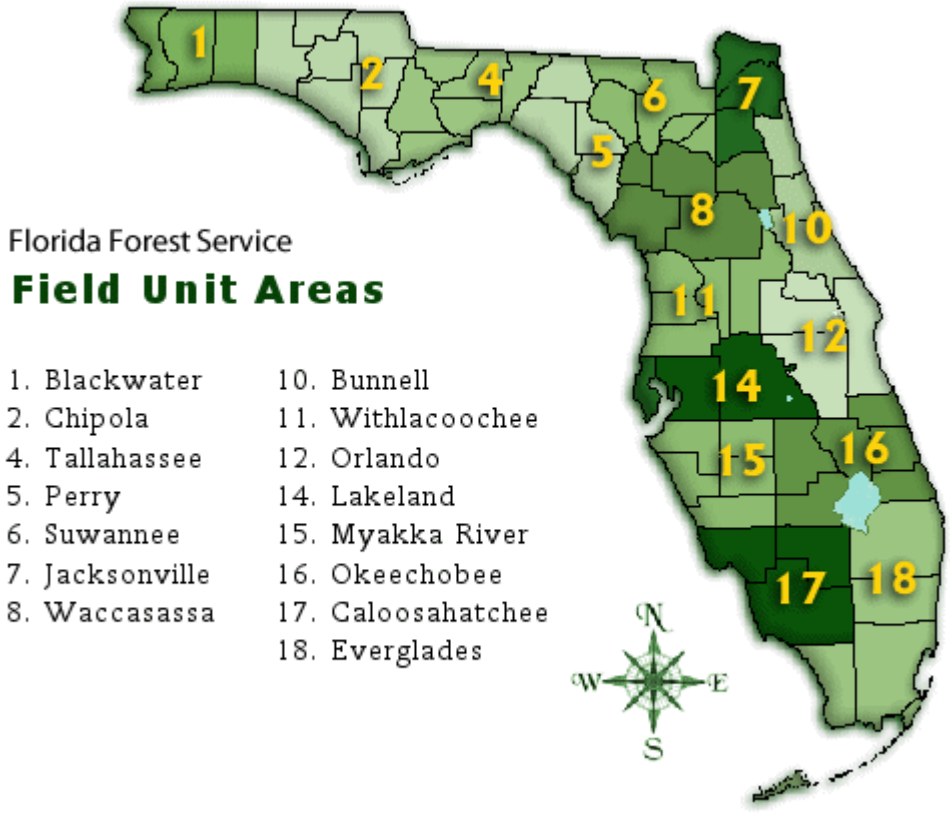
Fred Johnson	**Meteorologist In Charge**
Jon Rizzo	**Warning Coordination Meteorologist**
Alan Albanese	**Fire Weather Program Leader**

Counties of Responsibility:

FLORIDA: Monroe Keys

http://www.floridaforestservice.com/field_operations/index.html

1-Blackwater	850/ 957-6140
2- Chipola	850/ 872-4175
4- Tallahassee	850/ 488-1871
5- Perry	850/ 838-2299
6- Suwannee	386/ 758-5700
7- Jacksonville	904/ 266-5001
8- Waccasassa	352/ 955-2005
10- Bunnell	386/ 446-6785
11- Withlacoochee	352/ 754-6777
12- Orlando	407/ 856-6512
14- Lakeland	863/ 648-3163
15- Myakka River	941/ 751-7627
16- Okeechobee	863/ 462-5160
17- Caloosahatchee	239/ 690-3500
18- Everglades	954/ 475-4120


Florida Forest Service
Field Unit Areas
1. Blackwater
2. Chipola
4. Tallahassee
5. Perry
6. Suwannee
7. Jacksonville
8. Waccasassa
10. Bunnell
11. Withlacoochee
12. Orlando
14. Lakeland
15. Myakka River
16. Okeechobee
17. Caloosahatchee
18. Everglades
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III. Services Provided by the National Weather Service

Florida seasonal fire weather concerns:

The primary fire weather season for Florida prevails during January through May when fuel moistures are lowest, Winter frosts kill herbaceous fuels, and gusty winds with lower relative humidity often occur. However critical fire conditions can occur throughout the year, most notably during lengthy periods without rain.

Lightning during the spring is also a wildfire ignition problem when fuel and soil moistures are low. Seasonally high dispersion values are present on many spring afternoons due to higher sun angles and wind across dry fuels.

Summer into early autumn is normally a lower wildfire threat period as fuel moistures are high during and immediately following the Summer "rainy" season.

Routine fire weather forecasts

The objective of the National Weather Service fire weather services program is to provide fire weather products and services to the fire and land management community for the protection of life and property, promotion of firefighter safety, and stewardship of America's public wild lands.

Florida National Weather Service forecast offices will issue a core suite of fire products consisting of the following for their fire weather service area. Ref: NWS Policy Directives 10-401

A. Fire weather forecasts (FWF)

B. Dispersion Index Update (SMF)

C. National Fire Danger Rating System forecasts (NFDRS) (FWM)

D. Spot Forecasts (FWS)

E. Fire Weather Watches (RFW)

F. Red Flag Warnings (RFW)

G. Fire Danger Statement (RFD) *Optional use per NWS office*

The National Weather Service Fire Weather Forecasts are a zone-type product providing meteorological information used by land management personnel primarily for input in decision-making related to managing resources, pre-suppression operations, smoke management and other planning. The decisions impact firefighter safety, protection of the public and property, and resource allocation.

Zone forecasts provide for an average of expected 36 to 48 hour weather conditions throughout the zone. Zones are typically grouped based upon similarity of weather, with day to day grouping variations dependent upon ongoing weather or the timing of forecast weather. During daylight hours, forecasted elements should reflect conditions expected for periods of highest fire ignition potential, typically during the mid to late afternoon hours.

The National Fire Danger Rating System (NFDRS) measures wildland fire danger at observation sites throughout the contiguous United States. The National Weather Service role in NFDRS is forecasting weather input which, combined with user input, allows the NFDRS software to predict the next day's fire danger indices. These indices impact agency resource management decisions, firefighter safety, and protection of the public and property.

The site specific (Spot Forecasts) are issued by National Weather Service offices in support of wildfire suppression and natural resource management. These forecasts aid the land management and fire control agencies in protecting life and property during wildland fires, hazardous fuels reduction, and rehabilitation and restoration of natural resources. Spot forecasts may also be issued for hazardous materials incidents and other threats to public safety. See page 35 for specific instructions on spot forecasts.

Florida National Weather Service forecast offices will issue Fire Weather Watches/Red Flag Warnings when weather conditions support high to extreme fire danger. These conditions alert land management agencies to the potential for widespread new ignitions or control problems with existing fires, both of which could pose a threat to life and property.

Forecast issuances

Forecasts are issued daily throughout the year.

- The early morning Fire Weather Forecast (FWF) is the 36 hour (today/tonight/tomorrow) tabular planning forecast for forecast zones with a headline, weather synopsis, and five to seven day extended forecast outlook. Scheduled issuance is no later than 0730 am Eastern time (0630 am Central).

- The Dispersion Index Forecast (SMF) is the 12 hour (Tonight) Tabular Dispersion Index Smoke Management index update for the forecast zones. Scheduled issuance no later than 12 noon Eastern and Central Local time.

- The mid afternoon Fire Weather Forecast is a 48 hour (tonight/tomorrow/tomorrow night/following day) tabular planning forecast for forecast zones with a headline, weather synopsis, and five to seven day extended forecast outlook. Scheduled issuance is no later than 1545 pm Eastern time (1445 pm Central).

- The National Fire Danger Ratings System (NFDRS) forecast (FWM) is a 24 hour site specific digital forecast for numerous locations around the state (see appendix for locations) Scheduled issuance is no later than 1600 pm Eastern time (1500 pm Central).

- The unscheduled site specific (Spot Forecast) (FWS) is a user requested incremental tabular forecast with a headline and weather discussion followed by a 12 and 24 hour narrative outlook. Spot Forecasts are non routine and issuance times will vary according to user requests.

The Fire Weather Watch/ Red Flag Warning product (RFW) will be issued when weather conditions support very high to extreme fire danger while informing users of the status of any ongoing Fire Weather Watches or Red Flag Warnings for a specific zone. This product will be issued when necessary and define the affected zones or portions of a zone and include a headline and short weather synopsis.

Forecast updates

The RFW and Fire Weather Forecasts (FWF) will be updated when a Fire Weather Watch or Red Flag Warning is issued/cancelled or errors occur within the product text.

Forecast dissemination

Federal agencies:

Scheduled forecasts are distributed to federal land management agencies through the internet and/or the Weather Information Management System (WIMS), with agency logon and password at:

http://fam.nwcg.gov/fam-web/wims/jsp/wims.htm

For all other agencies

Forecast distribution is via the internet**.** One such internet address is through the Florida Forest Service at:

http://www.floridaforestservice.com/fire_weather/forecasts.html

A user agency alternate internet site for forecast access is available at address:

http://weather.gov/fire

Forecast distribution backup

US/State/local government agency users:

If WIMS and or Internet is down or inoperative, call your local NWS forecast office and have them fax a transmission of the fire weather forecast. Users can also contact the internet address of each NWS homepage for local fire weather forecasts. See pages 11 through 17 for web site addresses.

A. Fire Weather Forecast (FWF)

This is a tabular planning forecast for 15 different weather parameters and narrative extending outlook. A forecast is made for all National Weather Service zones.

The schedule issuance for availability to the users for the morning forecast is no later than 730 am eastern local time (0630 am central) and for the afternoon forecast is no later than 330 pm eastern local time (0230 pm central). These forecasts are issued daily throughout the year.

The morning forecast is for three 12 hour periods (today, tonight, and tomorrow), beginning 6 am local time on day of forecast preparation. Forecast periods are defined as:

Today: 6am to 6 pm
Tonight: 6 pm to 6 am
Tomorrow 6 am to 6 pm

The afternoon forecast is for four 12 hour periods (tonight, tomorrow, tomorrow night, and the following day), beginning 6 pm local time on day of forecast preparation. Forecast periods are defined as:

Tonight: 6 pm to 6 am
Tomorrow 6 am to 6 pm
Tomorrow night 6 pm to 6 am
The following day 6 am to 6 pm

.**The headline** an overview headline, before the synopsis, is required when red flag warnings and/or fire weather watches are in effect. The headline(s) will include the warning type, location, brief reason for issuance, and effective time period. A blank line will separate such headlines from the body of the synopsis. Also, headlines will be included above in each appropriate zone grouping.

.The weather discussion
This synopsis is a brief plain language narrative of the weather pattern as it pertains to Florida with special emphasis on the first period forecast through 48 hours. Weather elements which cannot be adequately addressed in the tabular format can be discussed within the synopsis. Such elements may include the passage of cold fronts, tropical disturbances, the onset of sea breezes, likelihood for freezes or frosts, and thunderstorm wind gusts, etc.

.Forecast zone numbers/counties names:
Each of the forecast zones may be grouped together, or have a separate forecast. Forecasts zone numbers will be followed by a county name that corresponds to that particular zone number. A brief fire weather watch/red flag warning headline will precede each affected zone grouping.

. Extended forecast
Public text forecast for general weather conditions for days 5 or up to 7 days will be appended to each zone grouping...with wind forecast for each day.

Forecast parameters:
Each of the 15 forecast weather parameters will be defined by element wording down the left margin of each zone grouping. Use the descriptor that would best describe the 12 hour period. Weather parameters are defined as follows:

Cloud cover: (value descriptions may be abbreviated)

Clear, mostly cloudy, mostly clear, cloudy, partly cloudy

Weather type: (value descriptions may be abbreviated)

None, freezing rain, fog, drizzle, rain, snow/rain showers, snow, thunderstorms

Definitions of weather type...

Fog - large mass of water vapor condensed to fine particles, at or near the ground, obscuring visibility.

Drizzle - mist–very small water droplets that appear to float when falling.

Rain - steadily falling small to medium sized water droplets

Shower - medium to large water droplets that seem to begin or end abruptly. No thunder is heard.

