

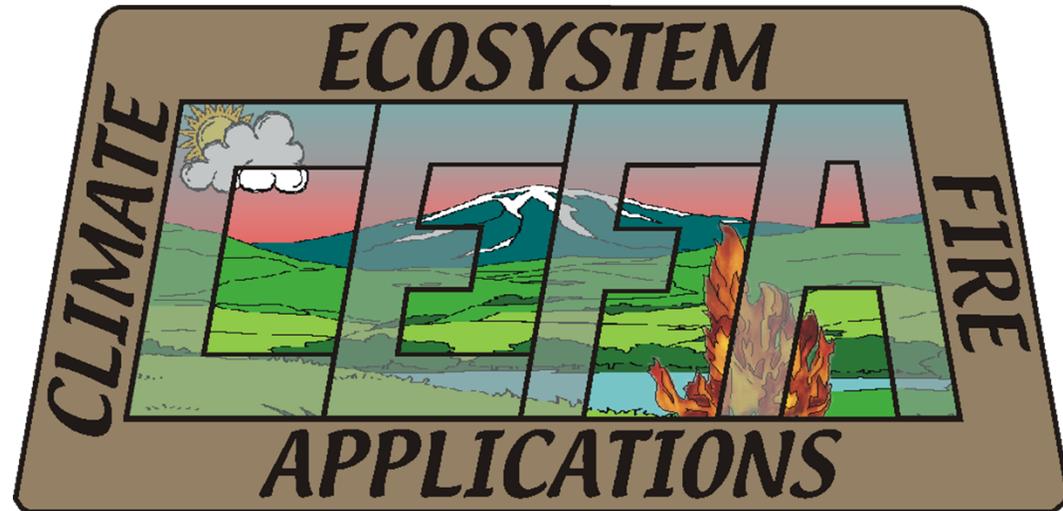
Seasonal Forecasting for the Global EWS

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GOFC-GOLD IT; 16 April 2013





Fire climate

Fire weather

Fire visualization

Fire societal

Fire ecology

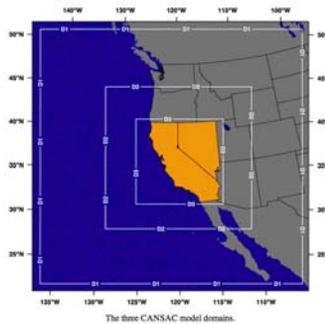
CEFA Operational Products

California and Nevada Smoke and Air Committee

Products Overview Projects Committee COFF Updates Links

CANSAC provides experimental forecast products of fire weather, smoke dispersion/transport, fire danger and fire behavior.

- The California and Nevada Smoke and Air Committee (CANSAC) membership includes:
- USDA Forest Service Region 5
- Bureau of Land Management California State Office
- Bureau of Land Management Nevada State Office
- U.S. Fish and Wildlife Service Pacific Region
- National Park Service
- USDA Forest Service Pacific Southwest Research Station
- California Department of Forestry and Fire Protection
- California Air Resources Board
- San Joaquin Valley Air Pollution Control District



Fire Consortia for Advanced Modeling of Meteorology and Smoke (FCAMMS)

National FCAMMS Smoke Dispersion Forecast Guidance

Start Show Rack Set Animation Speed <> Zoom Refresh

INITIALIZATION 12z May 06 2012 FORECAST VALID 18z May 10 2012

GFS MIXING HEIGHT

ft

Map Selections:
 Model: GFS
 Region: National
 Units: knots-feet
 Boundaries: States

