

# FLORIDA ANNUAL OPERATING PLAN FOR FIRE WEATHER



# Operating Plan for Fire Weather Services in Florida

## ***April 2020 updates, A. Enyedi, NWS Jacksonville***

- FWF issuance refined to account for Key West 1x day issuance
- Updated Lightning Activity Level (LAL) – now includes LAL descriptor terms
- Included IMET request process for Prescribed Burns
- Updated NWS Melbourne Personnel & Internet Resources
- Updated FFS District Office Contact Numbers

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#### **I. Introduction and General Program Information**

Despite ongoing land development, Florida continues to have expansive areas of forests and undeveloped land. Preserves, parks, refuges and other publicly and privately owned lands are 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.

Land management agencies are concerned with the control of wildfire, as well as the use of fire as a management tool to protect life, property and economic interests. Critical to this mission is access to timely and accurate weather forecast information which is used in decision making for wildfire prevention, fire control, prescribed burning, and smoke management.

The Florida Annual Operating Plan will be the governing document for fire weather procedures and cooperation among the following agencies:

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

This Operating Plan conforms to the Interagency Agreement for Meteorological Services, last reviewed September 2017. Please refer to the following link to access the national agreement: [https://www.weather.gov/media/jax/pdf/Latest\\_National\\_Agreement\\_2017.pdf](https://www.weather.gov/media/jax/pdf/Latest_National_Agreement_2017.pdf)

The Florida Annual Operating Plan will be reviewed annually and revised as needed. The annual review and revision (if needed) may be rotated among the Florida NWS offices. The plan will be reviewed annually by the land management agencies, NWS regional and national headquarters, and NWS Florida offices.

### **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.

## **II. Service Area and Organizational Directory**

### **Forecast Areas**

Fire weather forecasts are provided for the state of Florida through the year from seven National Weather Service offices. These offices are located at Miami, Key West, Melbourne, Ruskin (Tampa Bay), Jacksonville, Tallahassee, and Mobile, Alabama. NWS forecast offices at Jacksonville, Tallahassee, and Mobile also have additional forecast areas of responsibility for areas bordering Florida into Georgia, Alabama, and Mississippi.

Fire weather forecast products are divided into zones. Most zones are counties, however, some counties have two or more forecast zones to better define forecast differences between inland and coastal areas.

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 wildland fire danger.

Under the supervision of the Meteorologist-In-Charge (MIC) at National Weather Service (NWS) 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 as the Fire Weather Program Leader and serves as the interagency liaison. The fire weather program leader serves as the NWS contact for land management agencies within each National Weather Service forecast office area of responsibility.

MICs should ensure an updated list of fire weather customers and users are included in the WFO station duty manual or other appropriate reference. Fire Weather Program Leaders and other designated NWS team members should lead fire weather outreach and coordination efforts within their area of forecast responsibility. The NWS Fire Weather Program Leader at each office must maintain regular contact with fire and land management agencies and help them assess meteorological needs. Fire Weather Program Leaders will inform fire weather customers of available NWS products and services. Fire and land management personnel are encouraged to visit their local NWS Forecast Offices to become familiar with NWS personnel, operations and services. Similarly, NWS forecast staff are encouraged to visit land management agencies and operational sites (including observing prescribed burns and visiting Remote Automated Weather Station (RAWS)).

#### **NWS forecast zones and zone number:**

##### **Mobile, AL**

Inland Escambia	201	Coastal Escambia	202
Inland Santa Rosa	203	Coastal Santa Rosa	204
Inland Okaloosa	205		
Coastal Okaloosa 206 (includes Eglin AFB Okaloosa portion)			

##### **Tallahassee**

Inland Walton	7	Central Walton	8
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	Coastal Dixie	134
Inland Dixie	34	(includes Apalachicola National Forest)	
South Walton	108	(includes Eglin AFB Walton portion)	

### **Jacksonville**

Hamilton	20	Suwannee	21
Northern Columbia	122	Baker	23
Southern Columbia	222	Union	30
Inland Nassau	24	Coastal Nassau	124
Inland Duval	25	Coastal Duval	125
Bradford	31	Clay	32
Western Alachua	236	Eastern Alachua	136
Inland St Johns	33	Coastal St. Johns	133
Gilchrist	35	Putnam	37
Inland Flagler	38	Coastal Flagler	138
Western Marion	340	Central Marion	240
Eastern Marion	140		

### **Key West**

Monroe Upper Keys	76	Monroe Middle Keys	77
Monroe Lower Keys	78		

### **Melbourne**

Interior Volusia	41	Coastal Volusia	141
North Lake	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		

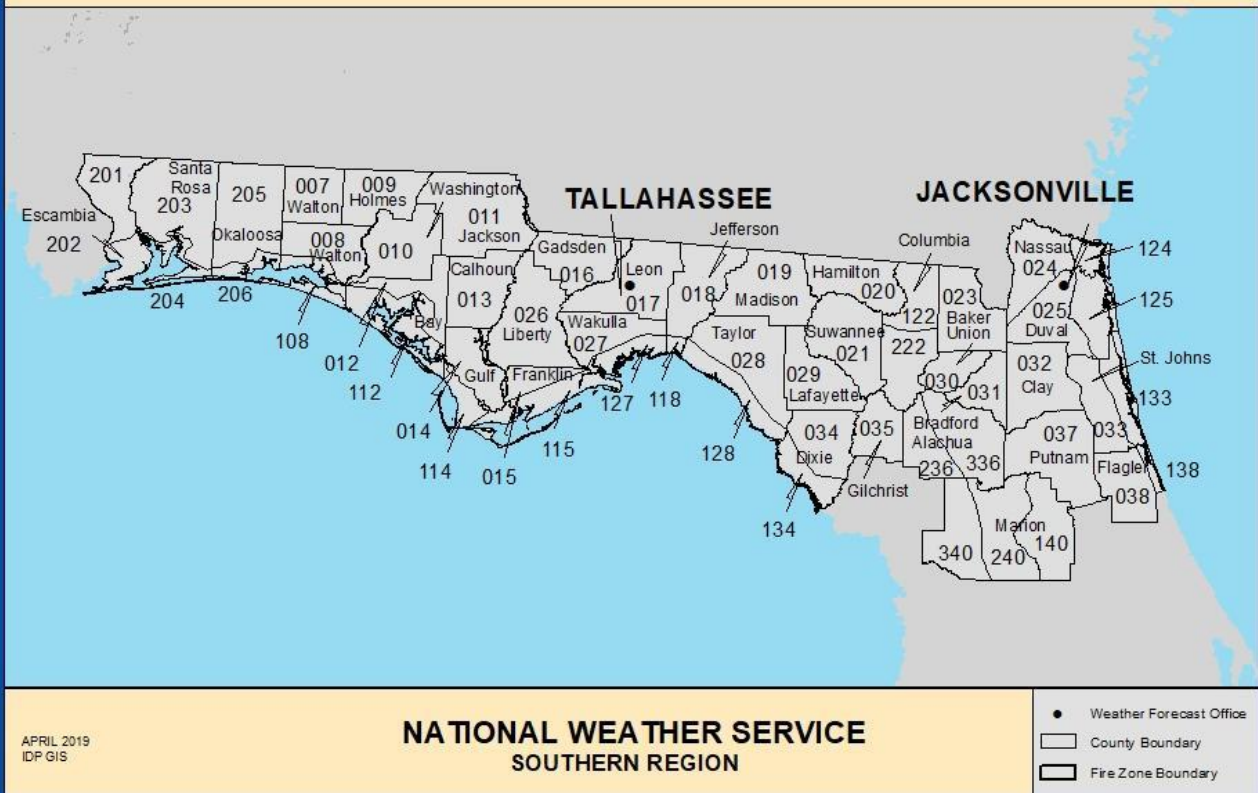
## **Tampa Bay Ruskin**

Inland Levy	239	Coastal Levy	139
Inland Citrus	242	Coastal Citrus	142
Sumter	43	Inland Hernando	248
Coastal Hernando	148	Inland Pasco	249
Coastal Pasco	149	Pinellas	50
Inland Hillsborough	251	Polk	52
Coastal Hillsborough	151	Inland Manatee	255
Coastal Manatee	155	Hardee	56
Highlands	57	Inland Sarasota	260
Coastal Sarasota	160	Desoto	61
Inland Charlotte	262	Coastal Charlotte	162
Inland Lee	265	Coastal Lee	165