Thunderstorm - heavy or violent downpour of large water drops accompanied with lightning and most often with gusty winds or possibly hail.

Freezing rain - liquid precipitation that freezes upon contact with ground surfaces or vegetation.

Snow/rain - rain changing to snow or snow changing to rain.

Snow -flakes of frozen crystalline precipitation.

Chance of precipitation

Chance of precipitation for the 12 hour period. The probability of measurable (0.01 inch or more) of water equivalent at any point in a particular zone having no relationship to the amount of precipitation to occur. With summertime shower and thunderstorm situations the value can be thought of as an expected areal coverage of precipitation across a zone grouping.

Chance of precipitation values

None use of 10 percent restricted to isolated events 10 percent through 100 percent

Temperature (Maximum Minimum)

The dry bulb (ambient air) temperature measured at a standard five feet above the ground in degrees fahrenheit. Daylight temperatures are measured in the shade.

Maximum temperature defined as the *highest* value expected within a forecast zone, usually occurring during the mid afternoon.

Minimum temperature defined as the *average* lowest value expected within a forecast zone, usually occurring just prior to sunrise.

Forecasted temperatures can vary 5 to 10 degrees within a zone due to localized vegetative cover, terrain, soil type, or proximity to lakes and coastal marine areas. Users are advised to adapt forecasts to local conditions.

Temperature less than zero is preceded by a minus sign.

Relative Humidity (Maximum Minimum)

Relative humidity is the ratio (percent) of the amount of moisture in the air compared to the amount of moisture the air could hold at saturation for a particular temperature. Usually the lowest humidity occurs near the time of the maximum temperature, and the highest humidity occurs near the time of the minimum temperature. Humidity values run from 0 to 100 percent.

Wind speed and direction (AM and PM) (20 feet)

The prevailing or average direction and speed from which the wind is blowing at the 20 feet level above the open ground or twenty feet above the vegetation surface. Wind speed is reported in miles an hour and is a one minute average. Direction will be restricted to **eight compass directions**. The exceptions are for variable or calm situations.. Variable means a changeable wind direction occurring most often within light wind situations 3 mph or less. Wind direction changes, such as frontal passages or for the onset of coastal sea breezes, can be discussed in the synopsis.

Precipitation

Amounts pertain to an average precipitation expected. But for showery situations, particularly during the summer months, local amounts can vary considerably.

None
trace to 0.25 inch
0.25 to 0.50
0.50 to 1.00
1.00 to 2.00 inches
2.00 to 4.00 inches
4.00 to 6.00 inches
6.00 inches or more

Precipitation Duration
Maximum duration in hours that precipitation is expected to occur within the twelve hour period.

Range of values from 0 to 12 (blank indicates no precipitation)
1 means one second up to one hour duration
2 means two hour duration etc.

Timing of Precipitation (local time)
This parameter will indicate the period of time within which precipitation is expected to begin and end. These values will be in local time. Example: blank indicates no precipitation, continue, 1 am, 3 pm, etc.

Lightning Activity Level (LAL)
Cloud and storm development code

1 - No Thunderstorms

2- Isolated Thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.

3 - Widely Scattered Thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.

4 - Scattered Thunderstorms. Moderate rain is commonly produced lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.

5- Numerous Thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.

6 - Dry Lightning (not used in Florida).

Mixing Height
The height above the ground at which atmospheric stability is sufficient to inhibit vigorous vertical mixing of air (or air particulate i.e. smoke). This height can imply an inversion level. Forecast digit value is in feet above the ground. Value defines a maximum mixing height expected above the average ground surface (AGL) typically during the mid afternoon.

Transport Wind Direction and Speed
The average wind direction through the mixing layer from the surface up to the mixing height. Directions are limited to the eight compass directions with the exceptions of variable or calm conditions (see **wind direction and speed 20 feet**)

Average of the wind speed within the mixing layer from the surface up to the mixing height. It generally refers to the rate at which smoke emissions will be horizontally transported from one area to another. (values are in miles an hour).

Dispersion Index - DI
An index computed from forecasted wind speed, mixing height, transport wind, cloud cover, and ceiling height used as a guide for atmospheric instability and smoke management. (ref see page 61)

DISPERSION INDEX VALUES	**FLORIDA FOREST SERVICE DAYTIME DESCRIPTORS**
GREATER THAN 80	EXCELLENT DISPERSION, CONTROL PROBLEMS EXPECTED.
61-80	VERY GOOD DISPERSION, CONTROL PROBLEMS LIKELY ABOVE 75
41-60	GENERALLY GOOD.
21-40	POOR TO FAIR, STAGNATION MAY BE INDICATED IF ACCOMPANIED BY LOW WIND SPEEDS.
0-20	POOR DISPERSION, STAGNANT IF PERSISTENT.

	NIGHTTIME DESCRIPTOR
0-2	POOR
3-4	POOR TO FAIR
5-8	GOOD

DISPERSION INDEX VALUES	**FLORIDA FOREST SERVICE DAYTIME DESCRIPTORS**

The Low Visibility Occurrence Risk Index - LVORI

This index is a measure of the risk of low visibility occurring. The risk dramatically increases when RH is high and DI is low. This index in useful in qualitatively estimating the likelihood of a vehicle accident occurring under a given set of conditions. This index can be ascertained by using the predicted nighttime DI, maximum RH, wind and the LVORI table.

Remarks
Appropriate remarks to add value and mark significant or pertinent weather changes or information. Insert ‘none’ if none.

For example of the morning fire weather forecast **page 27**

For example of the afternoon fire weather forecast **page 28**

Example: Morning Fire Weather Forecast (FWF)

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FNUS52 KMLB 060759
FWFMLB

FIRE WEATHER PLANNING FORECAST FOR EAST CENTRAL FLORIDA
NATIONAL WEATHER SERVICE OFFICE MELBOURNE FL
359 AM EDT TUE OCT 6 2009

.DISCUSSION...WEAK HIGH PRESSURE WILL REMAIN OVER THE AREA THROUGH
MID WEEK BEFORE A WEAK FRONTAL BOUNDARY SAGS DOWN THE PENINSULA.
WINDS WILL BE RELATIVELY LIGHT...ALLOWING THE EAST COAST SEA BREEZE
WILL DEVELOP EACH AFTERNOON.

NO LOW RH CONCERNS AS DEWPOINTS WILL REMAIN ELEVATED. WARM TEMPERATURES
CONTINUE FOR THE NEXT SEVERAL DAYS. SCATTERED SHOWERS AND STORMS
TODAY...THEN CHANCES GRADUALLY DECREASING TO ISOLATED BY LATE WEEK
INTO THE WEEKEND.

FLZ041-044-144-062115-
INLAND VOLUSIA-NORTHERN LAKE-SOUTHERN LAKE-
INCLUDING THE CITIES OF...DE LAND...LEESBURG...CLERMONT
359 AM EDT TUE OCT 6 2009

                     TODAY        TONIGHT      WED

CLOUD COVER          PCLDY        PCLDY        PCLDY
CHANCE PRECIP (%)    40           20           20
PRECIP TYPE          TSTMS        TSTMS        TSTMS
TEMP                 90           72           92
RH %                 54           100          51
20FT WND MPH (AM)    LGT/VAR                   LGT/VAR
20FT WND MPH (PM)    W  6         LGT/VAR      W  6
PRECIP DURATION      1            1            0
PRECIP BEGIN         8 AM         CONTINUING   2 PM
PRECIP END           CONTINUING   11 PM        CONTINUING
PRECIP AMOUNT        0.12         0.04         0.02
LAL                  3            2            3
MIXING HGT (FT-AGL)  4800         300          4900
TRANSPORT WIND (MPH) W  9         SW  8        W 10
DISPERSION INDEX     30           4            62
MAX LVORI                         9

REMARKS...NONE.

.FORECAST FOR DAYS 3 THROUGH 5...

.THURSDAY...PARTLY CLOUDY. A SLIGHT CHANCE OF SHOWERS AND
THUNDERSTORMS. LOWS IN THE MID 70S. HIGHS IN THE LOWER 90S. NORTH
WINDS AROUND 5 MPH.
.FRIDAY...PARTLY CLOUDY WITH A SLIGHT CHANCE OF SHOWERS AND
THUNDERSTORMS. LOWS IN THE LOWER 70S. HIGHS IN THE LOWER 90S.
SOUTHEAST WINDS AROUND 5 MPH.
.SATURDAY...PARTLY CLOUDY. A SLIGHT CHANCE OF SHOWERS AND
THUNDERSTORMS. LOWS IN THE MID 70S. HIGHS AROUND 90. SOUTH WINDS
AROUND 5 MPH.

$$
```

Example: Afternoon Fire Weather Forecast (FWF)

```
000
FNUS52 KTBW 061719
FWFTBW

FIRE WEATHER PLANNING FORECAST FOR WEST CENTRAL AND SOUTHWEST FLORIDA
NATIONAL WEATHER SERVICE TAMPA BAY AREA - RUSKIN FL
119 PM EDT TUE OCT 6 2009

.DISCUSSION...HIGH PRESSURE WILL CONTINUE OVER THE AREA FOR THE REST
OF THE WEEK AND INTO THE WEEKEND. LOW LEVEL MOISTURE WILL REMAIN HIGH
AS TEMPERATURES WARM TO NEAR RECORD LEVELS. THERE WILL ONLY BE AROUND
A SLIGHT CHANCE OF SHOWERS AND THUNDERSTORMS MAINLY ALONG SEA BREEZE
INTERACTIONS EACH AFTERNOON AND INTO THE EVENINGS.

FLZ039-070830-
LEVY-
119 PM EDT TUE OCT 6 2009

                      TONIGHT      WED          WED NIGHT    THU

CLOUD COVER           PCLDY        PCLDY        PCLDY        PCLDY
CHANCE PRECIP (%)     20           30           20           20
WEATHER TYPE          TSTMS        TSTMS        TSTMS        TSTMS
TEMP                  71           91           70           92
RH %                  100          54           100          52
20FT WIND MPH(AM)                  W  8                      NE  4
20FT WIND MPH(PM)     W  3         W  8         W  3         NE  3
PRECIP DURATION       0            1            0            1
PRECIP BEGIN          8 PM         2 PM         CONTINUING   2 PM
PRECIP END            12 AM        CONTINUING   12 AM        8 PM
PRECIP AMOUNT         T-.25        T-.25        T-.25        T-.25
LAL                   2            3            2            2
MIXING HGT(FT-AGL)    300          5000         300          5000
TRANSPORT WIND (MPH)  W  7         W 13         W  7         N  6
DISPERSION INDEX      8            77           6            42
MAX LVORI             9                         9

REMARKS...NONE.

.FORECAST FOR DAYS 3 THROUGH 5...