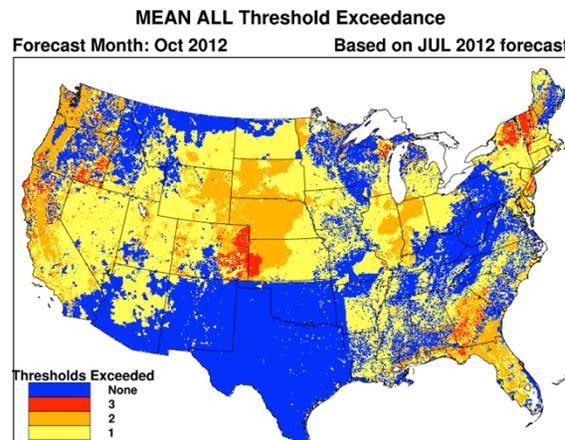
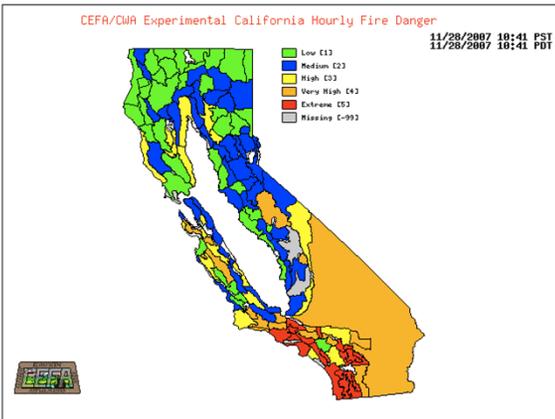
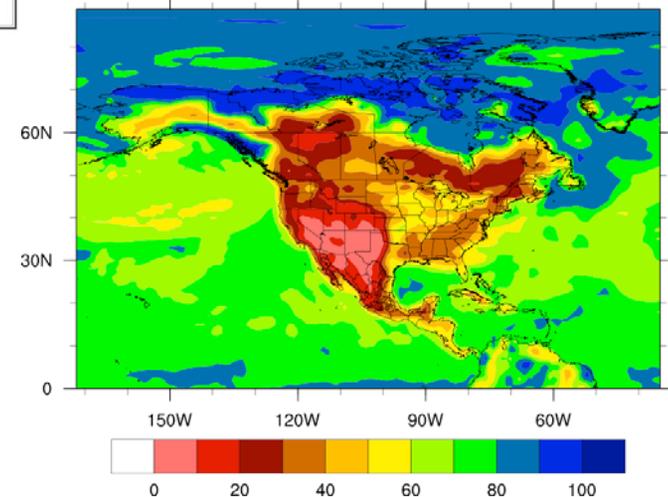
GFS Based
 Latest: 20120506 12z

Viewer:
 PM 2.5
 Mixing Height
 Ventilation Rate
 Ventilation Rate/Transport Wind
 Transport Wind
 Haines Index: low

Product Description
 Disclaimer
 Product Schedule
 *coming soon

Minimum Relative Humidity [Surface] (%)

Initialization: 2012-05-06, Forecast Period: 2012-05-06 -> 2012-05-12



Experimental National Standardized ERC Forecasts

Product Description | Project Report

Actual Time 1500 MST	Stand. ERC	Actual ERC	ERC Anom.
Friday 10 December	1-day	1-day	1-day
Saturday 11 December	2-day	2-day	2-day
Sunday 12 December	3-day	3-day	3-day
Monday 13 December	4-day	4-day	4-day
Tuesday 14 December	5-day	5-day	5-day
Wednesday 15 December	6-day	6-day	6-day
Thursday 16 December	7-day	7-day	7-day
Friday 17 December	8-day	8-day	8-day
Saturday 18 December	9-day	9-day	9-day
Sunday 19 December	10-day	10-day	10-day
Monday 20 December	11-day	11-day	11-day
Tuesday 21 December	12-day	12-day	12-day
Wednesday 22 December	13-day	13-day	13-day

Experimental Standardized ERC
 Initialization 00UTC Friday 10 December 2010 Forecast valid for 18UTC Friday 10 December 2010 (11MST Friday 10 December 2010)