## **Miami**

Glades	63	Inland Palm Beach	67
Metro Palm Beach	68	Coastal Palm Beach	168
Coastal Collier	69	Inland Collier	70
Coastal Broward	172	Inland Broward	71
Metro Broward	72	Inland Miami Dade	73
Metro Miami Dade	74	Coastal Miami Dade	173
Far south Miami Dade	174	Hendry	66
Mainland Monroe	75	(includes Everglades N.P. & Big Cypress Ntl.Preserve)	

## FLORIDA FIRE WEATHER ZONE BOUNDARIES



<https://www.weather.gov/pimar/FireZones>



# FLORIDA

## FIRE WEATHER ZONE BOUNDARIES



<https://www.weather.gov/pimar/FireZones>

## **National Weather Service Contacts**

### **Southern Region Headquarters National Weather Service**

Meteorologist: Paul Witsaman, Regional Fire Weather Program Leader  
Email: paul.witsaman@noaa.gov  
Internet home page [www.weather.gov](http://www.weather.gov)

Mailing Address: NWS - Southern Region Headquarters  
Fire Weather Program Leader  
Paul Witsaman W/SR11x2  
819 Taylor Street Room 10A06  
Fort Worth, TX 76102

Telephone: 817- 978-1100 x116  
8AM - 4PM CST Mon-Fri (Except Federal Holidays)

### **Mobile/Pensacola National Weather Service, North Florida**

Meteorologists: Jeff Medlin, Meteorologist In Charge  
John Purdy, Fire Weather Program Leader  
Jason Beaman, Warning Coordination Meteorologist  
Internet Page: [www.weather.gov/mob](http://www.weather.gov/mob)

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)  
251-406-8612 Fax

#### **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, North Florida**

Meteorologists: Tom Johnstone, Meteorologist in Charge  
Tim Barry, Fire Weather Program Leader  
Mark Wool, Warning Coordination Meteorologist

Internet Page: [www.weather.gov/tae](http://www.weather.gov/tae)

Mailing Address: National Weather Service  
Love Building Florida State University  
Tallahassee, FL 32306-4509

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

### **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, Northeast Florida**

Meteorologists: Scott Cordero, Meteorologist in Charge  
Angie Enyedi, Fire Weather Program Leader/IMET  
Al Sandrik, Warning Coordination Meteorologist

Internet Page: [www.weather.gov/jax](http://www.weather.gov/jax)

Mailing address: National Weather Service  
13701 Fang Drive  
Jacksonville, FL 32218

Telephone: 904-741-4411 ext. 1 (24 hours)  
904-741-0078 Fax

### **Counties of Responsibility:**

- Florida: Alachua, Columbia, Hamilton, St Johns, Baker, Duval, Marion, Suwannee, Bradford, Flagler, Nassau, Union, Clay, Gilchrist, Putnam.
- Georgia: Appling, Camden, Echols, Ware, Atkinson, Charlton, Glynn, Wayne, Bacon, Clinch, Jeff Davis, Brantley, Coffee, Pierce

## **Tampa Bay Area - Ruskin National Weather Service, Peninsula Florida**

Meteorologists: Brian LaMarre, Meteorologist In Charge  
Rodney Wynn, Fire Weather Program Leader  
Rick Davis, IMET  
Dan Noah, Warning Coordination Meteorologist

Internet Page: [www.weather.gov/tbw](http://www.weather.gov/tbw)

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

Telephone: 813-645-2323 24 Hour  
813-641-2619 Fax

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

## **Melbourne National Weather Service, Peninsula Florida**

Meteorologists: Dave Sharp, Meteorologist In Charge  
John Pendergrast, Fire Weather Program Leader/IMET  
Scott Spratt, Warning Coordination Meteorologist

Internet Page: [www.weather.gov/mlb](http://www.weather.gov/mlb)

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

Counties of Responsibility: Florida: Lake, Volusia, Seminole, Orange, Brevard, Osceola, Indian River, Saint Lucie, Martin, Okeechobee

## **Miami National Weather Service, Peninsula Florida**

Meteorologists: Dr. Pablo Santos, Meteorologist In Charge  
Steven Ippoliti, Fire Weather Program Leader/IMET  
Rob Molleda, Warning Coordination Meteorologist

Internet Page: [www.weather.gov/mfl](http://www.weather.gov/mfl)

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

Telephone numbers: 305-229-4525 24 Hour  
305-229-4553 Fax

Counties of Responsibility: Florida: Broward, Collier, Miami-Dade, Glades, Hendry, Monroe (Mainland), Palm Beach

## **Key West National Weather Service, Florida Keys**

Meteorologists: Chip Kasper, Meteorologist In Charge  
Andy Haner, Fire Weather Program Leader  
Jon Rizzo, Warning Coordination Meteorologist

Internet home page: [www.weather.gov/key](http://www.weather.gov/key)

Mailing address: National Weather Service  
1315 White Street  
Key West, FL 33040

Telephone numbers: 305-295-1316 24 hour  
305-296-2011 Fax

Counties of Responsibility: Florida: Monroe Keys

## Florida Forest Service District Offices

1-Blackwater	850-957-5701
2-Chipola	850-373-1801
4-Tallahassee	850-681-5951
5-Perry	850-223-0751
6-Suwannee	386-243-6243
7-Jacksonville	904-266-8351
8-Waccasassa	352-395-4951
10-Bunnell	386-585-6151
11-Withlacoochee	352-797-4100
12-Orlando	407-888-8760
14-Lakeland	863-940-6701
15-Myakka	941-213-6970
16-Okeechobee	863-467-3221
17-Caloosahatchee	239-690-8001
18-Everglades	954-453-2800



<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Our-Forests/Field-Operations>

### **III. National Weather Service Products & Services**

#### **Florida Seasonal Fire Weather Concerns**

The primary fire weather season for Florida prevails 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 in the spring is a wildfire ignition threat when fuel and soil moisture are low. Seasonally high dispersion values occur on many spring afternoons due to higher sun angles and breezy wind across dry fuels. Summer through early autumn is normally a lower wildfire threat period as fuel moisture is high due to the warm "rainy" season.

#### **National Weather Service 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.

Each Florida National Weather Service forecast office issues fire weather products for their fire weather service area, including the following (Reference [NWSI 10-401](#)):

- A. Fire Weather Planning Forecast (FWF)**
- B. National Fire Danger Rating System (NFDRS) Forecast (FWM)**
- C. Spot Forecast (FWS)**
- D. Fire Weather Watch and/or Red Flag Warnings (RFW)**

#### **A. Fire Weather Planning Forecast (FWF)**

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.

The Fire Weather Planning Forecast provides an average of expected 36 to 48 hour weather conditions across a given zone. Zones are typically a county, or a section of a county. During daylight hours, forecasted elements should reflect conditions expected for periods of highest fire ignition potential, typically during the mid to late afternoon hours.

## Fire Weather Planning Forecast Issuance

The Fire Weather Planning Forecast is issued year-round, at least twice a day. The product breaks down average forecast elements for a particular zone that includes a headline, weather synopsis, and five to seven day extended forecast outlook. The early morning Fire Weather Forecast (FWF) is the 36 hour (today/tonight/tomorrow) planning forecast. Scheduled issuance is no later than 0730 am Eastern time (0630 am Central). The mid-afternoon Fire Weather Forecast is a 48 hour (tonight/tomorrow/tomorrow night/following day). Scheduled issuance is no later than 1545 pm Eastern time (1445 pm Central).

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

Today:	6 am to 6 pm	Tonight:	6 pm to 6 am
Tomorrow:	6 am to 6 pm	Tomorrow night:	6 pm to 6 am
Following day:	6 am to 6 pm		

## Fire Weather Planning Forecast Content

**Headline:** An overview headline, before the weather discussion, 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 headlines from the weather discussion. Headlines will be included above in each appropriate zone grouping, if needed. A headline will also be included when the maximum dispersion (LDSI) is greater than 75 for areas away from the coast, or the maximum is less than 20 during the day. At night, a headline will be included if the Minimum dispersion is greater than 10.