.FRIDAY...PARTLY CLOUDY WITH A 20 PERCENT CHANCE OF SHOWERS AND
THUNDERSTORMS. LOWS IN THE LOWER 70S. HIGHS IN THE LOWER 90S.
SOUTH WINDS 5 TO 10 MPH.
.SATURDAY...PARTLY CLOUDY WITH A 20 PERCENT CHANCE OF SHOWERS AND
THUNDERSTORMS. LOWS IN THE LOWER 70S. HIGHS IN THE UPPER 80S.
WEST WINDS AROUND 5 MPH.
.SUNDAY...PARTLY CLOUDY WITH A 30 PERCENT CHANCE OF SHOWERS AND
THUNDERSTORMS. LOWS IN THE LOWER 70S. HIGHS IN THE UPPER 80S.
SOUTH WINDS AROUND 5 MPH.

$$
```

B. Smoke Dispersion Index Forecast (SMF)

A daily zone forecast update of the smoke dispersion index for smoke management
For the tonight period only will be provided between 11am and noon local time.
Forecast parameters are defined as follows:

Cloud amount: (value descriptions may be abbreviated)

Clear
Mostly cloudy
Mostly clear
cloudy
Partly cloudy
fog

Use the terms that would best describe the overnight period.

Ceiling height

The expected height above the ground level (agl) for cloud bases. Forecast values
Are in feet. I.e. 200, 1500, 3000 etc. None indicates no ceiling. For a ceiling, 6/10th or more
Of sky must be cloud covered.

Mixing height

The height above the ground at which airmass stability is sufficient to inhibit
Vigorous vertical mixing of air (or air particulate such as smoke). This height can
Imply an inversion level. Forecast digit values are in feet above the ground
And define a maximum mixing height expected that night.

Wind speed (20 foot)
Wind speed in miles an hour (one minute average)

20 foot wind is defined as the average wind twenty feet above the open ground or
Twenty feet above the vegetation surface. Use of calm restricted to no wind or wind
Speed zero. Variable means a changeable wind direction occurring most often within
Light wind situations.

Transport wind speed

Average of the wind speed within the mixing layer from the surface up to the mixing
Height. It generally refers to the rate at which smoke emissions will be
Horizontally transported from one area to another. Values are in miles an hour.

Dispersion Index - DI (ref see page 61)
An index computed from forecasted wind speed, mixing height, transport wind, cloud
Cover, and ceiling height used as a guide for atmospheric instability and smoke
management.

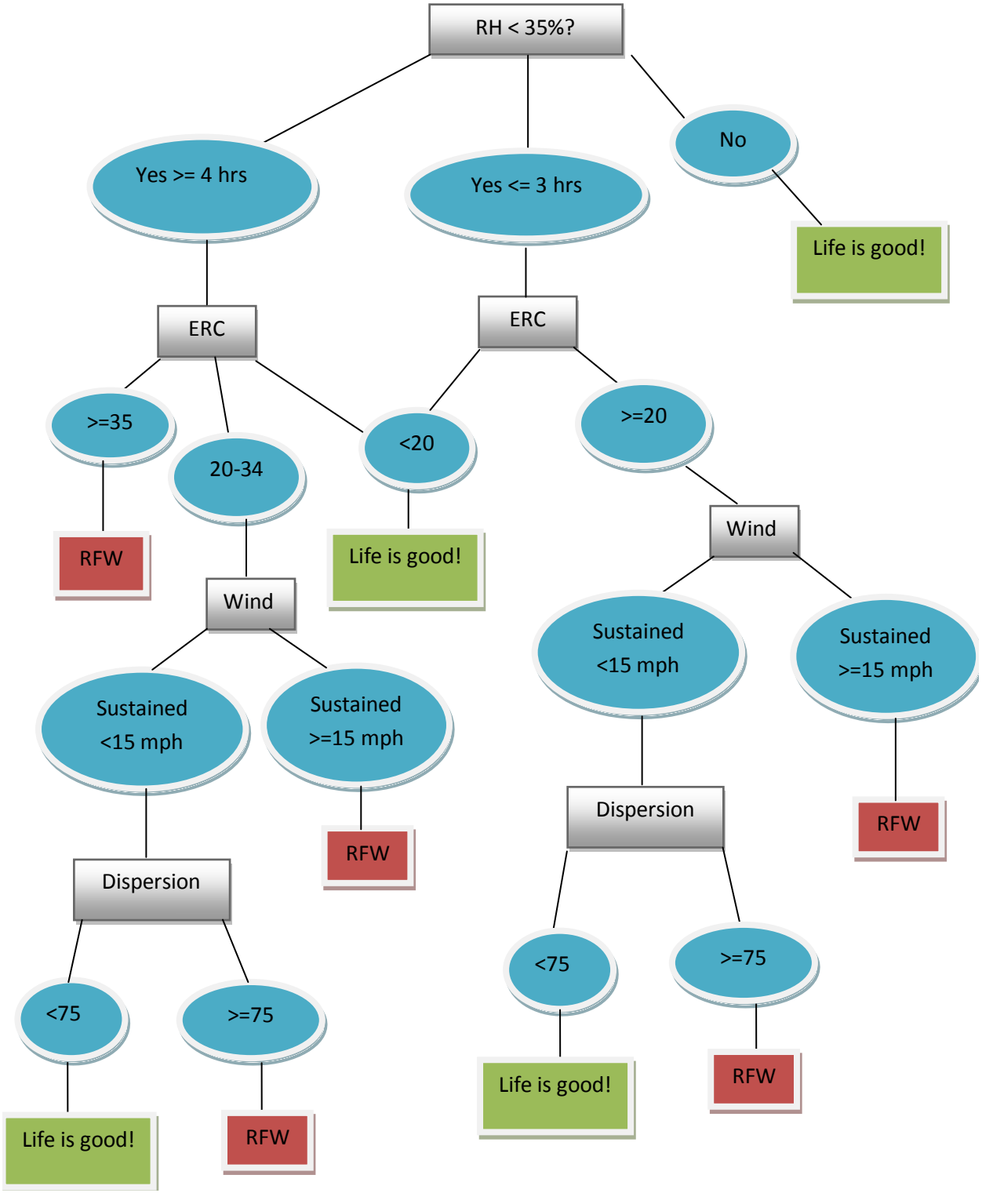
Dispersion Florida Forest Service night time
Index values descriptor:

Greater than 8 very good
5-8 good
3-4 poor to fair
0-2 poor

The Low Visibility Occurrence Risk Index - LVORI

This index is a measure of the risk of low visibility occurring. The risk dramatically
Increases when RH is high and DI is low. This index in useful in qualitatively
Estimating the likelihood of a vehicle accident occurring under a given set of
Conditions. This index can be ascertained by using the predicted nighttime DI and
Maximum RH, and the LVORI table.

DVD's Florida Fire Weather Decision Tree
Effective April 1, 2012



C. The National Fire Danger Rating System (NFDRS) (FWM)

This forecast is a National Fire Danger Rating System (NFDRS) specific location point forecast. Forecasts are for 24 hours (1400 to 1400 LST). Deadline for these forecasts to be available (via WIMS) into the NFDRS system is 1600 LST. This forecast is utilized as weather input for computation of NFDRS fuel moisture, burning and fire rate

of spread indices.

Examples: NFDRS point forecast (FWM)

~~~~~~

FNUS82 KMFL 302015 FWMMFL

FCST,086401,060501,13,1,86,36,1,1,NNE,06, ,86,56,100,36,0,0,N
FCST,086402,060501,13,1,86,37,1,1,NNE,06, ,86,55,100,37,0,0,N
FCST,086403,060501,13,1,85,39,1,1,N,06, ,85,57,100,39,0,0,N
FCST,086404,060501,13,1,85,38,1,1,NNE,06, ,85,55,100,37,0,0,N
FCST,086702,060501,13,1,84,41,1,1,NE,09, ,84,58,100,41,0,0,N
FCST,086703,060501,13,1,83,40,1,1,NNE,06, ,83,60,93,40,0,0,N
FCST,086704,060501,13,1,83,41,1,1,NE,08, ,83,62,90,41,0,0,N

FNUS82 KTAE 301851
FWMTAE

FCST,082201,060501,14,2,79,36,2,1,E,05,M,79,54,87,36,0,0,N
FCST,080802,060501,14,2,80,33,2,1,E,04,M,80,52,87,33,0,0,N
FCST,082001,060501,14,2,79,41,2,1,ESE,05,M,79,55,80,40,0,0,N
FCST,082002,060501,14,2,78,45,2,1,ESE,06,M,78,57,82,45,0,0,N

FNUS82 KJAX 301820
FWMJAX

FCST,081301,060501,13,1,77,39,1,1,NNE,08,M,77,52,100,39,0,0,N
FCST,081302,060501,13,1,76,36,1,1,NNE,08,M,76,51,100,36,0,0,N
FCST,083501,060501,13,1,80,40,1,1,NE,11,M,80,57,96,40,0,0,N
FCST,083502,060501,13,1,80,40,1,1,NE,10,M,80,56,97,40,0,0,N
~~~~~~

Below are quick reference definitions of NFDRS parameters.

A B C WX T RH AL TL DD FF F TX TN RX RN P1 P2 WF
Fcst,086702,030216,13, 2, 81, 66, 1, 3, s, 13, m, 83, 66, 98, 64, 0, 0, n

A: Station id
B: Date for forecast tomorrow
C: Local time to verify 2 pm tomorrow **wx**: state of weather 2 pm tomorrow
T: Temperature 2 pm tomorrow **RH**: relative humidity 2 pm tomorrow **AL**: lightning activity level 2 pm to midngt tonight **TL**: lightning activity level midngt tonight to midngt tomorrow night **DD**: wind direction 20 foot 2 pm tomorrow **FF**: wind speed 20 foot 2 pm tomorrow

F: fuel stick (not forecast) **TX**: max temperature 24 hr 2 pm today to 2 pm tomorrow **TN**: min temperature 24 hr 2 pm today to 2 pm tomorrow **RX**: max humidity 24 hr 2 pm today to 2 pm tomorrow **RN**: min humidity 24 hr 2 pm today to 2 pm tomorrow **P1**: precipitation 1st period 2 pm today to 6 am tomorrow **P2**: precipitation 2nd period 6 am tomorrow to 2 pm tomorrow **WF**: wet flag (y/n) .10 inch 2 pm today to 2 pm tomorrow

NFDRS digital point forecast

A: station number - six digits
- Refers to federal observing sites
- First 2 digits are state code (Florida--08)
- Second 2 digits are USFS county id
- Third 2 digits are site number

B: date - six digits (year, month, day)

C: valid time - two digits, 01 to 24
- valid time of forecast (LST)
-normally this is 14 (1400). (WIMS valid tomorrows date)

Wx:. State of weather - single digit, 0 to 9
- State of weather valid at 1400 tomorrow
- Select from among the following codes:

Code state of weather **0** clear (less than 1/10 cloud cover) **1** scattered clouds (1/10 to 5/10) **2** broken clouds (6/10 to 9/10) **3** overcast (more than 9/10 clouds) **4** fog **5** drizzle **6** rain **7** snow or sleet **8** showers **9** thunderstorm

(**use code 5-7 only if pop is 70 percent or higher**)

T: Temperature - one to four digits (-100 to 136)
- Temperature (F) at 1400 LST tomorrow

RH: Relative Humidity - one to three digits (1 to 100)

- Relative Humidity (%) at 1400 LST tomorrow

AL: Todays lightning - one digit (1 to 5) for the period 1400 activity level today to 2400 tonight

Tl: Tomorrows lightning - one digit (1 to 5) for the 24 hr period activity level 2400 tonight until 2400 tomorrow night

Lightning Activity Level

LAL cloud and storm development code

1 - No thunderstorms

2 - Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.

3 - Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.

4 - Scattered thunderstorms. Moderate rain is commonly produced Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.

5 - Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.

6 - Dry lightning (Not used in Florida)

DD: wind direction - one to three alphabetic characters (N, NW, NNW, etc.)

- wind direction at 1400 LST tomorrow

FF: wind speed - one or two digits (i to 99)

- Forest canopy wind speed in mph, at 1400 tomorrow
- Normally about 70 percent of the value used in the zone forecast

F: 10 hr t/l - 10-hour time lag fuel moisture index

- Either one or two digits (1 to 99) or **m** (missing)
- Normally coded as M (missing) since computation is made by WIMS computer for DSPW and DSPI products

TX: maximum temperature - one to four digits (t value up to 136)

- 24 hr maximum temperature (f) for the period 1400 today to 1400 tomorrow (may not be less than 1400 **t** value)

TN: minimum temperature - one to four digits (-100 up to **t** value).

- 24 hr minimum temperature (f) for the period 1400 today until 1400 tomorrow (may not exceed 1400 **t** value)

RX: max relative humidity - one to three digits (observed RH to 100)

24 hr maximum relative humidity (%) for the period 1400 today to 1400 tomorrow

Reserve for rain areal coverage of 70 percent or higher

P2: precip duration - one or two digits in hours (00 to 08)

Duration of precipitation expected from 0600 until 1400 tomorrow.
reserve for rain areal coverage of 70 percent or higher.

WF: wet flag - coded yes or no. If fuels expected to be wet at forecast valid time (1400) tomorrow, code as **y**. If fuels are dry, code as **n**. Reserve **y** for greater than 70 percent areal coverage of wetting rain in amounts greater than one tenth inch, otherwise **y** resets fire danger indices to zero.

D. The Spot Weather Forecast (FWS)

The National Weather Service will provide upon request, specialized site specific spot forecasts for wildfires, prescribed burns, particulate dispersal or aerial spray projects, hazardous materials incidents and other treats to public safety. A request may be made at any time and are for site specific locations. Spot forecasts provide a more detailed breakdown of weather forecasted elements into one or two hour segments of time. Spot forecasts are initially made for a 12 hour period with a 12 to 24 hour outlook.

The National Weather Service will provide spot forecast support and service upon request of any federal, state, tribal, or local official who represents the spot forecast is required to support a wildfire.

For non-wildfire purposes, resources permitting, the National Weather Service will provide spot forecast support and service under the following circumstances and conditions:

A. Upon the request of any federal official who represents that the spot forecast is required under the terms of the Interagency Agreement for Meteorological Services.

B. Upon request of any state, tribal, or local official who represents that the spot forecast is required to carry out their wildland fire management responsibilities in coordination with any federal land management agency participating in the Interagency Agreement for Meteorological Services.

C. Upon request of any public official who represent the spot forecast is essential to public safety, e.g. due to the proximity of population centers or critical infrastructure. A "public safety official" is an employee or contract agent of a government agency at any level (federal, state, local, tribal, etc.) charged with protecting the public from hazards including wildland fires and/or other hazards influenced by weather conditions such as hazardous material releases.

D. Upon request of any public official for natural resource protection and/or in support of Homeland Security Presidental Directive 5 related activities.

the Internet based NWS Spot program is used for requesting and issuing spot forecasts and should be used when possible. In times when Internet access is hindered or not possible, spot forecasts may be requested and disseminated by telephone or fax. See **pages 11 through 17** for NWS spot forecast support contact telephone numbers.

Spot forecasts should normally be available within 30 minutes of request with typically no more than a 45 minute deadline. However under adverse weather conditions, spot forecast requests will be processed within a myriad of ongoing weather concerns. If the spot request is for wildfire, the forecaster should assign a higher priority for forecast preparation. For the safety of fire crews and operations, a spot request for wildfire will be prioritized similar to the expediency given severe weather.

The requesting agency can aid the forecaster by providing at a minimum the following information:

Nature or reason of fire (wildfire or prescribed burn)

Name of fire

Name and phone number of control agency and/or representative

Location of the fire (lat/long in degrees/minutes/seconds format or township and range)

Size of fire or project

Recent weather observation near the fire site

The submission of at least one recent accurate weather observation from near the fire site is encouraged with each spot forecast request. For prescribed burns, a planned ignition time is recommended as well. Any additional information which would help the forecaster prioritize the request such as a threat to structures, the public, fire operations, or unusual fire behavior.

Constructive critique of spot forecasts by users is also encouraged, preferably directly to the forecaster and substantiated by on-site observations. If the forecast does not reasonably match observed conditions, call the forecaster to discuss the situation or to request an updated spot forecast.

Spot Forecast agency support (Florida Forest Service)

Site specific spot forecasts are also available from the Florida Forest Service's spot forecast web page. To process and receive automated spot forecasts access the internet address:

http://www.floridaforestservice.com/fire_weather/spot/index.html

NWS Spot Forecast content:

Spot forecast for name of incident
issuing National Weather Service office
Time and date of spot forecast issuance

A headline...only for watch/warning criteria weather discussion

Weather parameters for the first 12 hours will include a 1 to 2 hour time incremental breakup of:

Sky
Weather
Chance of precipitation
Temperature
RH
20 foot wind
(optional elements may be forecast such as mixing height...transport winds...smoke dispersion...etc).

Next 12 hour outlook period...typically overnight with abbreviated weather information.

Outlook for next day typically with abbreviated weather information.

Example: Spot Weather Forecast (FWS)