-6 -4 -2 0 2 4 6

National Wildland Significant Fire Potential Outlook



National Interagency Fire Center
Predictive Services



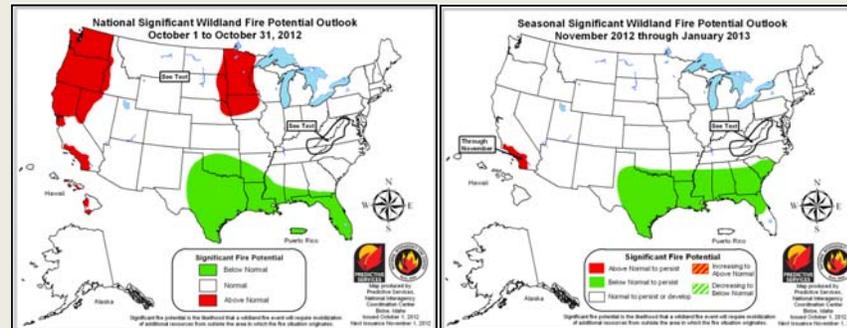
Issued: October 1, 2012

Next Issue: November 1, 2012

Wildland Fire Outlook – October 2012 through January 2013

The October 2012 through January 2013 significant fire potential outlooks are shown below. The primary factors influencing these outlooks are:

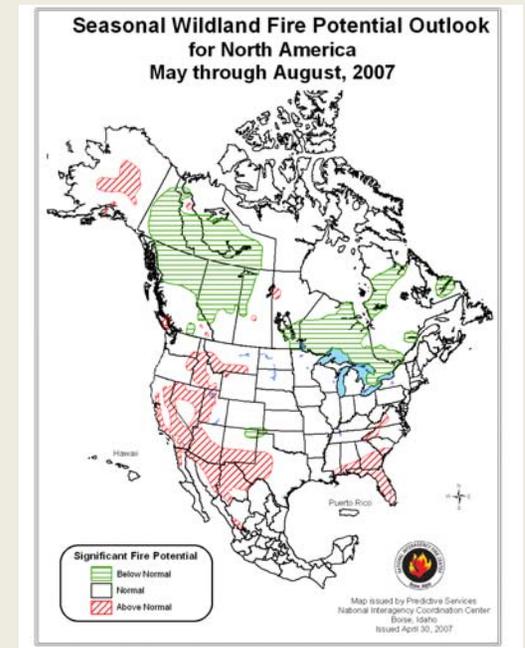
- **El Niño/Southern Oscillation (ENSO):** Equatorial Pacific sea surface temperatures continue to edge toward weak El Niño conditions.
- **Drought:** Above normal rainfall fell across much of the Ohio Valley and the mid and lower Mississippi Valley as well as parts of the Southwest and southern Great Basin. The rest of the country largely experienced precipitation deficits in September with the worst deficits over the West Coast, the Northwest, the northern Rockies and the northern Plains. Severe or worse drought conditions remained over the central U.S. from the Front Range of the Rockies to the mid-Mississippi Valley.
- **Fuel Conditions:** Through September lack of significant precipitation inputs have led to above normal Energy Release Components (ERCs) and below normal live and dead fuel moistures across most of the northern half of the U.S. as well as California. Normally during this time of year fuels conditions would decline fairly rapidly across the northern tier. This season is seeing a very slow decline in nearly all fire danger indices, with that decline coming mostly in response to longer and colder nights. In order for any significant improvement in fuel conditions to take place a sustained input of moisture would need to occur. This seems unlikely at least through the middle of October. Portions of the Hawaiian Islands also continue to see elevated fire danger indices. The southeastern U.S. will continue to see periodic precipitation events increasing fuel moistures and reducing fire potential. As the fall leaf drop season develops the potential exists for a return to above normal significant fire potential across portions of the eastern U.S. depending on fall precipitation that would moisten leaf litter as it drops into the surface fuel layer.



Note: Significant fire potential is defined as the likelihood that a wildland fire event will require mobilization of additional resources from outside the area in which the fire situation originates.