**Weather discussion:** This discussion is a brief, plain language narrative of the weather pattern as it pertains to the forecast zones in the product with 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. This will include dispersion when the dispersion index is 75 or higher or when daytime dispersion is 20 units or lower. It will also include a statement regarding the expectation of fog formation over the next 48 hours.

**Zone Forecast Tabular Content:** Forecast zone numbers will be followed by a county name that corresponds to that particular zone number. Below, a tabular forecast with average weather parameters across the entire zone will appear for each 12-hr time block. Forecast parameters and details are below.



**Extended forecast:** A 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.

**Fire Weather Planning Forecast Tabular Content and Decode:**

Forecast weather parameters will be defined by element wording down the left margin of each zone grouping with the descriptor that best describes the 12-hour forecast period across the zone. Weather parameters are defined as follows:

1. **Cloud cover** (descriptions may be abbreviated): Clear, mostly clear, partly cloudy, mostly cloudy, cloudy
2. **Weather type** (descriptions may be abbreviated): None, freezing rain, fog, drizzle, rain, snow/rain showers, snow, thunderstorms.

**Definitions of weather type:**

- a. Fog: Large mass of water vapor condensed to fine particles, at or near the ground, obscuring visibility.
  - b. Drizzle: Mist, very small water droplets that appear to float when falling.
  - c. Rain: Steadily falling small to medium sized water droplets.
  - d. Shower: Medium to large water drops that begin or end abruptly. No thunder.
  - e. Thunderstorm: Heavy or violent downpour of large water drops accompanied with lightning and most often with gusty winds or possibly hail.
  - f. Freezing rain: Liquid precipitation that freezes upon contact with ground surfaces or vegetation.
  - g. Snow/rain: Rain changing to snow or snow changing to rain.
  - h. Snow: Flakes of frozen crystalline precipitation.
3. **Chance of precipitation:** The probability of measurable (0.01 inch or more) of water equivalent at any point in the zone that has no relationship to the amount of precipitation that could occur, during the 12-hr forecast period. During the warm season, the value can be thought of as an expected areal coverage of precipitation across a zone. Chance of precipitation will range from 0-100%.
  4. **Temperature (Maximum & Minimum):** The dry bulb (ambient air) temperature measured at a standard six feet above the ground in degrees Fahrenheit. Maximum temperature is defined as the highest value expected across a forecast zone, usually occurring during the mid-afternoon. Minimum temperature is defined as the “average”\* lowest value expected within a forecast zone, usually occurring just prior to sunrise. Forecast temperatures can range across a given 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 will be preceded by a minus sign. Some offices will include a 24-hr temperature trend.
  5. **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. Some offices will include a 24-hr relative humidity trend.

6. **Wind speed and direction (AM and PM) (20 feet) Gusts (optional):** The prevailing or average direction and speed from which the wind is blowing at the 20-foot level above the open ground or 20 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.
7. **Precipitation:** Amounts pertain to an average precipitation expected. But for showery situations, particularly during the summer months, local amounts can vary considerably.
8. **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.
9. **Timing of Precipitation (local time):** Indicates 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.
10. **Lightning Activity:** Equates cloud to ground lightning to the coverage of thunderstorms within each forecast zone:

**LAL Number & Term**

**Descriptor**

<b>1 - No Lightning</b>	No thunderstorms forecast.
<b>2- Isolated Strikes</b>	Isolated thunderstorms. Lightning infrequent to occasional. 1 to 5 cloud to ground strikes within 5 minutes.
<b>3 to 4 - Scattered</b>	Scattered Thunderstorms. Lightning more frequent. 6 to 15 cloud to ground strikes within 5 minutes
<b>5 - Numerous</b>	Numerous Thunderstorms. Lightning frequent. May be intense. > 15 cloud to ground strikes within 5 minutes.
<b>6- Dry Lightning</b>	Not used in Florida.

11. **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.

12. **Transport Wind Direction and Speed:** The average wind direction and speed 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 (generally refers to the rate at which smoke emissions will be horizontally transported from one area to another). Values are in miles an hour.

13. **Dispersion Index (DI):** An index used as a guide for atmospheric instability and smoke management.

**Lavdas Dispersion Index (LDSI):** Used in Florida for dispersion calculation and refers to atmospheric processes that mix and transport particulate (smoke) away from a source both horizontally via the wind and vertically via stability. The LDSI is predominantly weighted to, and directly proportional to, values of the mixing height and transport wind. LDSI 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, thus, with good management, neither smoke nor fire will be a hazard. High index values imply an extremely unstable atmosphere which could contribute to increased incidence of wildfire and large fire growth. Low values of the index imply poor dispersion of smoke.

A Dispersion Index of 75 or greater shall be headlined in the discussion portion of the Fire Weather Forecast (FWF). A daytime dispersion of 20 units or lower will also be headlined in the FWF.

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

**Daytime Dispersion Value      Florida Forest Service Descriptors**

<b>&gt;80 units</b>	Excellent. Control problems expected.
<b>61-80</b>	Very Good. Control problems likely > 75 units.
<b>41-60</b>	Generally Good.
<b>21-40</b>	Poor to Fair. Stagnation may occur if accompanied by low wind speeds.
<b>0-20</b>	Poor. Stagnant if persistent.

**Nighttime Dispersion Value      Florida Forest Service Descriptors**

<b>0-2</b>	Poor.
<b>3-4</b>	Poor to fair.
<b>5-8</b>	Good.
<b>9+</b>	Very Good.

14. **The Low Visibility Occurrence Risk Index - LVORI:** This index is a measure of the risk of low visibility occurring. The risk dramatically increases when relative humidity is high and dispersion is low. This index is used to qualitatively estimate the likelihood of a vehicle accident due to poor visibility from ground smoke or fog, or a combination of both. This index can be ascertained by using the predicted nighttime DI, maximum RH, wind and the LVORI table:

Relative humidity	Dispersion Index											
	> 40	40-31	30-26	25-17	16-13	12-11	10-9	8-7	6-5	4-3	2	1
< 55	1	1	2	2	2	2	2	2	2	2	2	2
55-59	1	1	2	2	2	2	2	3	3	3	3	3
60-64	1	1	2	2	2	2	3	3	3	3	3	3
65-69	1	3	3	3	3	3	3	3	3	3	3	4
70-74	3	3	3	3	3	3	3	3	3	3	3	4
75-79	3	3	3	3	4	4	4	4	4	4	4	4
80-82	3	3	3	3	4	4	4	4	4	5	5	6
83-85	4	4	4	4	4	4	4	4	5	5	5	6
86-88	4	4	4	4	4	5	5	5	5	6	6	6
89-91	4	4	4	4	5	5	5	5	6	6	7	7
92-94	4	4	4	5	5	5	6	6	6	6	7	8
95-97	4	4	4	5	5	6	6	6	7	8	8	9
> 97	4	4	4	5	5	7	8	8	9	9	10	10

For reference see the following websites: [http://ncforestservice.gov/fire\\_control/fc\\_lvori.htm](http://ncforestservice.gov/fire_control/fc_lvori.htm)  
<http://www.weather.gov/images/gsp/fire/LVORI.jpg>

15. **Remarks:** Include appropriate remarks that add value, mark significant or pertinent weather changes, or other information. Insert 'none' if none.

## Example: Morning Fire Weather Planning Forecast (FWF)

Fire Weather Planning Forecast for East Central Florida  
National Weather Service Melbourne FL  
437 AM EDT Fri Apr 13 2018

.Discussion...Southeasterly surface and transport winds will prevail into the weekend as high pressure over the west Atlantic remains in control of the local weather pattern. The onshore flow will keep relative humidity above critical levels, though areas along and north of the I-4 Corridor may fall below 40 percent for a few hours. A strong cold front is expected to sweep through central Florida late Sunday afternoon through Sunday night. A squall line is expected to precede the front, bringing the potential for strong thunderstorms and heavy rain late Sunday into early Monday.

Fog potential and other remarks...No significant fog is anticipated at this time.