```
000
FNUS72 KMLB 301020
FWSMLB

SPOT FORECAST FOR JDSP E1...FLORIDA PARK SERVICE
NATIONAL WEATHER SERVICE MELBOURNE FL
620 AM EDT WED SEP 30 2009

FORECAST IS BASED ON IGNITION TIME OF 0930 EDT ON SEPTEMBER 30.
IF CONDITIONS BECOME UNREPRESENTATIVE...CONTACT THE NATIONAL WEATHER
SERVICE.

.DISCUSSION...A RATHER UNCERTAIN FORECAST TODAY. A WEAK COOL FRONT OVER
SOUTH FLORIDA WILL STALL SOUTH OF MARTIN COUNTY TODAY. SHOWERS ACROSS
SOUTHWESTERN FLORIDA ARE FORECAST TO PASS SOUTH OF MARTIN COUNTY AND
THE BURN SITE...BUT CLOSE ENOUGH SUCH THAT ANY APPRECIABLE NORTHWARD
SHIFT OF THE PRECIPITATION BAND WOULD LEAD TO A REVISED FORECAST TO
INTRODUCE RAIN CHANCES. WE WILL MONITOR RADAR TRENDS CLOSELY AND WOULD
ADVISE THAT YOU DO AS WELL.

ALSO...THE WIND FORECAST WILL ALSO BE TRICKY. THERE IS THE POTENTIAL FOR
A DIFFUSE SEA BREEZE TO TURN WINDS SLIGHTLY EAST OF DUE NORTH DURING THE
AFTERNOON...AND WIND DIRECTION MAY BEGIN TO VARY BETWEEN NORTH AND
NORTHEAST.

IT WOULD BE A GOOD IDEA TO CHECK IN WITH THE DAY SHIFT TODAY AS FORECAST
CONFIDENCE IS RATHER LOW GIVEN THE EXPECTED PROXIMITY OF THE STALLED
FRONT TO THE BURN SITE.



.TODAY...

SKY/WEATHER.........PARTLY SUNNY.
MAX TEMPERATURE.....AROUND 86.
MIN HUMIDITY........63 PERCENT.
WIND (20 FT)........NORTH WINDS 7 TO 9 MPH...VARYING BETWEEN NORTH AND
                    NORTHEAST THIS AFTERNOON.
CHANCE OF PCPN......10 PERCENT.
LAL.................1.
MIXING HEIGHT.......600-1800 FT AGL INCREASING TO 3300-4100 FT AGL
                    LATE IN THE MORNING.
TRANSPORT WINDS.....NORTHWEST 8 TO 12 MPH.
DISPERSION INDEX....35.
LVORI...............0.

TIME (EDT)      9AM 10A 11A 12P 1PM 2PM 3PM 4PM 5PM 6PM 7PM 8PM
SKY (%).........PC  PC  PC  PC  PC  PC  PC  PC  PC  PC  PC  MCR
WEATHER COV.....
WEATHER TYPE....
TEMP............79  82  82  83  84  84  84  84  83  82  80  79
RH..............94  82  74  77  77  72  70  65  67  72  72  68
20 FT WIND DIR..NW  NW  N   N   N   N   NNE NNE NNE NNE N   N
20 FT WIND SPD..7   8   8   9   9   9   10  10  10  10  8   7
20 FT WIND GUST.    10  10  10  10  10  12  12  12  12 10   9
```

```
.TONIGHT...

SKY/WEATHER.........PARTLY CLOUDY.
MIN TEMPERATURE.....AROUND 67.
MAX HUMIDITY........81 PERCENT.
WIND (20 FT)........NORTH WINDS 6 TO 8 MPH IN THE EVENING
                    BECOMING LIGHT NORTHWEST.
CHANCE OF PCPN......0 PERCENT.
LAL.................1.
MIXING HEIGHT.......2300 FT AGL.
TRANSPORT WINDS.....NORTH 6 TO 12 MPH.
DISPERSION INDEX....3.
LVORI...............6.

.THURSDAY...

SKY/WEATHER.........MOSTLY SUNNY.
MAX TEMPERATURE.....AROUND 86.
MIN HUMIDITY........48 PERCENT.
WIND (20 FT)........LIGHT WINDS BECOMING EAST 6 TO 9 MPH LATE IN
                    THE MORNING.
CHANCE OF PCPN......10 PERCENT.
LAL.................1.
MIXING HEIGHT.......1900-3600 FT AGL INCREASING TO 4500-4900 FT AGL
                    EARLY IN THE AFTERNOON.
TRANSPORT WINDS.....EAST 3 TO 8 MPH.
DISPERSION INDEX....20.
LVORI...............0.