Predictive Services Seasonal Outlooks

- **Formally began in 2003**
 - United States only
 - Climate experts prepared a consensus climate outlook
 - Predictive Services meteorologists and fuels specialists addressed climate impacts on fuels and fire potential.
 - Three category outlook (normal, above normal, below normal)
- **Canada, Mexico joined in 2006**
 - North American Seasonal Outlook
 - U.S. represented by national, regional experts
 - Canada, Mexico represented by national experts
 - Similar three category outlook



Australian seasonal outlooks

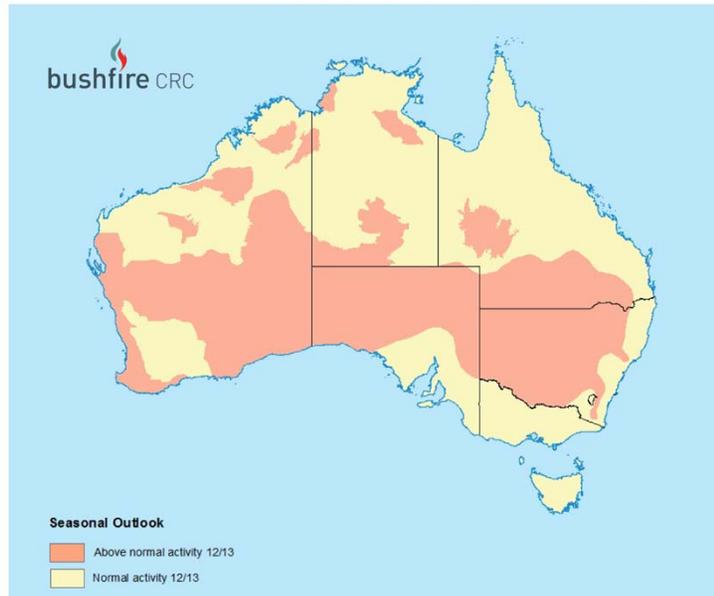
Background briefings on emerging issues for fire managers from AFAC and Bushfire CRC.



