National Digital Forecast Database (NDFD)
Experimental Fire Weather Outlook Elements
NWS Product Description
Document (PDD)
January 12, 2011

Part 1 - Mission Connection

a. Product Description **–** The National Digital Forecast Database (NDFD) contains a seamless mosaic of digital weather forecasts from National Weather Service (NWS) field offices and the National Centers for Environmental Prediction (NCEP). The Storm Prediction Center (SPC) is the NWS' center of expertise for forecasting large-scale fire weather hazards.

As of February 23, 2011, the following Fire Weather Outlook elements prepared by the SPC will be available in the NDFD on an experimental basis:

- Fire weather critical and extremely critical areas (days 1-7).
  These will depict critical and extremely critical areas on days 1-2, and only critical areas on days 3-7
- Fire weather critical areas - dry thunderstorms (days 1-3)

These elements are currently only available for the contiguous U.S. (CONUS) and the 16 pre-defined NDFD CONUS subsectors.

The Fire Weather Outlooks are issued for periods from 12 UTC to 12 UTC. Day 1 outlooks are valid from 12 UTC on day 1 (or, if issued after 12 UTC, are valid from the issuance time) to 12 UTC on day 2. The day 2 products are valid from 12 UTC on day 2 to 12 UTC on day 3, and so on.

b. Purpose – In support of the mission described in the *National Weather Service Strategic Plan for FY2005 - FY 2020*, "expanded digital services allow communication of forecast information with greater resolution in time and space and facilitates the integration of data in all service program areas." The NDFD is the primary means by which digital information is available to customers and partners. As part of this digital database, Fire Weather Outlook elements are available in response to growing user needs for planning purposes and critical safety decisions. Future digital datasets will continue to be developed in accordance with growing user needs.

c. Audience - The audience for the Fire Weather Outlook elements includes large volume users of forecast information, emergency managers, the media, numerous local, state, and federal government agencies (including NWS field offices), academia, and many other groups. They are also for anyone who wishes to decode

and explore various potential applications of the NWS Fire Weather Outlook data, or simply to view, post, or distribute the graphic images.

d. Presentation Format – As with all NDFD elements, these elements are available in Gridded Binary Data Edition 2 (GRIB2) via file transfer protocol (ftp) or hypertext transfer protocol (http), eXtensible Markup Language (XML), Geographical Markup Language (GML) via the experimental NWS Web Feature Service, and as graphics via web browser. The Fire Weather Outlook elements are only available for the CONUS and for the 16 pre-defined NDFD CONUS subsectors.

1. GRIB2 format at 5 km horizontal grid spacing, via file transfer protocol (ftp) or hypertext transfer protocol (http): The GRIB2 files can be decoded and converted to other formats, such as shapefiles, netCDF files, etc. A tutorial to download NDFD elements, decode them and generate images is available online.

   These elements are available in GRIB2 from the NWS ftp server for the CONUS and/or for the 16 predefined NDFD CONUS subsectors. A user-defined GRIB2 access method is also available. That service allows the user to input latitude/longitude points for two corners and select a single weather element. The resulting GRIB2 message is built "on-the-fly" and downloaded by the user. For more information about User Defined GRIB2 access, please refer to the Service Description Document.

2. Extensible Markup language (XML): Users can request NDFD elements over the Internet using the NDFD XML Simple Object Access Protocol (SOAP) server. The response to the user request is returned in XML format. For more information, please refer to the NDFD XML Service Description Document.

3. Online NDFD graphics: Fire Weather Outlook images may be accessed from the NWS homepage by clicking on the Graphical Forecasts tab. To access these and other NDFD elements, or for further availability and technical information (e.g., temporal and spatial resolutions, forecast projections, and geographic coverage), please refer to the NDFD technical details page.

e. Feedback Method – The comment period for these experimental NDFD elements will extend from 23 February through 3 June 2011. These new Fire Weather Outlook elements will remain experimental until all feedback is assessed and a technical analysis is completed. At that time, the NWS will determine whether to transition these experimental elements to operational status, discontinue them, or revise and retain them as experimental elements. Links to online surveys for NDFD customers are broken down by type of retrieval service:

1. GRIB2 via ftp or http: http://www.weather.gov/survey/nws-survey.php?code=ndfd-grids
2. XML via SOAP service: http://www.weather.gov/survey/nws-survey.php?code=xmlsoap

3. NDFD graphics: http://www.weather.gov/survey/nws-survey.php?code=gfp

Part II – Technical Description

a. Format and Science – The Fire Weather Outlook products are intended to delineate areas of the contiguous U. S. where the pre-existing fuel conditions, combined with forecast weather conditions will result in a significant threat for wildfires. There are three types of Fire Weather Outlook areas – a critical fire weather area for wind and relative humidity, an extremely critical fire weather area for extreme conditions of wind and relative humidity, and a critical fire weather area for dry thunderstorms.

The outlook type depends upon the severity of the forecast weather, antecedent conditions, and climatology relative to the given geographic region. Critical fire weather areas for wind and relative humidity are typically issued when strong winds (>20 mph) and low RH are expected to occur where dried fuels exist. Extremely critical fire weather areas for wind and relative humidity are issued when very strong winds and very low RH are expected to occur with very dry fuels. Due to limited predictability, the SPC only considers issuance of extremely critical fire weather areas on convective days 1-2.

Critical fire weather areas for dry thunderstorms are typically issued when widespread or numerous thunderstorms producing little wetting rain (<0.10 in) are expected to occur where dried fuels exist.

The fire weather outlooks are issued by the SPC for the "convective" day - that is from 1200 Coordinated Universal Time (UTC) through 1159 UTC the following day. Day 1 outlooks are valid from 1200 UTC on Day 1 (or, if issued after 1200 UTC, are valid from the issuance time) through 1159 UTC on Day 2. The Day 2 products are valid from 1200 UTC on Day 2 through 1159 UTC on Day 3, and so on.

The NDFD products will use the following integers to delineate risk areas:

No area	0 (zero)
Critical area	8 (eight)
Extremely critical area	10 (ten)

Fire weather areas for dry thunderstorms will be denoted using the following integer convention:

No area	0 (zero)
Critical area	8 (eight)

b. Product Availability –

The initial day 1 fire weather critical/extremely critical areas and critical areas for dry thunderstorms products are issued by 0900 UTC daily during daylight time, 1000 UTC daily during standard time. These products are updated by 1700 UTC daily.

The initial day 2 fire weather critical/extremely critical areas and critical areas for dry thunderstorms products are issued by 1000 UTC daily. These products are updated by 2000 UTC daily.

The day 3-7 fire weather critical areas products and day 3 critical areas for dry thunderstorms products are issued once daily by 2200 UTC.

c. Additional Information – Detailed descriptions of these products are available on the SPC web site. Detailed information about the NDFD is also available online.