$$
FORECASTER...55
REQUESTED BY...RR
TYPE OF REQUEST...PRESCRIBED
.TAG 20090930.JDSPE.01/MLB
```

E. Fire Weather Watches and F. Red Flag Warnings:

The Fire Weather Watch and Red Flag Warning programs are a means by which the weather forecaster informs the land management agencies of critical weather factors, combined with dry fuels, which could support extreme fire danger and/or fire behavior which may lead to extensive wildfire occurrence or control problems with existing fires. Forecasts are headlined with fire weather watches or red flag warnings as issued.

A Fire Weather Watch or Red Flag Warning is issued for weather situations, combined with dry fuels, which may represent a threat to life and property, by adversely impacting fire fighting resources or personnel. Therefore the identification of red flag events is a prime responsibility of the fire weather forecaster.

Weather and fuel definition for the issuance of red flag events is coordinated in advance with land management agencies and users within the state of Florida. Fire weather watches and red flag warnings are issued solely for the purpose of advising agencies of critical fire weather conditions. Critically dry fuels in Florida are highly dependent on one hour fuel moisture, which is directly determined by relative humidity, therefore critically dry relative humidity is equivalent to critically dry fuels.

Red Flag Warning: ***Updated 4/1/12***

A Red Flag Warning is issued to warn of an impending or ongoing red flag event. A Red Flag Warning will be issued immediately when red flag conditions are either imminent, occurring, or when there is a high level of confidence that the conditions will develop within the next 24 hours.

In coordination with land management agencies, any area of Florida will be considered to be experiencing a Red Flag event whenever any one of the following criteria are met:

Minimum Florida Red Flag criteria

1. Relative humidity less than 35 percent for four consecutive hours or more along with Energy Release Component (Fuel Model G) of 35 or greater.

2. Relative humidity less than 35 percent and sustained 20 foot wind speeds of 15 mph or more, along with Energy Release Component (Fuel Model G) of *20 or greater.*

3. Relative humidity less than 35 percent and a dispersion index value of 75 or more, along with Energy Release Component (Fuel Model G) of *20 or greater*

Fire Weather Watch:

A Fire Weather Watch is issued to alert the users to the possible development of a Red Flag event as defined above. A fire weather watch is not allowed within the initial 12 hours of forecast issuance. A watch is issued if forecaster confidence is reasonably higher that an event will occur in the period greater than 24 hours in advance of forecast issuance. A watch will not be issued more than 96 hours in advance of an expected event. Although it is desirable to have a fire weather watch precede a red flag event by at least 12 hours...a watch is in no way a mandatory prerequisite for an unforeseen warning to be issued.

A fire weather watch shall remain in effect until the forecaster determines that either the red flag event will not develop or that the watch should be upgraded to a red flag warning. If the fire weather forecaster determines that the potential red flag event will not occur, the fire weather watch will be canceled.

When a fire weather watch or red flag warning is issued, the event shall be headlined on **all** subsequent fire weather forecasts until the event expires or is canceled. (exception: headlines are omitted from National Fire Danger Rating System -NFDRS- point forecasts). Unscheduled spot forecast will only contain an
event headline if the spot forecast site is within a watch or warned area.

Watch/warning forecast updates

Whenever unforeseen red flag conditions develop, a Red Flag Warning product (RFW) will be issued. An updated fire weather forecast with appropriate watch or warning headlines should be issued. Headlines should include the effective onset time, zones affected, valid period of the watch or warning, and reasons for issuance update. Notify the DOF and affected federal agency dispatch offices within amended warned areas.

RFW content

The fire weather watch and red flag warning format will include segmented forecast information, and may contain an overview section.

.Overview Section

This section is optional. If included, it should contain at least one of the following items:

Overview headline(s) - general headline statement(s) that summarizes the fire weather threat, time of devolvement, reason for issuance, and area affected.

General discussion - a brief, non technical discussion of the expected fire weather event.

.Segmented forecast information

Each segment of the fire weather watch/red flag warning will include:

UCG and geographic description of zones and/or zone numbers.

A headline describing the state of the fire weather watch or red flag warning (issued, continues, canceled), the effective time of the event, the critical weather element(s) causing the event, and a description of the affected area.

Discussion section which describes the adverse weather conditions. In the intial issuance of the watch or warning, including the following phrase to begin the discussion: the National Weather Service in (WFO or location) has issued a (Red Flag Warning or Fire Weather Watch) for

.Order of Segments

(1) Watch/Warning cancellation
(2) Warnings
(3) Watches

.Order of Headlines

If multiple headlines are required in a single segment, the order of headlines will follow the order of segments.

.Updates and Corrections

A fire weather watch will remain in effect until the watch: 1) is canceled, 2) is upgraded to a Red Flag Warning, or 3) expires.

A Red Flag Warning will remain in effect until the warning: 1) is canceled, or 2) expires.

Use the same product identifier (RFW) for issuing, updating, and canceling Fire Weather Watches and Red Flag Warnings. Forecasters will also update the FWF product when a RFW product is issued, updated, or canceled.

The RFW will be corrected when a typographical/format error is detected.

.Other Dissemination of Red Flag information

Forecasters will place headlines for Fire Weather Watches/Red Flag Warnings at the beginning of the routine FWF and in the appropriate zone sections.

Forecasts should include the RFW highlights in the appropriate list of highlights in the area forecasts discussion.

EXAMPLE

_____

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WWUS82 KTAE 010824
RFWTAE

URGENT - FIRE WEATHER MESSAGE
NATIONAL WEATHER SERVICE TALLAHASSEE FL
424 AM EDT FRI APR 1 2011

...A RED FLAG WARNING IS IN EFFECT FROM 1 PM EDT /NOON CDT/ TO 8
PM EDT /7 PM CDT/ THIS EVENING FOR MOST OF THE INLAND BIG BEND
AND EASTERN PANHANDLE OF FLORIDA DUE TO THE COMBINATION OF LOW
RELATIVE HUMIDITY...STRONG WINDS...AND HIGH DISPERSION VALUES...

...A FIRE WEATHER WATCH IN EFFECT FOR SATURDAY AFTERNOON FOR
PORTIONS OF INLAND BIG BEND AND EASTERN PANHANDLE OF FLORIDA DUE
TO THE COMBINATION OF POSSIBLE LOW RELATIVE HUMIDITY AND HIGH
DISPERSION VALUES...

.A REINFORCING COLD FRONT PUSHED ACROSS THE REGION THURSDAY NIGHT.
IN ITS WAKE...WINDY AND GUSTY WEST TO NORTHWEST WINDS AND A DRIER
AIR MASS WILL LEAD TO STEEP MIXING HEIGHTS...HIGH DISPERSIONS AND
LOW HUMIDITIES YIELDING RED FLAG CONDITIONS ACROSS MUCH OF THE
INLAND FLORIDA BIG BEND AND PANHANDLE THIS AFTERNOON

FLZ009>011-013-016>019-026>029-020030-
/O.EXT.KTAE.FW.A.0025.110402T1900Z-110402T2300Z/
/O.CON.KTAE.FW.W.0031.110401T1700Z-110402T0000Z/
HOLMES-WASHINGTON-JACKSON-CALHOUN-GADSDEN-LEON-INLAND JEFFERSON-
MADISON-LIBERTY-INLAND WAKULLA-INLAND TAYLOR-LAFAYETTE-
424 AM EDT FRI APR 1 2011 /324 AM CDT FRI APR 1 2011/

...RED FLAG WARNING REMAINS IN EFFECT FROM 1 PM EDT /NOON CDT/
THIS AFTERNOON TO 8 PM EDT /7 PM CDT/ THIS EVENING FOR...
...FIRE WEATHER WATCH REMAINS IN EFFECT FROM SATURDAY AFTERNOON
THROUGH EVENING...

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A RED FLAG WARNING MEANS THAT CRITICAL FIRE WEATHER CONDITIONS
ARE EITHER OCCURRING NOW...OR WILL SHORTLY. LOW RELATIVE HUMIDITY
WILL ENHANCE FIRE GROWTH POTENTIAL.

A FIRE WEATHER WATCH MEANS THAT CRITICAL FIRE WEATHER CONDITIONS
ARE POSSIBLE. LISTEN FOR LATER FORECASTS AND POSSIBLE RED FLAG
WARNINGS.

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G. Fire Danger Statements (RFD)

Fire danger statements might be issued for elevated fire weather conditions that approach but do not exceed Red Flag Warning criteria. Fire danger statements are intended to be a day one issuance designed to alert the public as well as official agencies of elevated fire weather conditions. Fire danger statements may be issued under the following conditions *(Note: NWS offices may locally develop their own criteria for use per NWSI 10-401).*

Forecasted Energy Release Component (Model G) 30 to 34 along with minimum RH less than 35 percent four consecutive hours or greater
OR
Minimum RH of 35 percent along with 20 foot wind gusts exceeding 15 mph.

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FNUS62 KMLB 270829
RFDMLB
FLZ041-044>046-053-058-141-144-272100-

FIRE DANGER STATEMENT
NATIONAL WEATHER SERVICE MELBOURNE FL
429 AM EDT SUN MAR 27 2011

...LOW RELATIVE HUMIDITY WITH SOUTHWEST WINDS AND DRY FUEL
CONDITIONS WILL PRODUCE A FIRE DANGER THIS AFTERNOON...

THIS STATEMENT IS FOR LAKE...VOLUSIA...SEMINOLE...ORANGE...
OSCEOLA AND OKEECHOBEE COUNTIES FROM NOON TO 5 PM TODAY.

RELATIVE HUMIDITIES ARE FORECAST TO REACH AT OR BELOW 35 PERCENT
FOR UP TO TWO HOURS THIS AFTERNOON. SOUTHWEST WINDS OF 10-12 MPH
MAY OCCASIONALLY GUST TO AROUND 15 MPH. ENERGY RELEASE COMPONENTS
ARE ALSO ABOVE 30 IN THESE AREAS.

FIRE DANGER STATEMENTS ARE ISSUED WHEN FIRE WEATHER CONDITIONS
ARE APPROACHING BUT NOT MEETING OR EXCEEDING RED FLAG WARNING
CRITERIA.

EMERGENCY OFFICIALS SHOULD BE AWARE THAT WEATHER CONDITIONS MAY
BECOME CONDUCIVE FOR THE IGNITION AND RAPID SPREAD OF WILDFIRES.

PERSONS ARE URGED TO EXERCISE EXTREME CARE WITH RESPECT TO
OUTDOOR ACTIVITIES THAT COULD CAUSE WILDFIRES. AVOID THE USE OF
ANY EQUIPMENT THAT CAN CAUSE SPARKS NEAR DRY GRASS OR BRUSH. DO
NOT TOSS CIGARETTES ON THE GROUND. REPORT NEW WILDFIRES QUICKLY
TO THE NEAREST FIRE DEPARTMENT OR LAW ENFORCEMENT OFFICE.

&&

A BURN BAN IS CURRENTLY IN EFFECT FOR VOLUSIA...ST LUCIE...
OKEECHOBEE AND MARTIN COUNTIES. OUTDOOR BURNING IN THESE COUNTIES
REQUIRES AN AUTHORIZATION FROM THE FLORIDA DIVISION OF FORESTRY.


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ON SITE SUPPORT RESPONSIBILITIES (*NWSI Directive 10-402)*