FIRE NOTE

ISSUE 95 AUGUST 2012

SOUTHERN AUSTRALIA SEASONAL BUSHFIRE OUTLOOK 2012-13

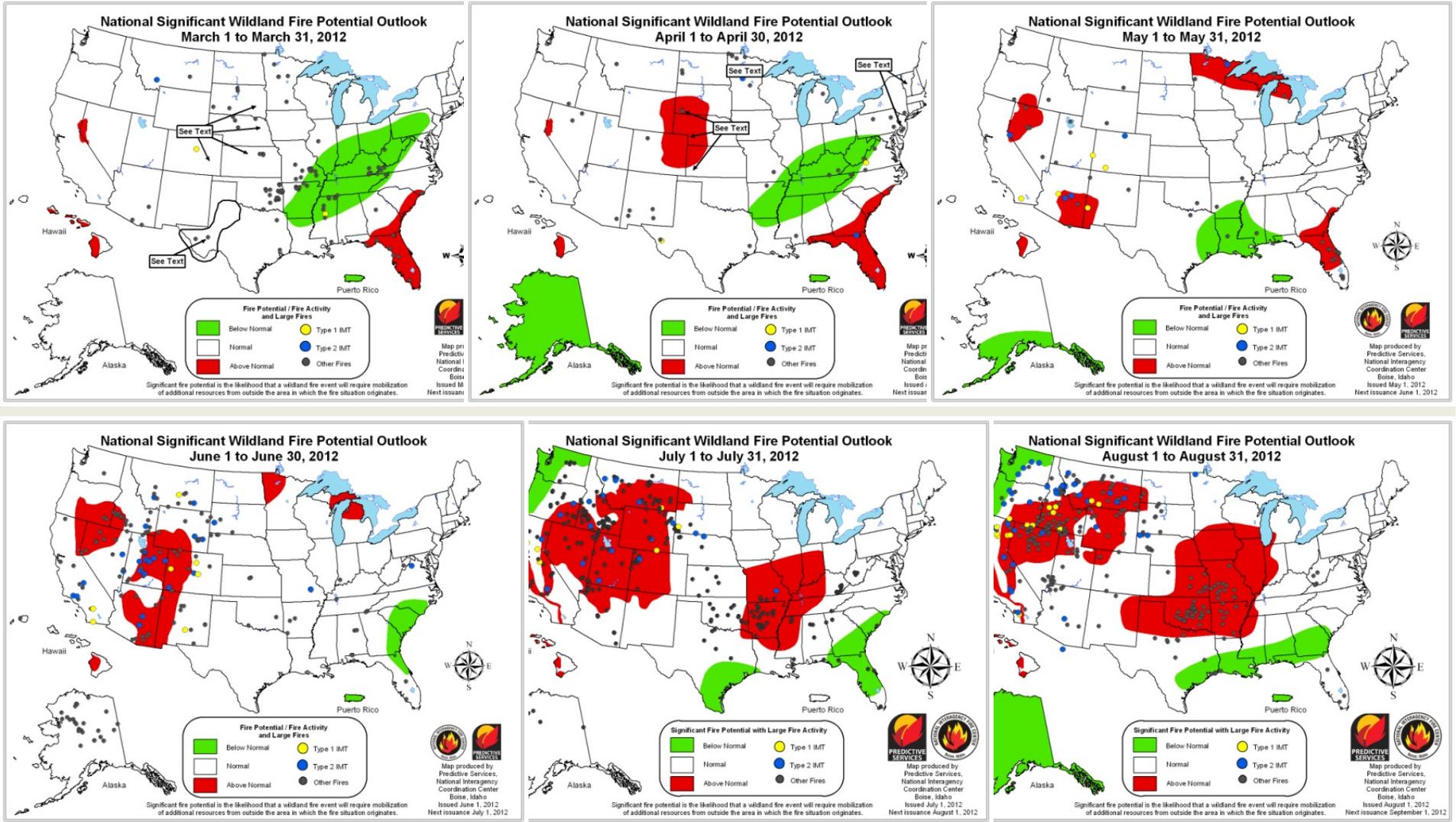


SUMMARY

Large areas of southern Australia, from the east coast to the west coast, face above average fire potential for the 2012-13 fire season, despite the extensive fires in some parts of the country over the last 12 months. However, the area most at risk does not extend as far north as was seen in 2011-12. The above average forecast is due to the abundant grass growth from the high amount of rain from two strong La Niña events seen in the past two years across the eastern

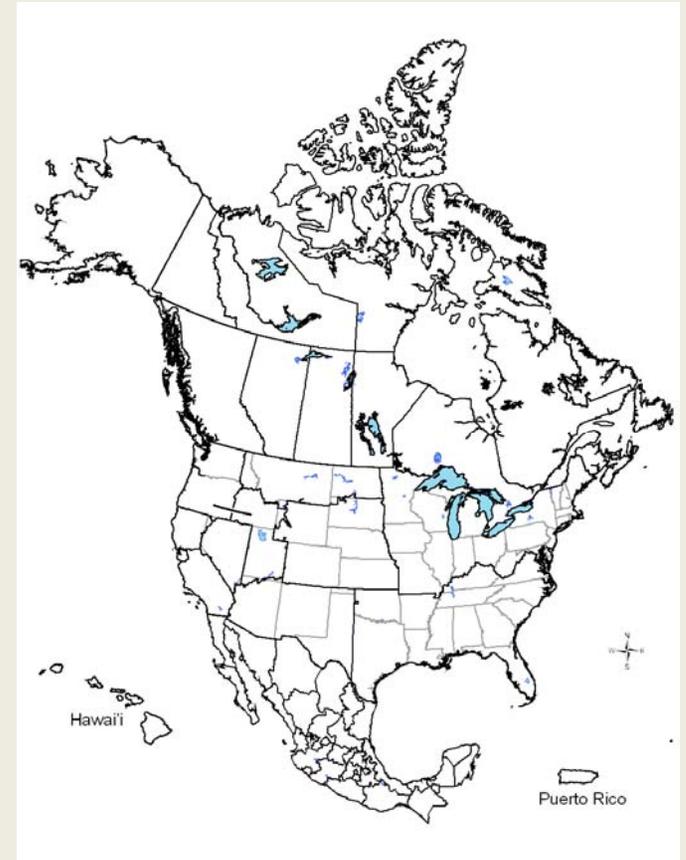
seaboard and South Australia. Fuel moisture content within forests is still high, but this rainfall has continued to provide widespread vegetation growth in the grasslands, which remain a threat. Elsewhere across southern Australia, the fire potential is considered to be average for 2012-13, but average fire conditions can still produce fast running fires. The above map combines the southern bushfire outlook with the northern bushfire outlook, which was released as *Fire Note 93* in early August.