FLZ041-044-144-132115-

Inland Volusia County-Northern Lake County-Southern Lake County-  
Including the cities of Debary, Deland, Deltona, Eustis,  
Mount Dora, Leesburg, Tavares, Clermont, Mascotte, and Groveland  
437 AM EDT Fri Apr 13 2018

	Today	Tonight	Sat
Cloud cover	MClear	MClear	PCldy
Chance precip (%)	0	0	0
Precip type	None	None	showers
Temp	85	64	89
RH %	36	99	38
20ft Wnd mph (AM)	SE 5		SE 5
20ft Wnd mph (PM)	SE 7	E 7	SE 8
Precip duration			
Precip begin			
Precip end			
Precip amount	0.00	0.00	0.00
LAL	1	1	1
Mixing hgt (ft-AGL)	5600	300	5500
Transport wind (mph)	SE 12	SE 21	SE 13
Dispersion index	78	0	78
Max LVORI		10	

Remarks...None.

.Forecast for Days 3 through 5...

.SUNDAY...Showers and scattered thunderstorms. Lows around 70. Highs in the mid 80s. East winds around 10 mph.

.MONDAY...Partly cloudy. Showers likely and a chance of thunderstorms. Not as warm. Lows in the upper 50s. Highs in the mid 70s. Southwest winds around 10 mph.

.TUESDAY...Clear. Lows in the upper 40s. Highs in the mid 70s. West winds around 5 mph.

## Example: Afternoon Fire Weather Planning Forecast (FWF)

Fire Weather Planning Forecast for East Central Florida  
National Weather Service Melbourne FL  
218 PM EDT Fri Apr 13 2018

.Discussion...Southeasterly surface and transport winds will prevail into the weekend as high pressure over the west Atlantic remains in control of the local weather pattern. The onshore flow will keep relative humidity above critical levels, though areas along and north of the I-4 Corridor may fall below 40 percent for a few hours. A strong cold front is expected to sweep through central Florida Sunday night. A squall line is expected to precede the front, bringing the potential for strong thunderstorms and heavy rain late Sunday into early Monday.

Fog potential and other remarks...No significant fog is anticipated at this time.

FLZ041-044-144-141100-

Inland Volusia County-Northern Lake County-Southern Lake County-  
Including the cities of Debary, Deland, Deltona, Eustis,  
Mount Dora, Leesburg, Tavares, Clermont, Mascotte, and Groveland  
218 PM EDT Fri Apr 13 2018

	Tonight	Sat	Sat Night	Sun
Cloud cover	MClear	PCldy	PCldy	MCldy
Chance precip (%)	0	20	0	80
Precip type	None	showers	None	tstms
Temp	64	88	68	82
RH %	99	41	97	56
20ft Wnd mph (AM)		Lgt/Var		S 10 G23
20ft Wnd mph (PM)	E 7	SE 7	SE 6	S 14 G24
Precip duration		1		5
Precip begin		11 AM		8 AM
Precip end		6 PM		Continuing
Precip amount	0.00	0.01	0.00	0.42
LAL	1	1	1	3
Mixing hgt (ft-AGL)	300	5400	300	4100
Transport wind (mph)	E 7	S 10	SE 14	S 31
Dispersion index	2	69	3	104
Max LVORI	8		6	

Remarks...None.

.Forecast for Days 3 through 5...

.MONDAY...Partly cloudy. Lows in the upper 50s. Highs in the mid 70s.  
Northwest winds around 10 mph.

.TUESDAY...Clear. Lows in the upper 40s. Highs in the mid 70s.  
Variable winds around 5 mph.

.WEDNESDAY...Clear. Lows in the mid 50s. Highs in the lower 80s.  
Southeast winds around 5 mph.



## **B. National Fire Danger Rating System (NFDRS) Forecast (FWM)**

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.

### **NFDRS Forecast Content and Decode:**

The National Fire Danger Ratings System (NFDRS) forecast (FWM) is a 24-hour site specific digital forecast for numerous locations across the state (1300-1300 LST). NFDRS forecast issuance times are dependent on the arrival of the observations in the FWO product.

Format:

**FCST,081301,180418,13,0,85,27,1,1,SW,08,M,85,49,96,27,0,0,N A, B, C, D,  
WX,T,RH,LAL,TL,DD,FF,F,TX,TN,RX,RN,P1,P2,WF**

**A.** Indicates forecast is for NFDRS zone or individual station. FCST = station, ZONE = forecast zone (ex: FCST). Refers to federal observing sites: First two digits are state code (Florida 08), next two digits are USFS county ID, last two digits are site number.

**B.** NFDRS Station Number or Zone Number (ex: 08301)

**C.** Year, month, and day valid forecast time (ex: 180418)

**D.** Always 1300 LST

**WX:** State of weather 1300 tomorrow (ex: 0): State of weather - single digit, 0-9:

- 1 Clear (less than 1/10 cloud cover)
- 2 Scattered clouds (1/10 to 5/10)
- 3 Broken clouds (6/10 to 9/10)
- 4 Overcast (more than 9/10 clouds)
- 5 Fog
- 6 Drizzle
- 7 Rain
- 8 Snow or Sleet
- 9 Showers
- 10 Thunderstorm

**T:** Temperature 1300 tomorrow in degrees Fahrenheit (ex: 85)

**RH:** Relative humidity 1300 tomorrow in percent (ex: 27)

**LAL:** Lightning Activity Level 1400 LST to 2300 LST.  
Reference LAL definitions in previous section “Fire Weather Planning Forecast”

**TL:** Lightning Activity Level 2300 LST to 2300 LST.

**DD:** Wind direction 20 ft 1300 LST tomorrow (ex: SW)

**FF:** Wind speed 20 ft 1300 LST tomorrow. In canopy, usually about 70% of zone forecast value (ex: 8)

**F:** Fuel stick (not forecast). 10-hr time lag fuel moisture. Normally coded as M (missing) since computation is made by WIMS computer for DSPW and DSPI products (ex: M)

**TX:** Max 24-hr temperature 1300 today to 1300 tomorrow, up to 136 ° F (ex: 85)

**TN:** Min 24-hr temperature 1300 today to 1300 tomorrow, down to -100 ° F (ex: 49)

**RX:** Max 24-hr humidity 1300 today to 1300 tomorrow (ex: 96)

**RN:** Min 24-hr humidity 1300 today to 1300 tomorrow (ex: 27)

**P1:** Precipitation duration in hours 1300 LST today through 0500 LST tomorrow. One or two digits in hours (00 to 08). Reserve for rain areal coverage of 70% or higher (ex: 0)

**P2:** Precipitation duration 0500 LST through 1300 LST tomorrow (ex: 0)

**WF:** Wet flag (Y/N). Indicates if liquid water will be on fuels at 1300 tomorrow. Reserve **y** for greater than 70% areal coverage of wetting rain in amounts greater than one tenth inch, otherwise **y** resets fire danger indices to zero. (ex: N)



## Example: NFDRS Planning Forecast (FWM)

000

FNUS82 KTAE 161845

FWMTAE

FCST,082201,180417,13,0,72,30,1,1,WNW,02,M,72,43,76,28,0,0,N  
FCST,080802,180417,13,0,72,29,1,1,NW,03,M,72,43,76,29,0,0,N  
FCST,082001,180417,13,0,72,31,1,1,WNW,02,M,73,43,82,29,0,0,N  
FCST,082002,180417,13,0,72,33,1,1,WNW,02,M,72,43,86,32,0,0,N  
FCST,098201,180417,13,0,67,39,1,1,W,06,M,67,45,82,37,0,0,N  
FCST,098401,180417,13,0,66,37,1,1,W,09,M,67,45,82,36,0,0,N  
FCST,089909,180417,13,0,71,33,1,1,W,02,M,71,44,79,32,0,0,N  
FCST,089910,180417,13,0,71,34,1,1,W,03,M,71,44,86,32,0,0,N  
FCST,089911,180417,13,0,73,29,1,1,WNW,02,M,73,42,82,28,0,0,N  
FCST,089914,180417,13,0,71,30,1,1,WNW,02,M,72,44,73,29,0,0,N  
FCST,089915,180417,13,0,71,32,1,1,W,04,M,71,44,82,32,0,0,N  
FCST,089916,180417,13,0,71,34,1,1,W,03,M,71,45,82,34,0,0,N  
FCST,089917,180417,13,0,71,34,1,1,W,04,M,71,47,79,32,0,0,N  
FCST,089918,180417,13,0,71,32,1,1,WNW,03,M,71,44,82,32,0,0,N  
FCST,089919,180417,13,0,70,31,1,1,WNW,05,M,70,44,79,31,0,0,N  
FCST,089920,180417,13,0,71,35,1,1,W,02,M,71,45,83,34,0,0,N  
FCST,089921,180417,13,0,70,35,1,1,W,03,M,71,45,83,34,0,0,N  
FCST,089923,180417,13,0,70,27,1,1,WNW,03,M,70,43,86,27,0,0,N  
FCST,089928,180417,13,0,68,34,1,1,WNW,02,M,69,44,79,33,0,0,N  
FCST,089929,180417,13,0,70,30,1,1,NW,04,M,70,41,89,29,0,0,N  
FCST,089930,180417,13,0,70,33,1,1,WNW,02,M,70,44,76,32,0,0,N  
FCST,089931,180417,13,0,69,32,1,1,WNW,03,M,69,44,82,32,0,0,N  
FCST,089932,180417,13,0,69,32,1,1,WNW,05,M,69,44,86,32,0,0,N  
FCST,082202,180417,13,0,69,35,1,1,WNW,02,M,69,46,76,31,0,0,N  
FCST,082203,180417,13,0,71,33,1,1,W,02,M,71,45,76,28,0,0,N