At designated forecast offices, an Incident Meteorologist (IMET) will be All Hazards Meteorological Response System (AMRS) qualified for on-site deployment to major wildfires or major all hazards incidents within or out of state for incident forecast support. IMET deployments are dispatched through the NWS National Fire Weather Operations Coordinator (NFWOC) at the National Interagency Fire Center (NIFC) in Boise, ID. The IMET will work in support of the Fire Behavior Analyst, overall hazmat team and Incident Commander under the National Incident Command System Structure.

Training responsibilities

NWS fire weather program leaders will at times be requested to provide training within basic meteorology in support to land management agency schools or seminars. Instruction topics can include the impact of weather upon fire and wildland fuels, smoke management, or the use of national weather service products and services.
User agencies will reimburse the NWS for all costs associated with IMET mobilizations set forth in the National Agreement. Reimbursable expenses include overtime, per diem, travel, equipment maintenance, and transportation of the IMET and equipment.
Other specialized services include course development work, instruction in observation procedures, and maintaining the Florida Fire Weather Operations Plan. Specific information can be found in the Interagency Agreement for Meteorological and Technical Services in the appendix (NWS Agreement 0-02 FedFireWeather 2008).
IMET/AMRS support
IMET Coordination and Conference calls *(ref: NWSI 10-402 Sec 4.2)*
On-site meteorological services (IMET/AMRS) ref: Interagency Agreement (Appendix)

Specially trained Incident Meteorologists (IMET), equipped with AMRS provide on-site weather support to personnel working prescribed burns, control of large wildfires, major all hazards incidents , or other significant weather sensitive incidents.

IMET Support Laptop PC's

An AMRS is a modularized mobile forecasting unit designed to be easily transported and assembled on site. The modules contain a Laptop computer, satellite system for high speed data transfer to the laptop, belt weather kit, and assorted supplies.

NWS fire weather laptop computers are national resources to support incident meteorologists during out of office assignments. The laptops have been setup with a standardized software configuration. The standardized software should not be modified. Laptops utilize a windows operating system.
A request for an IMET meteorologist should be placed through the Florida Interagency Coordination Center (FICC) in Tallahassee. FICC will forward the request to appropriate channels for IMET dispatch, day and night. The requesting agency is responsible for coordinating transportation of the IMET to and from the incident site.
All IMETs will have access to laptop PC's to support a satellite interface, data acquisition, and a printer. Specified IMETs will be assigned an NWS owned laptop PC at their home duty office. Within Florida, laptop PC's are cached at the Tampa Bay area office in Ruskin, Melbourne and Miami.

IMETs are responsible for obtaining the following information upon dispatch:

All IMETs are responsible for the care and transport of the laptops to and from incident sites or the laptop cache site.
- --Name of agency requesting support
- --Name and telephone number of person requesting support
- --Incident name and location
- --Resource order numbers for the IMET
- --Directions to fire camp or incident location
- --Type of incident team including the Incident Commander, Planning section chief and Fire Behavior Analyst, or hazmat personnel if available.

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The requesting agency is responsible for transporting the IMET to and from an incident. Additionally the user agency is responsible for providing adequate shelter for meteorologist and equipment to function efficiently. This would include a location free of excessive dust, heat and moisture, protection from wind and other elements, and a table and chair. Transportation and shelter arrangements should be made at the time of the request. The AMRS requires 120 volt AC power and the laptop needs a quality Internet access. An outside area with a clearing to the south, allowing visibility to within 40 degrees of the horizon, should be provided to allow the IMET access to a satellite. Charges to or from incident should be charged to the incident. While in possession of the laptop, the IMET meteorologist is also responsible for checking the laptop PC and restocking any support supplies, batteries, software, forms, etc (to ensure dispatch readiness

Coordination on Incidents.
The IMET and local NWS Weather Forecast Office (WFO) should coordinate at least on a daily basis. The local WFO will coordinate with, or at least notify, the IMET of any significant weather threatening the site, and of any watches or warnings they plan to issue that include the incident or nearby areas. If the IMET is located at an incident without phone communication, the WFO should notify the local dispatch office of these types of critical conditions or forecasts, and the dispatch office should be encouraged to then notify the incident and/or IMET.

In cases of watch or warning issuances by the local WFO, the IMET should defer to the local office. However, in the absence of a watch or warning from the local WFO, the IMET has discretion to issue a watch or warning for the incident only. The IMET will coordinate with the local WFO, or in the absence of time, will notify the local WFO of any such issuances as soon as is practicable. In instances of multiple IMETs dispatched to a single WFO fire weather service area, the Regions and the NFWOC should coordinate and determine the necessity for regularly scheduled conference calls. If conference calls are considered necessary, the Regions should assist the WFO MIC in setting up the calls. The calls should include the WFO forecasters, the IMETs, and the NFWOC. Other nearby WFOs and any IMETs in that WFO's service area may also be included in the call.

IMET Accounting Procedures

As soon as possible after each IMET deployment, weather service form **D-21**, *fire weather mobile unit operation report,* (or ATMU Report) should be completed with copies forwarded to NWS Southern Region Headquarters, and to the NFWOC. This report documents any logistic, equipment, or accounting problems which may have occurred in support of an incident.

A RRE form, *Report of Reimbursable Expenses*, for each incident should also be forwarded to the appropriate NWS regional headquarters. This form will itemize the expenses which may be charged to the appropriate land management agency responsible for fire costs. Reimbursable expenses as per the national agreement include overtime, per diem, travel, maintenance of damaged equipment and expenses resulting from duty activities.

IMET duties

Individual IMET deployments to an incident can vary and can range up to one or two weeks, but will not exceed 14 days. The IMET works within the structure of the incident management team, in concert with the fire behavior analyst under the supervision of the plans section chief. IMET duties include daily forecast coordination and compositions, spot forecasts as requested, daily weather briefings, weather observations, weather records, daily log of duties and contacts, and ensuring the functionality of the AMRS equipment.

IMET Forecasts

Daily planning forecasts are prepared along with supplemental spot forecasts, including updates as necessary. Planning forecasts are composed within the guidelines of an fire weather forecast form (**page 45**).

Example of IMET forecast

WEATHER FORECAST

FORECAST NO: 3

NAME OF FIRE: Mustang Corner

PREDICTION FOR: Day & Evening Ops

UNIT: National Park Service

SHIFT DATE: Monday 05/19/08
TIME AND DATE 1700
FORECAST ISSUED: 05/18/08

SIGNED: *John Pendergrast*
Incident Meteorologist

WEATHER DISCUSSION: A stalled frontal boundary near Lake Okeechobee will dissipate today. An upper level wave moving across the Southeast US will increase our winds this afternoon. Expect gusty southwest winds by mid day with a slight chance of showers. Overall moisture levels will increase tonight and into Monday.

The **main concerns are:**

1. Gusty afternoon winds. Continued dry with less than 20 percent chance of rain.
2. Dense smoke advisory until 10 am near and west of the Miami metro area.

WEATHER FORECAST DAY SHIFT MONDAY:

…Continued Hot and breezy…

WEATHER: Partly cloudy. Hot. Areas of dense morning smoke and haze.
MAX TEMPERATURES: 92-94 (24 hour trend ~ same)
MIN HUMIDITY: 40-45%, (24 hour trend ~ 5% higher)
20 FT WINDS: West 2 to 4 mph early becoming Southwest 9 to 14 mph with gusts to 21 mph in the afternoon.
STABILITY/INVERSION: Inversion around 500 ft dissipating by 1000. Mixing heights around 5000 ft. Dispersion index around 78. Haines Index 5.

WEATHER FORECAST NIGHT SHIFT MONDAY NIGHT:

WEATHER: Partly Cloudy. Areas of smoke, locally dense.
MIN TEMPERATURES: 67-70.
MAX HUMIDITY: Recovery 90 to 95 percent.
20 FT WINDS: Southwest 3 to 5 mph.
STABILITY/INVERSION: Inversion around 600 ft beginning to develop after 2300. Dispersion index 2.

OUTLOOK FOR TUESDAY:

Partly sunny. A slight chance of thunderstorms. High temperatures 88-91. Minimum RH values 40 to 45 percent. Southwest winds 4 to 8 mph with gusts to 15 mph, increasing to 9 to 13 mph with gusts to 20 mph early afternoon. Chance of rain 20 percent.

EXTENDED…WEDNESDAY THROUGH SATURDAY:

TUESDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF THUNDERSTORMS. HIGHS IN THE LOWER 90S. SOUTHWEST WINDS 5 TO 10 MPH. CHANCE OF RAIN 20 PERCENT.
WEDNESDAY...MOSTLY CLEAR IN THE MORNING THEN BECOMING PARTLY CLOUDY. HIGHS IN THE LOWER 90S. SOUTHWEST WINDS 5 TO 10 MPH BECOMING SOUTHEAST.
THURSDAY...MOSTLY CLEAR IN THE MORNING THEN BECOMING PARTLY CLOUDY. HIGHS IN THE LOWER 90S. SOUTH WINDS 5 TO 10 MPH BECOMING SOUTHEAST.

Other Special Support Services

NWS fire weather meteorologists are available to assist land management agencies with fire training courses (i.e. S-290, RX-450, Florida interagency prescribed burn course, etc.) Requests for assistance should be made through the local NWS program leader. Requests should be made as far in advance of the training dates as possible to allow for scheduling. Ancillary expenses incurred by the NWS while providing training should be reimbursed by the requesting agency.

Other meteorological services are available under the direction of the Interagency Agreement for Meteorological Services. These include but are not necessarily limited to...

~ Observation site visitation course development work
~ Training of weather observers agency observation
~ Quality control

Forecaster travel is encouraged for liaison, meetings, or participation in training activities or seminars. Forecasters should experience as many varied types of fire and forestry operations as possible to become acquainted with agency operations and the local influences of weather on fire behavior. Reciprocal visits by agency personnel should likewise be made available. As resources are available, forecasters should attend NWS or land agency sponsored training, workshops, or refresher seminars.