2012 Monthly Outlooks and Significant Fires



Value of International Collaboration

- **Fire Operations Planning/Support**
 - Resource sharing/assistance agreements
- **Knowledge/Data Transfer**
 - Climate analysis and forecast techniques
 - Fire occurrence/fire behavior data
 - Fuels information
- **Research Opportunities**
 - Ongoing dialog with neighbors
 - Regional partnerships
 - Northwest-British Columbia
 - Northern Rockies-Alberta, Saskatchewan, Manitoba
 - Eastern Area-Manitoba, Ontario, Quebec



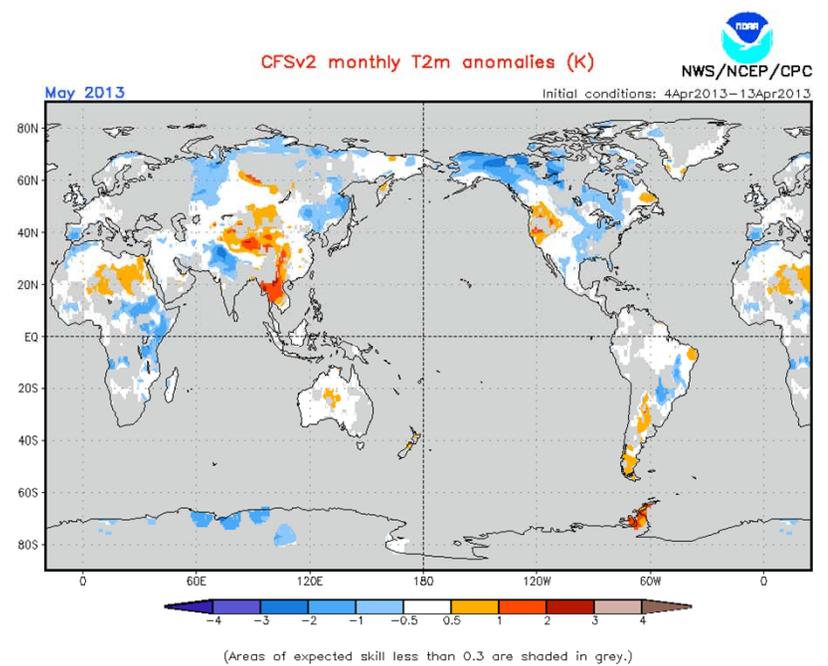
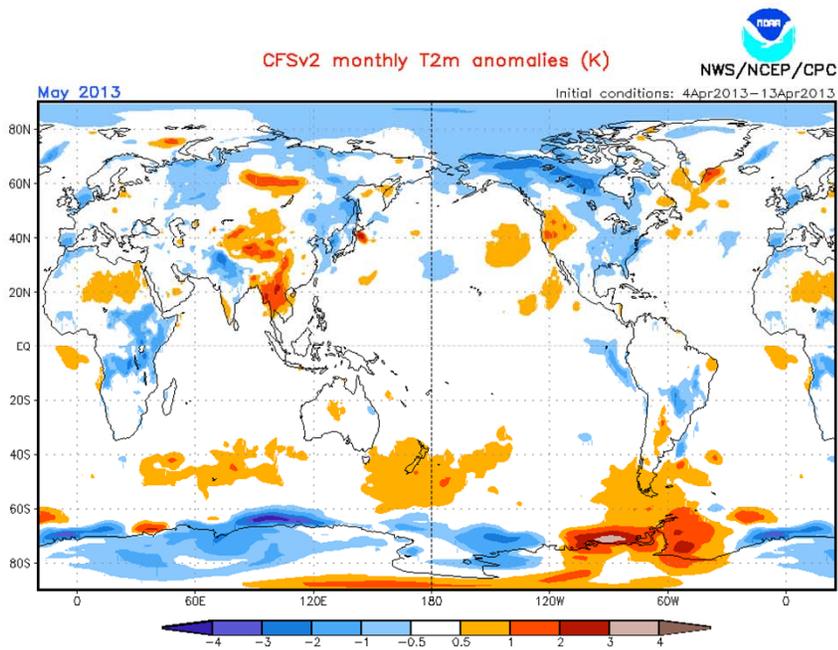
NCEP Climate Forecast System (v1)