## C. Spot Forecast (FWS)

Site specific, spot forecasts, are issued by National Weather Service offices in support of wildfire suppression and natural resource management. These forecasts help land management and fire control agencies protect life and property during wildland fires and prescribed burns. Spot forecasts are also utilized for hazardous materials incidents and other potential threats to public safety influenced by weather.

The Spot Forecast is a non-routine, user requested product that includes a site specific forecast for an incident. The product includes a headline, weather discussion focused on the next 12-24 hours, and an incremental tabular forecast.

### Requesting a NWS SPOT Forecast

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

**For non-wildfire purposes**, 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 represents that 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 <https://www.dhs.gov/publication/homeland-security-presidentialdirective-5> related activities.

The Internet based NWS Spot program is used for requesting and issuing spot forecasts and should be used when possible: [www.weather.gov/spot](http://www.weather.gov/spot)

The spot forecast may be requested immediately or scheduled for a future date and time.

If Internet access is unavailable, spot forecasts may be requested and disseminated by telephone or fax.

Spot forecasts should normally be available within 30 minutes of the requested deliver time with typically no more than a 60 minute deadline. 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 of severe weather warnings.

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

1. Nature or reason of fire (wildfire or prescribed burn)
2. Name of fire
3. Name and phone number of control agency and/or representative
4. Location of the fire (latitude/longitude)
5. Size of fire or project (acres)
6. 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. Please include additional information which would help the forecaster prioritize the request such as a threat to structures, the public, fire operations, or unusual fire behavior.

User feedback is encouraged regarding the spot forecast to the NWS forecast office that issued the product, preferably substantiated by on-site observations. If the forecast does not reasonably match observed conditions, please call the forecast office and request to discuss the situation and/or to request an updated spot forecast.

#### **NWS Spot Forecast content:**

The text Spot Forecast (FWS) product will contain the name of the incident, the issuing National Weather Service Office, the time and date of spot forecast issuance and the following:

**Headline:** For watch/warning criteria weather discussion.

**Weather parameters:** For the first 12 hours will include a 1-2 hour time incremental breakup of: sky, weather, chance of precipitation, temperature, RH, and 20 ft wind. Optional elements may be forecast such as mixing height, transport winds, and atmospheric dispersion.

**Outlook Forecast:** Typically overnight with abbreviated weather information. Outlook for next day typically with abbreviated weather information.

## Example: Spot Weather Forecast (FWS)

Forecast is based on ignition time of 1000 EDT on April 18.  
If conditions become unrepresentative...contact the National Weather Service.

Please contact our office at (904) 741-4370, if you have questions or concerns with this forecast.

.DISCUSSION...Warmer today, critically dry this afternoon with breezy southwest winds. Gusts will near 15 mph late this afternoon. East coast sea breeze not expected to impact the burn site today.

.REST OF TODAY...

TIME (EDT)	10A	11A	12P	1PM	2PM	3PM	4PM	5PM
Temp.....	69	76	80	83	86	87	87	86
RH.....	49	39	33	28	25	24	25	27
20 FT wind dir..	SW	SW	SW	SW	SW	SW	SW	SW
20 FT wind spd..	5	5	6	6	7	7	8	8
20 FT wind gust..	7	7	8	8	10	10	11	11
Mix hgt (kft)...	0.7	0.9	1.8	2.8	3.7	3.8	3.9	4.0
Transp wind dir..	SW	SW	SW	SW	SW	SW	SW	SW
Transp wind spd..	3	6	7	8	9	10	12	12
LVORI.....	2	2	2	2	1	1	1	1

.TONIGHT...

TIME (EDT)	6PM	7PM	8PM	9PM	10P	11P	MID	1AM	2AM	3AM	4AM	5AM
Temp.....	84	80	75	71	68	66	65	63	62	60	59	58
RH.....	29	34	41	47	54	61	60	67	67	72	75	80
20 FT wind dir..	SW	SW	W	SW	SW	SW	SW	SW	SW	SW	SW	SW
20 FT wind spd..	8	7	5	3	3	3	3	2	3	3	3	3
20 FT wind gust..	11	10	7	6	5	5	5		5	5	5	5
Mix hgt (kft)...	2.8	1.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Transp wind dir..	SW	W	W	W	SW	SW	SW	SW	SW	SW	SW	SW
Transp wind spd..	10	8	6	5	3	2	2	3	3	3	3	3
LVORI.....	1	2	2	2	2	3	3	4	3	3	4	5

## Requesting Hysplit Model Run

Government agencies may also request a Hysplit model run for chemical release and/or smoke dispersion. To request HYSPLIT forecast model trajectories from NWS Spot forecast request webpages, the authorized user must click on the box in the spot forecast request. The HYSPLIT trajectory raw data, as well as ".gif" (image) and ".kmz" (geocoded) files, will be sent to the specified email address.

For more information concerning HYSPLIT: [http://www.arl.noaa.gov/HYSPLIT\\_info.php](http://www.arl.noaa.gov/HYSPLIT_info.php)

## 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://spotweather.freshfromflorida.com/>

## **D. Fire Weather Watch and/or Red Flag Warnings (RFW)**

Fire Weather Watch and Red Flag Warning products inform land management agencies of critical weather factors and fuel conditions that could support extreme fire danger and/or behavior and thus threaten life and property. These products can alert to the potential for widespread new ignitions or control problems with existing fires.

Weather and fuel definition for the issuance of a Red Flag Warning is coordinated in advance with land management agencies and users within the state of Florida.

Critically dry fuels in Florida are highly dependent on one hour fuel moisture, which is directly determined by the relative humidity; therefore, critically dry relative humidity is equivalent to critically dry fuels.

Florida is divided into two geographic areas for Red Flag criteria; North Florida and Peninsula Florida. North Florida includes all zones within the NWS Mobile, NWS Tallahassee, and NWS Jacksonville service areas. The southernmost counties within 'North Florida' include Dixie, Gilchrist, Alachua, Marion, Putnam, and Flagler. All areas south of these counties are known as Peninsula Florida.

In coordination with land management agencies including the Florida Forest Service, U.S. Fish and Wildlife, National Park Service, Bureau of Indian Affairs, and other federal, state or local government agency with fire weather concerns, Red Flag events will be defined as the following:

### **North Florida Red Flag Criteria:**

Relative humidity < 28% and sustained 20-ft winds of > 15 mph occurring with Energy Release Components of  $\geq 26$  units.

### **Peninsula Florida Flag Criteria:**

Relative humidity < 35% and sustained 20-ft winds of > 15 mph occurring with Energy Release Components of  $\geq 27$  units.

The Energy Release Component for each forecast zone is extracted from the Florida Forest Service website: <http://currentweather.freshfromflorida.com/fdi-report.html>

NOTE: The Red Flag criteria is based on RH < 10<sup>th</sup> percentile and the ERC value < 25<sup>th</sup> percentile. The percentiles were determined based on climatology and restricting the dataset to the 90<sup>th</sup> percentile of fire activity by acreage burned for each region, yielding the worst weather from the worst fires. This climatology will consist of at least 40 years of fire and weather data, and will be reexamined periodically to ensure the proper breakpoints are being used.