Fire Weather Operation Plans (AOP)
(ref: National Weather Service Instruction 10-404)
This Florida Fire Weather Operations Plan shall be maintained, reviewed, and updated as necessary. The annual review and revision (if required) may be rotated among the Florida NWS offices. Each NWS office shall also maintain an in-house fire weather forecasting manual inclusive of this plan and any other local agency contacts, and forecast procedures or preparation guidelines.
Fire Weather Annual Report *(ref: National Weather Service Instruction 10-404)*
Every WFO that issues non-routine fire weather products during their fire weather season (e.g., spot forecasts, Fire Weather Watches, Red Flag Warnings) will produce an annual report summarizing fire support in their area of responsibility.

WFOs should disseminate the Annual Report to the same entities as the AOP. Annual Reports should summarize the calendar year activities. The NWS Regional Headquarters will determine the due date of the Annual Report, and the regional statistics are due March 1st

Conference Calls, GoTo Meeting and Webinars:

During periods of intense or prolonged wildfire activity conference calls may be organized between land management agencies, state and federal emergency officials, state water management districts, and the National Weather Service. Topics of discussion would include, but not be limited to, current drought and/or indices relating to drought, available surface and fuel moisture, any ongoing wildfire activity, status of control operations, public and property safety issues, preparedness actions, and the outlook for future planning and logistics. Participating NWS offices may schedule routine web-based conferences with partners in their areas especially during occurrences of critical fire weather conditions.

FARSITE Meteorological Data
Farsite is a fire behavior and growth simulator program used by Fire Behavior Analysts. FARSITE is designed for use by trained, professional wildland fire planners and managers familiar with fuels, weather, topography, wildfire situations.
ASCII formatted files containing *daily* summaries of temperature, relative humidity and precipitation, and *hourly* data of wind speed, wind direction, and cloud cover are available from participating WFO's. The weather files can be used with FARSITE to predict the likely behavior of a wildfire up to 72 hours into the future. Please contact your local WFO for more information about FARSITE

The Area Forecast Discussion is a NWS issued product where information on wildfire related weather effects may be included. Typically issued up to four times daily, the product serves as an excellent forum for coordinating meteorological reasoning among weather offices. Technical terms may be used, but the brief discussion should focus on weather effects and not fire behavior. As a coordination tool and ledger of ongoing NWS watch and warning issuances, use of the terms Red Flag Warning and Fire Weather Watch is permitted.

Civil Emergency Messages (CEM)

Special messages that contain information on events that would require protective actions on the part of the public are transmitted by the NWS in conjunction with the Florida Division of Emergency Management and Department of Homeland Security via the Internet and broadcast on NOAA Weather Radio when requested by authorities. Emergency situations requiring civil emergency messages may include wildfires threatening life and property, including the health hazard of excessive dense smoke. Such messages may include pending or ongoing evacuation orders.

Request and authentication of CEM messages would come from the office of the state of Florida, Division of Emergency Management, or law/fire enforcement officials through the ESATCOM, the state's emergency communications system. Text of the requested CEM should be faxed to the appropriate NWS office with receipt confirmed to the sender. CEM messages should be same/tone alerted on NOAA weather radio.

Example of Civil Emergency Message (CEM)

BULLETIN-EAS ACTIVATION REQUESTED CIVIL EMERGENCY
MESSAGE NATIONAL WEATHER SERVICE TAMPA BAY AREA-
RUSKIN FL 330 PM EST FRI MAR 19 2009

THE FOLLOWING MESSAGE IS BEING TRANSMITTED AT THE REQUEST OF THE LEE COUNTY EMERGENCY MANAGEMENT OFFICE.

A WILDFIRE AT LEHIGH ACRES COUNTRY CLUB HAS CONSUMED SEVERAL HUNDRED ACRES OF GRASS AND WAS SPREADING WEST TOWARD DENSELY POPULATED AREAS OF EAST LEHIGH ACRES. STRONG WINDS FROM THE EAST COUPLED WITH LOW HUMIDITY ARE EXPECTED TO PUSH WILDFIRES RAPIDLY WEST ACROSS LEHIGH ACRES OVER THE NEXT 3 HOURS.

EMERGENCY MANAGEMENT OFFICIALS HAVE ORDERED A MANDATORY EVACUATION, EFFECTIVE IMMEDIATELY, NORTH OF STATE ROAD 884 TO SOUTH OF 8TH AVENUE, AND WEST TO THE ORANGE RIVER CANAL.

LISTEN TO NOAA WEATHER RADIO, LOCAL TELEVISION, OR RADIO FOR ADDITIONAL INFORMATION ON THE LOCAL CIVIL EMERGENCY.

Dense Smoke Advisory (NPW)

A Dense Smoke Advisory is issued by local NWS offices for persisting local or widespread dense smoke reducing visibilities to ¼ mile of less over a portion or all of a forecast zone. Issuance of Dense Smoke advisories are typically pre-coordinated with authorities (DOF, FHP and/or other law enforcement authorities) who typically monitor the scope of smoke emissions in the area of existing fires.

NWS Hazardous Weather Outlooks (HWO)

The NWS Hazardous Weather Outlook is a publicly disseminated discussion of any and all potentially hazardous weather that may affect a forecast area.

The HWO is an excellent product through which weather information related to a fire/smoke threat can be communicated to the public. The reality is that fire does often threaten populated areas and at that point, becomes a serious emergency management issue. Critical information then needs to be communicated through whatever outlets the NWS has at it's disposal.

The intent is two-fold: to provide the public with a sufficient level of awareness as to minimize the occurrence of accidental fire starts; and encourage a rapid and appropriate response should fire threaten life and/or property.

NWS offices should consider providing fire weather information in the HWO when any of the following are met within an offices area of responsibility:

1. Red flag warning in effect
2. Significant wildfire activity exists
3. Smoke is expected to be a serious obstruction to visibility and/or an air quality hazard to the public
4. Severe drought conditions exist

In mentioning the fire threat in the HWO, avoid use of **fire weather watch** or **red flag warning** as the public may not be familiar with these terms which could result in public misinterpretation. Also avoid using terms as high or extreme fire danger, or fire alert since these terms carry official definitions of land management agencies.

Suggested text guidelines include:

1. Address only the weather effects on the fire threat.
2. Avoid assessing fire activity or fire behavior
3. Stress safety with fire sources but avoid recommending courses of action.

Iv. Fire agency operational support and services

Florida Fire Weather Observations

Routine fire weather observations are meant to reflect the most volatile fire weather conditions of the day, so observations are taken during the mid afternoon at the time of maximum heating. Observations provide needed site weather information for forecast issuances and the verification of prior forecasts. Observations as well as forecasts provide the needed weather input for land management decision making for operations planning, staffing, and issuance of burn permits. To provide input for the preparation of afternoon planning forecasts, observations are taken daily at 2 pm eastern time (1pm central time).

Florida Forest Service Observations

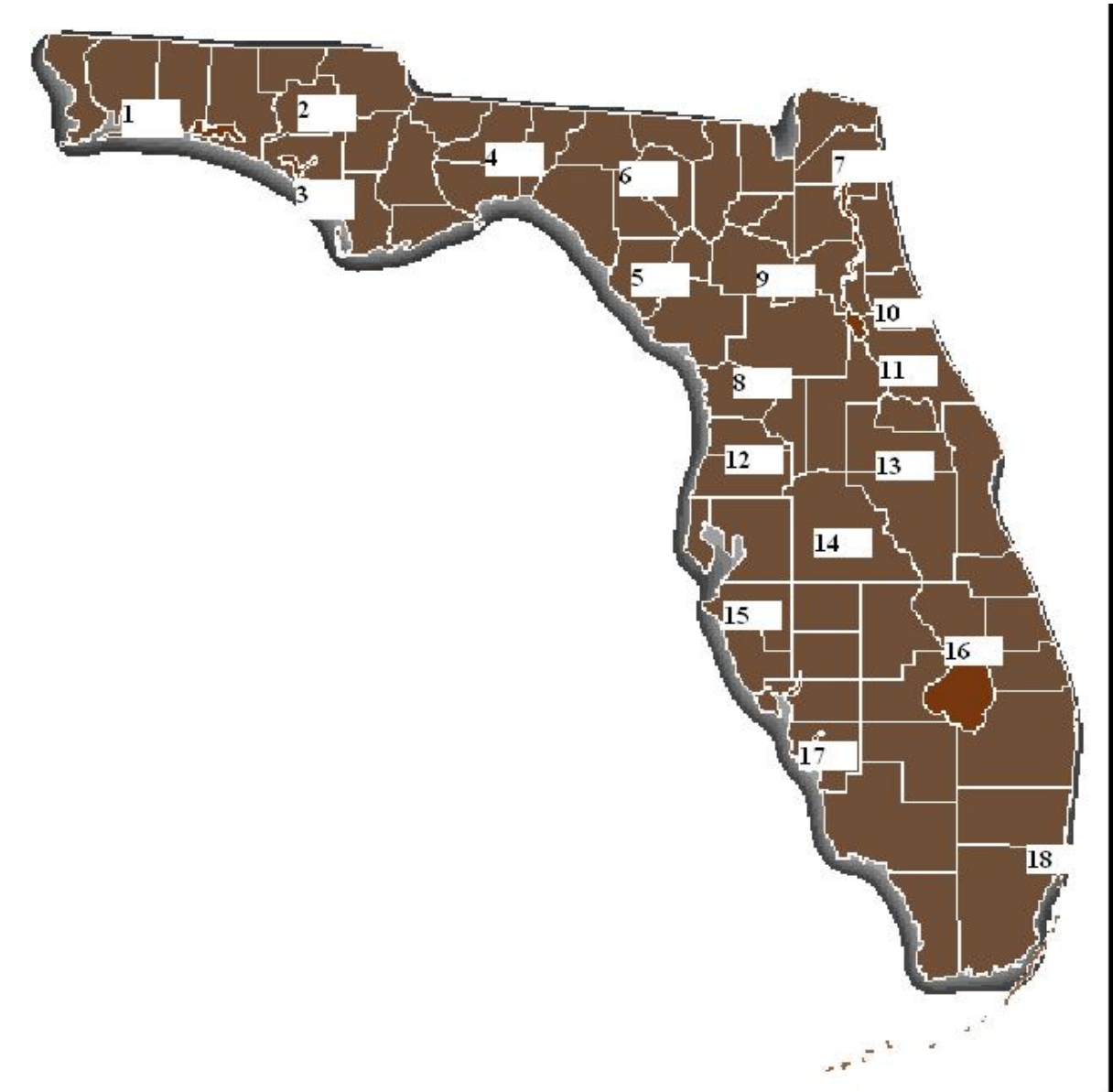
Deadline for DOF observations to be available is 2:30 pm eastern time. The majority of the observations are from Florida Forest Service district offices. Observations are accessible via the internet at address:

http://flame.fl-dof.com/cgi-bin/weather/weather.ksh/

The Florida Forest Service uses the Wildland Fire Danger Index (FDI) for estimating the potential for a fire to start and require suppression action on any given day.

The FDI does not consider how quickly any fires that do start will grow due to prevailing winds.

For more information about this index please refer to the following link:
http://flame.fl-dof.com/fire_danger/wims-report.html



FLORIDA FOREST SERVICE OBSERVATION SITES
(see next page for names)

Dst	Date	Location
1	10/06	Blackwater Fc, Milton
2	10/06	Chiploa River Com Ctr, Bonifay
2	10/06	Chipola River Do, Panama City
4	10/06	Tallahassee District Office
5	10/06	Perry District Office
6	10/06	Suwannee District Office
7	10/06	Jacksonville District Office
8	10/06	Usher Work Center
8	10/06	Waccasassa Fc, Gainesville
10	10/06	Bunnell District Office
10	10/06	Deleon Forestry Station (Comp)
11	10/06	Withlacoochee Fc, Brooksville
12	10/06	Orlando District Office
14	10/06	Lakeland District Office
15	10/06	Myakka River Do, Bradenton
16	10/06	Okeechobee District Office
17	10/06	Caloosahatchee Do, Fort Myers
18	10/06	Everglades Do, Davie

WIMS (NFDRS) Observations

NFDRS site forecasts must be entered into WIMS no later than 1455 local time. WIMS collectives of observations (NMCFWOXXX) are available between 300 pm and 400 pm daily. WIMS observations are collectively grouped into zones by forecast office for calculation of zone site observation averages.

Observation sites are assigned a six digit NWS station identification number. The first two digits indicate the state, the second two digits the county, and the last two digits are the consecutively assigned station numbers within a county. The local NWS office must be contacted for assignment of a six digit number for any new permanent stations, or for changes in location made to existing stations already assigned a number. Several sites are also assigned a national environmental satellite (NESDIS) data platform ID's for automated interrogation.

DECODE FEDERAL WIMS/RAWS/NFDRS OBSERVATIONS:

ST NME – STATION NAME

STAT'N – 6-DIGIT NWS STATION IDENTIFICATION

DATE -- YYMMDD (YEAR, MONTH, DAY)

HR -- HOUR OF OBSERVATION

T – OBSERVATION TYPE (**O**) (**F** FOR FORECAST COLLECTIVE)

W – STATE OF WEATHER AT OBSERVATION TIME:

0 - CLEAR, LESS THAN 1/10 CLOUD COVER **5** - DRIZZLE *** 1** - SCATTERED CLOUDS, 1/10 - 5/10 CLOUD COVER **6** - RAIN *** 2** - BROKEN CLOUDS, 6/10 - 9/10 CLOUD COVER **7** - SNOW OR SLEET *** 3** - OVERCAST, MORE THAN 9/10 CLOUD COVER **8** - SHOWERS **4** - FOG **9** - THUNDERSTORMS