- Atmospheric and land surface initial conditions
(R2 NCEP/DOE Global Reanalysis)
- Global ocean data assimilation system (GODAS)
(provides ocean initial states)
- NCEP Global Forecast System (GFS)
(atmospheric model)
- MOM3 ocean forecast model

NCEP Climate Forecast System (v2)

- Improvements to v1 models
- Upgraded four level soil model
- Interactive three layer sea-ice model
- Historical prescribed (i.e. rising) CO₂ concentrations
- Improved consistency between model states and initial states produced by the data assimilation system
- Comprehensive reforecast over 29 years (1982-2011)

NCEP Climate Forecast System (v2)



Program for Climate, Ecosystem and Fire Applications

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CFS Weekly to Seasonal Forecasts

CFSv2 Forecast Grid Initialization - North America: 2013/04/07

7-day Forecast Means - North America											
Mean Wind [700-500 mb] (mph)	Loop	Grid	07Apr	14Apr	21Apr	28Apr	05May	12May	19May	26May	02Jun
			09Jun	16Jun	23Jun	30Jun	07Jul	14Jul	21Jul	28Jul	04Aug
Mean Wind [700 mb] (mph)	Loop	Grid	07Apr	14Apr	21Apr	28Apr	05May	12May	19May	26May	02Jun
			09Jun	16Jun	23Jun	30Jun	07Jul	14Jul	21Jul	28Jul	04Aug
Mean/Anom Geopotential Height [500 mb] (dam)	Loop	Grid	07Apr	14Apr	21Apr	28Apr	05May	12May	19May	26May	02Jun
			09Jun	16Jun	23Jun	30Jun	07Jul	14Jul	21Jul	28Jul	04Aug
Mean Relative Humidity [700-300 mb] (%)	Loop	Grid	07Apr	14Apr	21Apr	28Apr	05May	12May	19May	26May	02Jun
			09Jun	16Jun	23Jun	30Jun	07Jul	14Jul	21Jul	28Jul	04Aug
Mean Relative Humidity [Surface] (%)	Loop	Grid	07Apr	14Apr	21Apr	28Apr	05May	12May	19May	26May	02Jun
			09Jun	16Jun	23Jun	30Jun	07Jul	14Jul	21Jul	28Jul	04Aug
Max Relative Humidity [Surface] (%)	Loop	Grid	07Apr	14Apr	21Apr	28Apr	05May	12May	19May	26May	02Jun
			09Jun	16Jun	23Jun	30Jun	07Jul	14Jul	21Jul	28Jul	04Aug
Min Relative Humidity [Surface] (%)	Loop	Grid	07Apr	14Apr	21Apr	28Apr	05May	12May	19May	26May	02Jun
			09Jun	16Jun	23Jun	30Jun	07Jul	14Jul	21Jul	28Jul	04Aug
Accumulated Precipitation (in)	Loop	Grid	07Apr	14Apr	21Apr	28Apr	05May	12May	19May	26May	02Jun
			09Jun	16Jun	23Jun	30Jun	07Jul	14Jul	21Jul	28Jul	04Aug
Mean Wind [200 mb] (mph)	Loop	Grid	07Apr	14Apr	21Apr	28Apr	05May	12May	19May	26May	02Jun
			09Jun	16Jun	23Jun	30Jun	07Jul	14Jul	21Jul	28Jul	04Aug
Mean Wind [300 mb] (mph)	Loop	Grid	07Apr	14Apr	21Apr	28Apr	05May	12May	19May	26May	02Jun
			09Jun	16Jun	23Jun	30Jun	07Jul	14Jul	21Jul	28Jul	04Aug