## Fire Weather Watch & Red Flag Warning Issuance

A Fire Weather Watch is issued when there is high confidence for a Red Flag event, usually within the next 18-96 hours. A Fire Weather Watch is not issued within the first 12 hrs of forecast issuance. Although it is desirable for a Fire Weather Watch to precede a Red Flag Warning, as watch is not a prerequisite for a Red Flag Warning. A Fire Weather Watch will remain in effect until the forecast office determines that either the Red Flag event will not occur or that the Fire Weather Watch should be upgraded to a Red Flag Warning. A red flag warning will be in effect until the warning is cancelled or expires.

When a Fire Weather Watch or Red Flag Warning is issued, the event shall be headlined in subsequent NWS fire weather forecasts for the impacted zone, including the Fire Weather Planning Forecast (FWF) and Spot Forecasts (FWS). The exception is headlines are omitted from the NFDRS forecasts (FWM).

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

If an unforeseen Red Flag conditions develop, a Red Flag Warning will be issued and an updated Fire Weather Planning Forecast (FWF) with the appropriate headline should be issued. Notify the impacted FFS and affected federal agency dispatch offices impacted by the newly issued Red Flag Warning.

## Fire Weather Watch & Red Flag Warning Content

The Fire Weather Watch and Red Flag Warning format will include segmented forecast information, and may contain an overview section, for each zone or zone combination expected to experience Red Flag conditions.

**Overview:** This section is optional. The overview will summarize the fire weather threat, onset time, reason for Red Flag issuance and area affected.

**Discussion:** A brief, non-technical discussion of the expected fire weather event.

**Segmented Forecast Information:** Each segment will include the UCG and geographic description of impacted zones and/or zone numbers, a headline describing the state of the Fire Weather Watch or Red Flag Warning (either that the product was issued, cancelled, continued, upgraded), the effective time of the event, the critical weather elements expected and a description of the effective area. The order of the segments will be prioritized as watch/warning cancellation, current warnings then current watches. If multiple headlines are needed for one zone segment, the order of headlines will be 1) Watch/Warning Cancellations, 2) Current Warnings, 3) Current Watches.

**Bullet Content:** The content of the RFW product will contain bullet format forecast information. Content can include the affected areas, the timing of the weather impacts, weather element forecast including winds and relative humidity, and ERC values.

## Fire Weather Watch Example

URGENT - FIRE WEATHER MESSAGE  
National Weather Service Tampa Bay Area - Ruskin FL  
746 PM EST Wed Mar 7 2018

...FIRE WEATHER WATCH FOR LOW HUMIDITY...ROBUST WINDS...AND HIGH  
ERC VALUES ON THURSDAY...

.Another very dry day is in store on Thursday with breezy  
northwest winds expected. This combined with high ERC values and  
low humidities will allow for enhanced fire danger across the  
region tomorrow.

FLZ043-052-056-057-061-239-262-265-081300-  
/O.NEW.KTBW.FW.A.0001.180308T1700Z-180309T0000Z/  
Sumter-Polk-Hardee-Highlands-DeSoto-Inland Levy-Inland Charlotte-  
Inland Lee-  
746 PM EST Wed Mar 7 2018

...FIRE WEATHER WATCH IN EFFECT FROM THURSDAY AFTERNOON THROUGH  
THURSDAY EVENING FOR LOW HUMIDITY...ROBUST WINDS AND HIGH ERC  
VALUES.

The National Weather Service in Tampa Bay Area - Ruskin FL has  
issued a Fire Weather Watch, which is in effect from Thursday  
afternoon through Thursday evening.

\* AFFECTED AREA...Sumter...Polk...Hardee...Highlands...DeSoto...  
Inland Levy...Inland Charlotte...Inland Lee.

\* WIND...15 MPH with higher gusts.

\* HUMIDITY...Minimum values of 25 to 35 percent.

\* ERC...27 to 39

\* IMPACTS...any fires that develop will likely spread rapidly.  
Outdoor burning is not recommended.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Fire Weather Watch means that critical fire weather conditions  
are forecast to occur. Listen for later forecasts and possible  
Red Flag Warnings.

## Red Flag Warning Example

URGENT - FIRE WEATHER MESSAGE  
National Weather Service Tampa Bay Area - Ruskin FL  
359 AM EST Thu Mar 8 2018

...RED FLAG WARNING FOR...GUSTY WINDS...AND HIGH ERC VALUES...AND  
CRITICALLY LOW HUMIDITIES THIS AFTERNOON...

.Another very dry day is in store today with breezy northwest  
winds expected. This combined with high ERC values and low  
humidities will allow for a few hours of critical fire danger for  
all inland areas of the Florida peninsula.

FLZ043-052-056-057-061-239-242-248-249-251-255-260-262-265-090000-  
/O.CON.KTBW.FW.W.0005.180308T1600Z-180309T0000Z/  
Sumter-Polk-Hardee-Highlands-DeSoto-Inland Levy-Inland Citrus-  
Inland Hernando-Inland Pasco-Inland Hillsborough-Inland Manatee-  
Inland Sarasota-Inland Charlotte-Inland Lee-  
359 AM EST Thu Mar 8 2018

...RED FLAG WARNING REMAINS IN EFFECT FROM 11 AM THIS MORNING TO  
7 PM EST THIS EVENING...

\* AFFECTED AREA...All inland areas of the Florida peninsula.

\* WIND...15 MPH with higher gusts.

\* HUMIDITY...Minimum values of 25 to 35 percent.

\* ERC...30 to 39

\* IMPACTS...any fires that develop will likely spread rapidly.  
Outdoor burning is not recommended.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Red Flag Warning means that critical fire weather conditions  
are either occurring now...or will shortly. A combination of  
strong winds...low relative humidity...and warm temperatures can  
contribute to extreme fire behavior.



## **E. On-Site NWS Support (NWS Directive 10-402)**

<http://www.nws.noaa.gov/directives/sym/pd01004002curr.pdf>

A qualified NWS Incident Meteorologist (IMET) may be present at expanding or large wildland fire incidents. 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.

IMETs travel with an All-Hazards Meteorological Response System (AMRS) kit that can be used to gather weather intelligence to support the incident command team. Part of the AMRS kit includes a fire weather laptop computer which is a national resource to support deployed IMETs. IMET laptops have standardized software configuration that should not be modified. Laptops utilize a windows operating system. All IMETs are responsible for the care and transport of the laptops to and from incidents. 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).

In Florida, NWS IMETs are located at NWS Jacksonville, NWS Tampa Bay-Ruskin, NWS Melbourne, NWS Miami and NWS Key West.

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.

### **Requesting an IMET**

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. Only a federal agency may order an IMET for on-site support. IMETs can also be ordered for prescribed burns for more complex operations (reference [IMET Rx Announcement March2020 document](#)). Should the State of Florida, or a more local agency/county enter into an interagency agreement, the services would then be provided as per the agreements.

IMETs are responsible for obtaining the following information upon dispatch:

- Name of agency requesting support
- Name and telephone number of person requesting support
- Incident name and location
- Resource order 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 Lead if available.

## **IMET Onsite Needs**

The user agency is responsible for providing adequate shelter for the IMET and the IMETs AMRS equipment to function efficiently. This includes a location free of excessive dust, heat and moisture, protection from wind and other elements, and a table and chair. The AMRS requires 120 volt AC power and the laptop needs quality Internet access. Charges to or from the incident should be charged to the incident.

## **Coordination on Incidents**

The IMET and local NWS Weather Forecast Office (WFO) should coordinate at least daily basis. The local WFO will at least notify deployed IMETs of any significant weather threatening the fire site, including potential watches or warnings. If the IMET is located at an incident without phone communication, the WFO should notify the local dispatch office of potential critical weather conditions, and the dispatch office should 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 Fire Weather Watch or Red Flag 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 within to a single WFO service area, the GACC Region and the NFWOC should coordinate and determine the necessity for regularly scheduled conference calls. If conference calls are considered necessary, the GACC Region should assist the WFO MIC in setting up the calls. The calls should include WFO forecasters, the deployed IMETs, and the NFWOC. Other nearby WFOs and any IMETs in that WFO's service area may also be included in the call.

## **IMET duties**

IMET deployments to an incident can vary and can range up to two weeks, but will not exceed 14 days onsite. The IMET serves within the incident management team, typically in concert with the Fire Behavior Analyst under the supervision of the Plans Section Chief. IMET duties include daily planning forecast coordination and composition, 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. The structure of each IMET forecast will vary depending on the weather needs of the incident management team.