***** – These entries, if entered as a forecast, will reset fire danger indices to zero.

DBT – DRY BULB (AIR) TEMPERATURE

DPT – DEW POINT TEMPERATURE

RH – RELATIVE HUMIDITY **Y** – YESTERDAY'S LIGHTNING ACTIVITY LEVEL (LAL). (Midnight to Midnight)

M – MORNING LIGHTNING ACTIVITY LEVEL. (Midnight to Observation time)

DIR – WIND DIRECTION (FROM WHICH THE WIND IS BLOWING). (Reported in whole degrees)

WS – WIND SPEED (10 Minute average)

10 – TEN HOUR TIME LAG FUEL MOISTURE

TMX -- MAXIMUM TEMPERATURE DURING LAST 24 HOURS. (2PM-2PM) Value cannot be less than DBT.

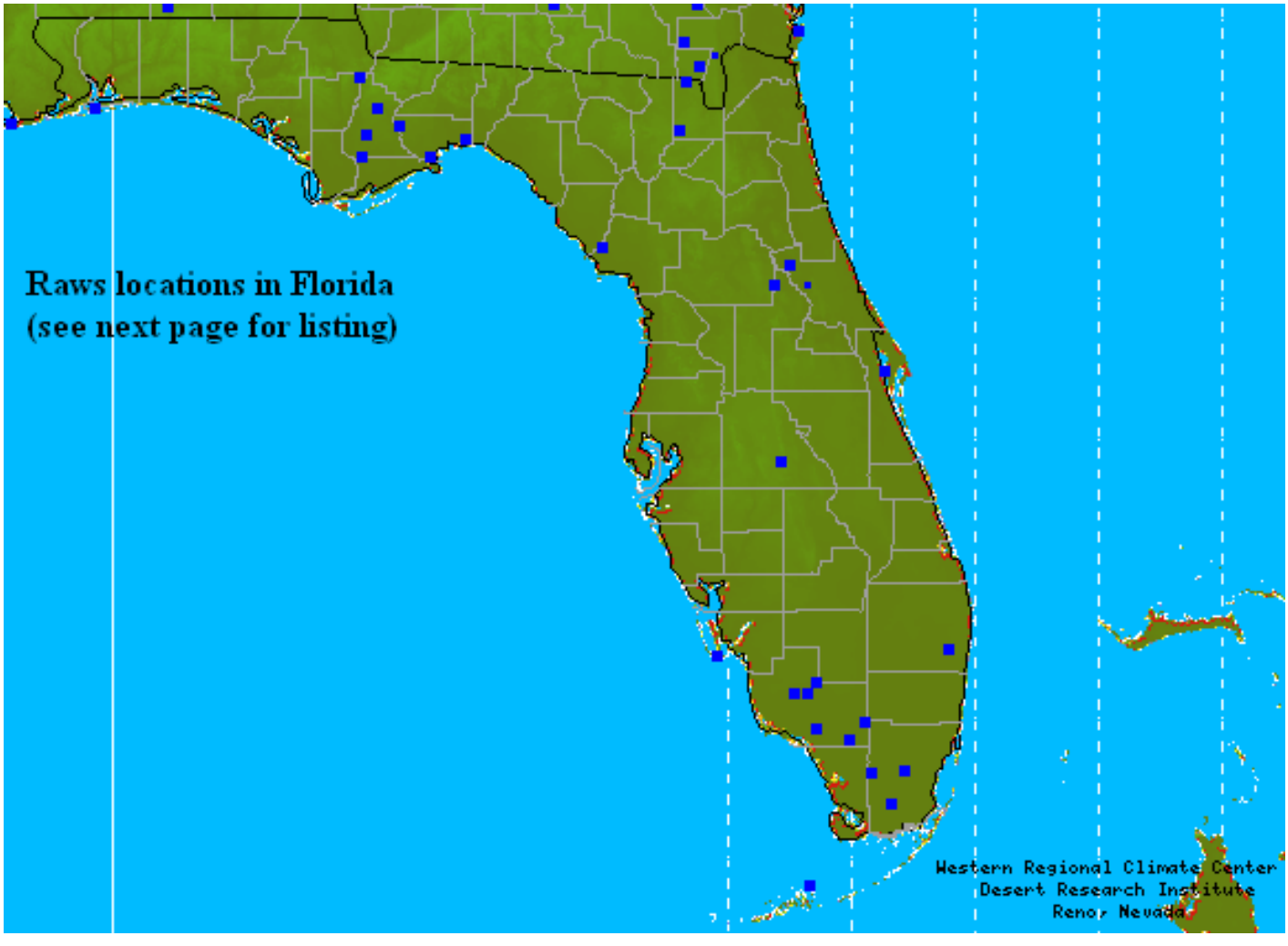
TMN -- MINIMUM TEMPERATURE DURING LAST 24 HOURS. (2PM-2PM) Value cannot be more than DBT)

HMX – MAXIMUM RELATIVE HUMIDITY DURING LAST 24 HOURS. (2PM-2PM)

HMN – MINIMUM RELATIVE HUMIDITY DURING LAST 24 HOURS. (2PM-2PM)

PD -- PRECIPITATION DURATION. (Enter total time in hours–-cumulative number of minutes converted to hours–that precipitation occurred in the past 24 hours. If none, enter a **0** (**zero**). A minus sign is used to indicated wet fuels at time of observation).

PPAMT – PRECIPITATION AMOUNT. (Total accumulation past 24 hours. If none, enter **0** (**zero**); If a trace, enter **T**. If at least **T** entered then duration must be at least **1**).


Raws locations in Florida
(see next page for listing)
Western Regional Climate Center
Desert Research Institute
Reno, Nevada

RAWS Locations Listed by County Location and Elevation (above sea level)

Baker County
EDDY TOWER 150 ft
OLUSTEE 150 ft
Brevard County
MERRITT ISLAND 10 ft
Collier County
MILES CITY RAWS 16 ft
OASIS 8 ft
OCHOPEE RAWS 2 ft
PANTHER EAST 15 ft
PANTHER WEST 15 ft
RACCOON POINT 15 ft
Glades County
BRIGHTON 15 ft
Miami Dade County
CACHE 5 ft
CHEKIKA 5 ft
TENRAW 5 ft
Highlands County
LAKE WALES 141 ft
Lake County
PAISLEY 85 ft
CENTRAL 74 ft
Lee County
DING DARLING NWR 10 ft
Leon County
BLOXHAM 100 ft
Levy County
LOWER SUWANNEE 15 ft
Liberty County
SUMATRA 60 ft
WILMA 50 ft
Marion County
LAKE GEORGE 129 ft
Palm Beach County
LOXAHATCHEE 17 ft
Santa Rosa County
NAVAL LIVE OAKS 15 ft
Volusia County
LAKE WOODRUFF QD 60 ft
Wakulla County
SANDBORN 50 ft
ST. MARKS (EAST) 15 ft
ST. MARKS (WEST) 50 ft

Call for special observations

The National Weather Service requests the assistance of the land management agencies in providing much needed reports of significant weather events. In spite of ever-advancing technology, the collection of timely reports from reliable observers will always be of critical importance to the weather forecaster.

Timely reports of ongoing severe weather can greatly aid the meteorologist in his mission of protecting life and property. Even reports on a delayed basis assist the meteorologist in evaluating and verifying warning events.

Reports can be made anytime directly to National Weather Service offices or local law enforcement officials with a request to relay the report to the local National Weather Service.

Among the significant events that would be of value to the forecaster:

1 Funnel clouds or tornado touching the ground
2 Hail one half inch or larger
3 Measured wind gusts in excess of 50 mph
4 Uprooting of trees or weather damage to structures
5 Any weather related event with possible impact to life or property
6 Flooding rains of 2 inches per hour or 4 inches per day.

Please report:
1 The time of the event (beginning/end)
2 Location (section of county or road intersection)
3 Movement (if known)
4 Name of agency making report

http://www.floridastateparks.org/images/DistMapAll.cfm

http://www.dep.state.fl.us/Parks/planning/forms/State_parks_b&w_8X11.pdf

MAP OF LAND ENTITIES UNDER FEDERAL MANAGEMENT

http://www.lib.utexas.edu/maps/united_states/fed_lands_2003/florida_2003.pdf

Lavdas Dispersion Index

This dispersion index offers a means of allocating prescribed fire emissions within an area, according to prevailing weather conditions, to avoid regional smoke overload. In other words, this index refers to those processes within the atmosphere which mix and transport particulate (smoke) away from a source both horizontally via the wind and vertically via stability.

The dispersion index is predominately weighted to, and directly proportional to values of the mixing height and transport wind. The index also incorporates factors of seasonal solar elevation angle (net radiation), total opaque cloud cover, ceiling height, and surface wind speed, with these additional elements approximating an overall atmospheric stability class.

Much of the range of good dispersion of pollutants overlaps the range of weather conditions utilized for good burning conditions, so with good management, neither smoke nor fire will be a hazard. High index values imply an extremely unstable atmosphere, contributing to increased incidence of wildfire. Much as low values of the index imply poor dispersion of smoke, high values of the index may imply conditions for potentially large fire growth.

In agreement with the land management agencies within Florida, high values of the dispersion index (75 or greater) initiate additional criteria for the issuance of fire weather watches and red flag warnings within the state.

Both day and nighttime dispersion index values are calculated within issuances of the morning and afternoon planning forecasts.

Reference: Lavdas, Leonidas g.; *An Atmospheric Dispersion Index for Prescribed Burning; U*.S. Department of Agriculture, Forest Service, research paper SE-256, October 1986.

Keetch-Byram Drought Index

The Keetch-Byram Drought Index (KBDI) evaluates the effects of long-term meteorological drought as it relates to the gain or loss from the duff layer down through an eight inch depth of soil. Therefore the index is based on the available moisture in the upper soil layers that can be used by vegetation for evapotranspiration.

The index measure is in hundredths of an inch of water, and has a range of zero through 800, with zero being saturated and 800 representing the worst drought condition. A KBDI of 250 means there is a deficit of 2.5 inches of ground water available to vegetation. Subsequently as drought progresses, there is more available fuel that can contribute to fire intensity.

Evaluation of approximate index range values:

Zero to 200 -- soil moisture and large class fuel moisture are high and do not contribute much to fire intensity.

200 to 400 -- a near normal range but lower litter and duff layers are drying and beginning to contribute to fire intensity.

400 to 600 -- lower litter and duff layers activity contribute to fire intensity and will burn actively.

600 to 800 -- often associated with more severe drought with increased wildfire occurrence. Intense deep burning fires with significant downwind Spotting can be expected. Live fuels can also be expected to burn activity at these levels.

Reference: Keetch, John J. And Byram, George M., *A Drought Index For Forest Fire Control;* U.S. Department of Agriculture, Forest Service, research paper SE-38, November 1968.

The Low Visibility Occurrence Risk Index - LVORI

This index in useful in qualitatively estimating the likelihood of a vehicle accident occurring under a given set of conditions. This index can be ascertained by using the predicted nighttime DI and maximum RH, and the LVORI table. For reference see the following website::

http://www.erh.noaa.gov/gsp/fire/ADI_LVORI/ADI_LVORI.html

FORESTRY INTERNET LINKS:

NWS NATIONAL FIRE WEATHER PAGE
http://www.weather.gov/fire

NWS SOUTHERN REGION HDQTRS FIRE WEATHER PAGE
http://www.srh.noaa.gov/srh/cwwd/msd/firewx/index.htm

ROMAN RAWS OBS
http://raws.wrh.noaa.gov/roman

NATIONAL INTERAGENCY FIRE CTR
http://www.nifc.gov/

USFS SOUTHERN REGION
http://www.fs.fed.us/r8/

GEOGRAPHIC AREA COORDINATION CENTER
http://www.nifc.gov

SOUTHERN AREA COORDINATION CENTER
http://gacc.nifc.gov/sacc/

FLORIDA FOREST SERVICE HOME PAGE
http://www.floridaforestservice.com/index.html

FLORIDA FOREST SERVICE FORECAST ACCESS
http://www.floridaforestservice.com/fire_weather/forecasts.html

WEATHER INFORMATION MANAGEMENT SYSTEM
http://fam.nwcg.gov/fam-web/

WILDLAND FIRE ASSESSMENT SYSTEM
http://www.wfas.net/

GEORGIA FORESTRY COMMISSION
http://www.gfc.state.ga.us

ALABAMA FORESTRY COMMISSION
http://www.forestry.state.al.us

MISSISSIPPI FORESTRY COMMISSION
http://www.mfc.state.gov

NWS STORM PREDICTION CENTER
http://www.spc.noaa.gov/fire
(Fire Weather Outlooks)

NWS CLIMATE PREDICTION CENTER
http://www.cpc.ncep.noaa.gov/index.html
(Long term weather outlooks)

NATIONAL WILDFIRE COORDINATING GROUP
http://www.nwcg.gov

WIMS NFDRS Observation and Forecast points Florida

ID	Elev	Lat	Long
80802 BLOXHAM	100	30.3	84.6
81301 OLUSTEE	150	30.2	82.4
81302 EDDY TOWER	150	30.5	82.3
82001 WILMA	50	30.1	84.9
82002 SUMATRA	60	30.0	84.9
82201 SANBORN	74	30.0	84.5
83501 CENTRAL	61	29.1	81.6
83502 LAKE GEORGE	61	29.3	81.8
83702 LAKE WOODRUFF	32	29.1	-81.3
84802 LAKE WALES RIDGE	144	27.4	81.3
89901 BREVARD	14	28.2	-80.7
89902 FLAGLER	16	29.4	-81.3
89903 MONROE	3	25.4	-80.9
89904 ORANGE	83	28.5	-81.3
89905 ST. JOHNS	25	29.8	-81.4
89906 SEMINOLE	32	28.7	-81.2
89907 VOLUSIA	29	29.0	-81.1
89908 ESCAMBIA	126	30.7	-87.3
89909 FRANKLIN	6	29.8	-84.8
89910 HOLMES	128	30.8	-85.8
89911 LIBERTY	91	30.2	-84.8
89912 OKALOOSA	163	30.7	-86.5
89913 SANTA ROSA	121	30.7	-87.0
89914 WAKULLA	5	30.1	-84.4
89915 WALTON	201	30.6	-86.1
89916 WASHINGTON	118	30.6	-85.6
89917 BAY	45	30.2	-85.6
89918 CALHOUN	115	30.4	-85.1
89919 GADSDEN	159	30.5	-84.6
89920 GULF	16	29.9	-85.2
89921 JACKSON	131	30.7	-85.2
89922 CLAY	65	29.9	-81.8
89923 DIXIE	28	29.6	-83.1
89924 DUVAL	13	30.3	-81.6
89925 LAKE	113	28.7	-81.7
89926 NASSAU	18	30.6	-81.8
89927 SUMTER	30	28.7	-82.0
89928 JEFFERSON	114	30.4	-83.8
89929 LAFAYETTE	38	29.9	-83.1
89930 LEON	121	30.4	-84.2
89931 MADISON	104	30.4	-83.4
89932 TAYLOR	73	30.0	-83.5
89933 BAKER	116	30.3	-82.2
89934 BRADFORD	99	29.9	-82.1
89935 COLUMBIA	134	30.2	-82.6
89936 HAMILTON	103	30.4	-82.9
89937 SUWANNEE	105	30.2	-82.9

89938 UNION 127 30.0 -82.3
89939 ALACHUA 153 29.6 -82.3
89940 CITRUS 88 28.8 -82.4
89941 GILCHRIST 86 29.7 -82.7
89942 HERNANDO 90 28.5 -82.4
89943 LEVY 32 29.3 -82.7
89944 MARION 72 29.2 -82.0
89945 PASCO 74 28.3 -82.3
89946 PUTNAM 19 29.6 -81.7
89947 CHARLOTTE 27 26.9 -81.8
89948 DESOTO 52 27.1 -81.8
89949 HARDEE 82 27.4 -81.8
89950 HILLSBOROUGH 68 27.9 -82.3
89951 LEE 13 26.5 -81.7
89952 MANATEE 68 27.4 -82.2
89953 PINELLAS 23 27.9 -82.7
89954 POLK 107 27.9 -81.6
89955 SARASOTA 18 27.1 -82.3
89956 BROWARD 9 26.1 -80.4
89957 COLLIER 10 26.1 -81.3
89958 HENDRY 26 26.5 -81.1
89959 MIAMI-DADE 3 25.6 -80.5
89960 PALM BEACH 12 26.6 -80.4
89961 GLADES 24 26.9 -81.1
89962 HIGHLANDS 76 27.3 -81.3
89963 INDIAN RIVER 19 27.6 -80.6
89964 MARTIN 29 27.0 -80.4
89965 OKEECHOBEE 51 27.3 -80.8
89966 OSCEOLA 65 28.0 -81.1
89967 ST. LUCIE 20 27.3 -80.4

WIMS NFDRS Zone designators for Florida