## **F. Other NWS Forecast Services & Products**

### **Other Special Support Services**

NWS fire weather meteorologists are available to assist land management agencies teaching the weather units of fire training courses (S-190, S-290, RT-130, Florida Interagency Prescribed Burn course, etc.) Requests for assistance should be made through the local NWS fire weather 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 services include observation training, site visits, course development work , training of weather observers and quality control of weather data.

### **Fire Weather Annual Report**

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. NWS Regional Headquarters will determine the due date of the Annual Report, and the regional statistics are due March 1<sup>st</sup>. For further guidance on annual fire activity reports from the NWS, please refer to [NWS Directive 10-404](#).

### **Conference Calls & 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 include current drought and/or indices relating to drought, available surface and fuel moisture, 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

## **Area Forecast Discussion**

This 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 issuance, use of the terms Red Flag Warning and Fire Weather Watch is permitted.

## **Dense Smoke Advisory (NPW)**

This product is issued by local NWS offices for persisting local or widespread dense smoke reducing visibilities to ¼ mile or 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 NWS forecast area out through 7 days. Not all Florida offices issue a HWO.

The HWO can relay weather information related to a fire/smoke threat to the public. 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.

## **Web and Email Briefings**

Many NWS offices are transitioning to web-based and email-based briefings to alert partners of potential weather impacts over the next 7 days. Please contact your local NWS office to learn what briefing services they provide.

## **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.

## **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 near the average time of maximum heating. Observations provide needed site weather information for forecast issuances and the verification of prior forecasts. Observations and forecasts provide needed weather input for land management decision making for operational planning, staffing, and the 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://distweather.freshfromflorida.com/>

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://currentweather.freshfromflorida.com/fdi-report.html>

### **Relaying Potential Severe Weather Reports to NWS**

The National Weather Service requests significant weather reports from land management agencies. The collection of timely, ground truth reports from reliable observers will always be of critical importance to the weather forecaster and can greatly aid NWS meteorologists in their warning decision making process. Delayed reports are also appreciated as they will be used to verify warning events. Reports can be made anytime directly to National Weather Service offices. When relaying a weather report to the NWS, give the location of the event, approximate time of damage (if known), extent of damage, and the agency reporting the event. Significant weather events to relay to the local NWS forecast office include:

- Funnel clouds or tornadoes touchdown and waterspouts
- Hail, especially when ½ inch or larger in diameter
- Measured wind gusts > 50 mph
- Uprooted trees, power lines down, structure damage from wind
- Any weather related event with possible impact to life or property
- Rainfall accumulation of 2 inches per hour or 4 inches per day
- Weather that poses a potential threat to life and/or property

### **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: <https://famit.nwcg.gov/applications/WIMS>

### **All other agencies:**

Forecast distribution is via the internet. One such internet address is through the Florida Forest Service at: <http://www.freshfromflorida.com/Divisions-Offices/FloridaForest-Service/Wildfire/Fire-Weather>

A user agency alternate internet site for forecast access is available at address: <http://weather.gov/fire>

### **Forecast Distribution Backup (Federal/State/Local U.S. 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.

### **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:
  - 1 - CLEAR, LESS THAN 1/10 CLOUD COVER
  - 2 - SCATTERED CLOUDS, 1/10 - 5/10 CLOUD COVER
  - 3 - BROKEN CLOUDS, 6/10 - 9/10 CLOUD COVER
  - 4 - OVERCAST, MORE THAN 9/10 CLOUD COVER
  - 5 - FOG

- 6 - DRIZZLE \*
- 7 - RAIN \*
- 8 - SNOW OR SLEET \*
- 9 – SHOWERS
- 10 - 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 blows, 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 0 (zero). A minus sign is used to indicate 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 then duration must be at least 1).



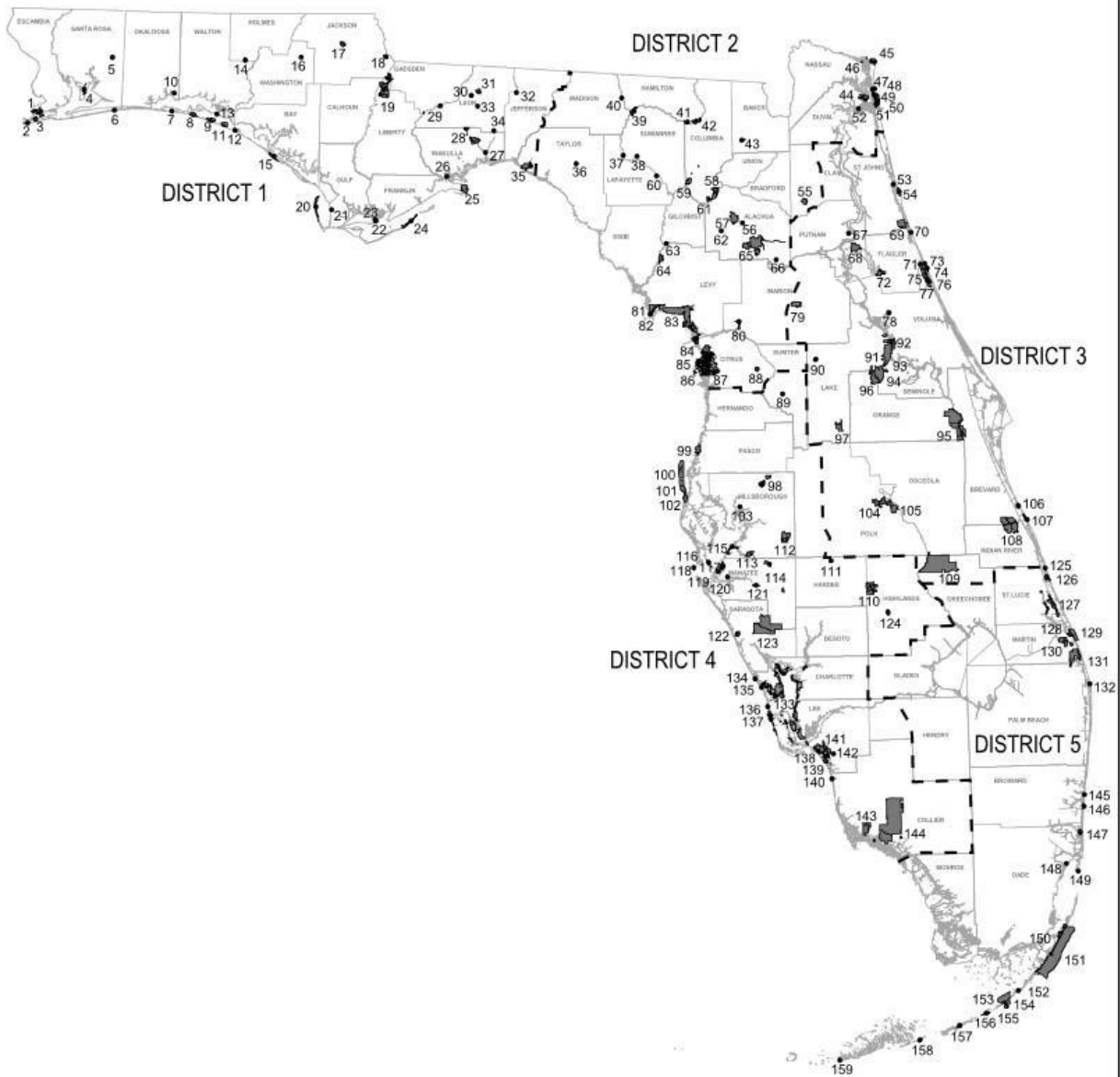
## RAWS locations in Florida



County	RAWS, Elevation	County	RAWS, Elevation
<b>Baker</b>	<a href="#">EDDY TOWER</a> 131 ft <a href="#">OLUSTEE</a> 175 ft	<b>Highlands</b>	<a href="#">AVON PARK AF RANGE 1</a> 126 ft <a href="#">LAKE WALES</a> 141 ft
<b>Palm Beach</b>	<a href="#">LOXAHATCHEE</a> 17 ft	<b>Monroe</b>	<a href="#">NATIONAL KEY DEER NW</a> 10 ft
<b>Brevard</b>	<a href="#">MERRITT ISLAND</a> 30 ft	<b>Glades</b>	<a href="#">BRIGHTON</a> 15 ft
<b>Santa Rosa</b>	<a href="#">NAVAL LIVE OAKS</a> 15 ft	<b>Hendry</b>	<a href="#">FLSEA Port1</a> 15 ft
<b>Volusia</b>	<a href="#">LAKE WOODRUFF QD</a> 10 ft	<b>Lee</b>	<a href="#">DING DARLING NWR</a> 10 ft
<b>Wakulla</b>	<a href="#">SANDBORN</a> 35 ft <a href="#">ST. MARKS (EAST)</a> 15 ft <a href="#">ST. MARKS (WEST)</a> 50 ft <a href="#">PANTHER EAST</a> 15 ft	<b>Leon</b>	<a href="#">BLOXHAM</a> 125 ft
<b>Levy</b>	<a href="#">LOWER SUWANNEE</a> 15 ft	<b>Marion</b>	<a href="#">LAKE GEORGE</a> 129 ft
<b>Liberty</b>	<a href="#">SUMATRA</a> 37 ft <a href="#">WILMA</a> 65 ft	<b>Lake</b>	<a href="#">CENTRAL</a> 74 ft <a href="#">PAISLEY</a> 85 ft
<b>Collier</b>	<a href="#">HONEYMOON RAWS</a> 14 ft <a href="#">MILES CITY RAWS</a> 15 ft <a href="#">OASIS</a> 8 ft <a href="#">OCHOPEE RAWS</a> 7 ft <a href="#">PANTHER WEST</a> 15 ft <a href="#">PANTHER EAST</a> 15 ft <a href="#">RACCOON POINT</a> 7 ft	<b>Miami Dade</b>	<a href="#">BICY PORTABLE</a> 4 ft <a href="#">CACHE</a> 5 ft <a href="#">CHEKIKA</a> 5 ft

## Florida Forest Service Districts

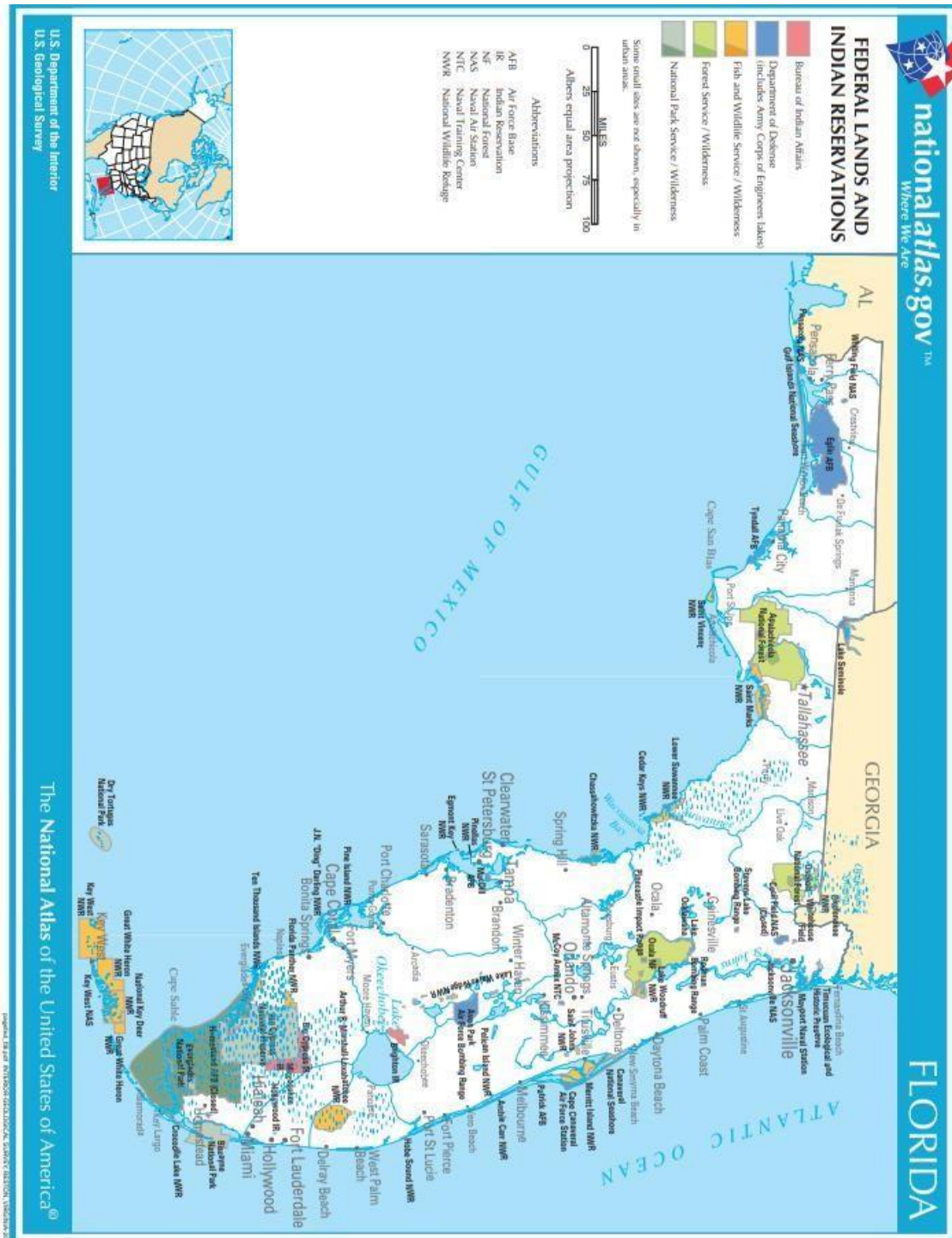
# FLORIDA STATE PARK SYSTEM



<https://floridadep.gov/parks/park-mapping-databases>

[http://www.dep.state.fl.us/Parks/planning/forms/State\\_parks\\_b&w\\_8X11.pdf](http://www.dep.state.fl.us/Parks/planning/forms/State_parks_b&w_8X11.pdf)

# Federally Managed Lands



[https://nationalmap.gov/small\\_scale/printable/images/pdf/fedlands/FL.pdf](https://nationalmap.gov/small_scale/printable/images/pdf/fedlands/FL.pdf)

## Fire Internet Resources

### Weather Resources

- NWS Fire Weather National Page: <https://www.weather.gov/fire/>
- NWS Fire Weather Dashboard (Fire Poker): <https://www.weather.gov/dlh/firepoker>
- Storm Prediction Center Fire Weather Outlooks: [https://www.spc.noaa.gov/products/fire\\_wx/](https://www.spc.noaa.gov/products/fire_wx/)
- Climate Prediction Center: <https://www.cpc.ncep.noaa.gov/>
- Drought Monitor: <https://droughtmonitor.unl.edu/>
- MesoWest: <https://mesowest.utah.edu/>

### Agency Fire Resources

- National Interagency Fire Coordination Center: <http://www.nifc.gov/>
- National Wildfire Coordination Group: <https://www.nwcg.gov/>
- National Fire & Aviation Management: <https://fam.nwcg.gov/fam-web/>
- Geographic Area Coordination Center: <https://gacc.nifc.gov/>
- Southern Area Coordination Center: <https://gacc.nifc.gov/sacc/>
- Wildland Fire Assessment System: <http://www.wfas.net/>
- USFS Southern Region: <https://www.fs.usda.gov/r8>
- Florida Forest Service: <https://www.fdacs.gov/Divisions-Offices/Florida-Forest-Service/Wildland-Fire>
- Florida Forest Service Weather: <https://www.fdacs.gov/Forest-Wildfire/Wildland-Fire/Fire-Weather>
- Georgia Forestry Commission: <https://gatrees.org/>
- Alabama Forestry Commission: <http://www.forestry.alabama.gov/>
- Mississippi Forest Commission: <https://www.mfc.ms.gov/>

## WIMS NFDRS Observation and Forecast points Florida

ID	County	Elevation	Latitude	Longitude
89930	LEON	121	30.4	-84.2
89931	MADISON	104	30.4	-83.4
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	84.9
82201	SANBORN	74	30	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	-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
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
89928	JEFFERSON	114	30.4	-83.8
89929	LAFAYETTE	38	29.9	-83.1



## WIMS NFDRS Zone designators for Florida



## 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 groundwater 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 actively 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.