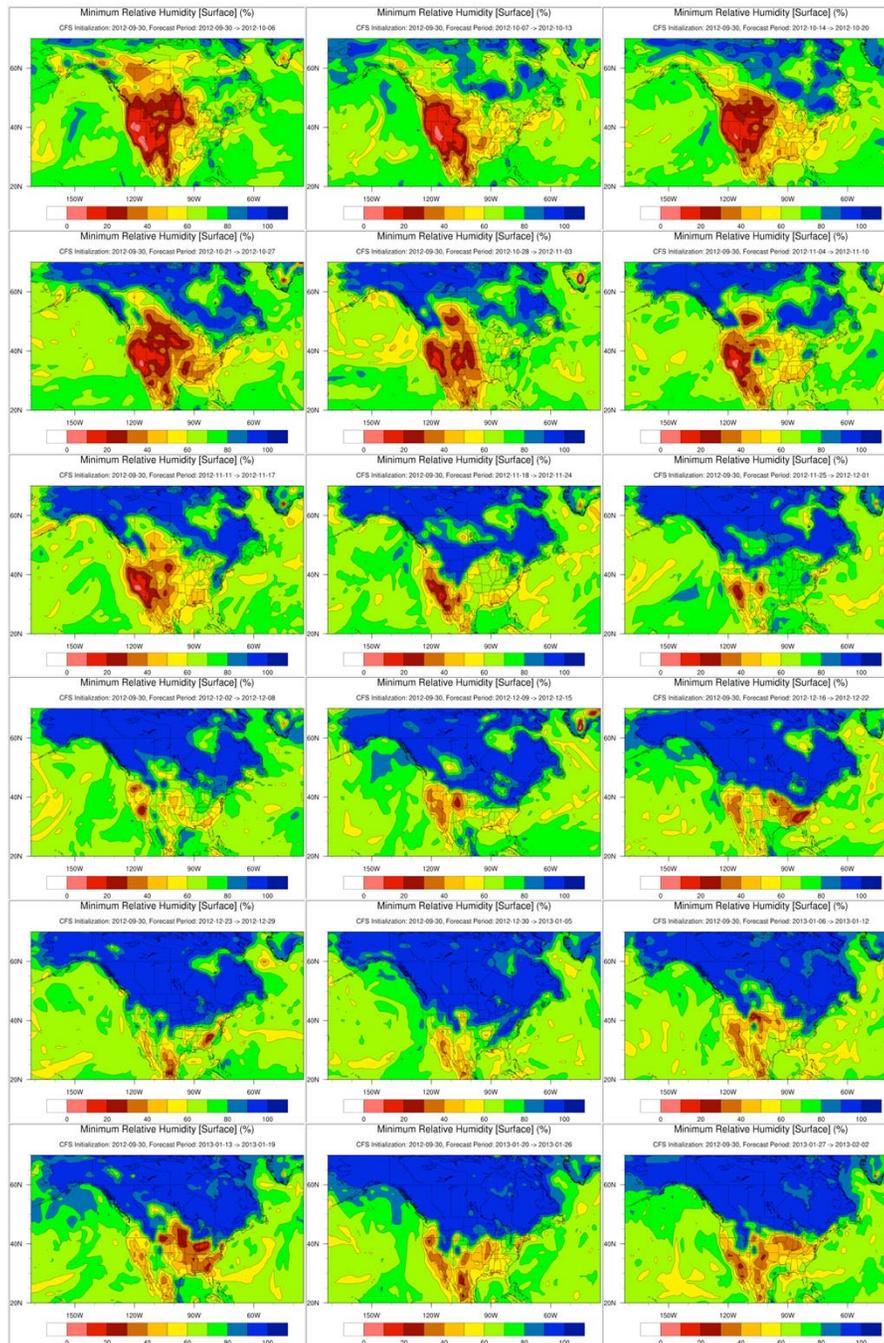
CFSv2 Forecast Grid Initialization - Global: 2013/03/20

7-day Forecast Means - Global											
Mean/Anom Geopotential Height [500 mb] (dam)	Loop	Grid	20Mar	27Mar	03Apr	10Apr	17Apr	24Apr	01May	08May	15May
			22May	29May	05Jun	12Jun	19Jun	26Jun	03Jul	10Jul	17Jul

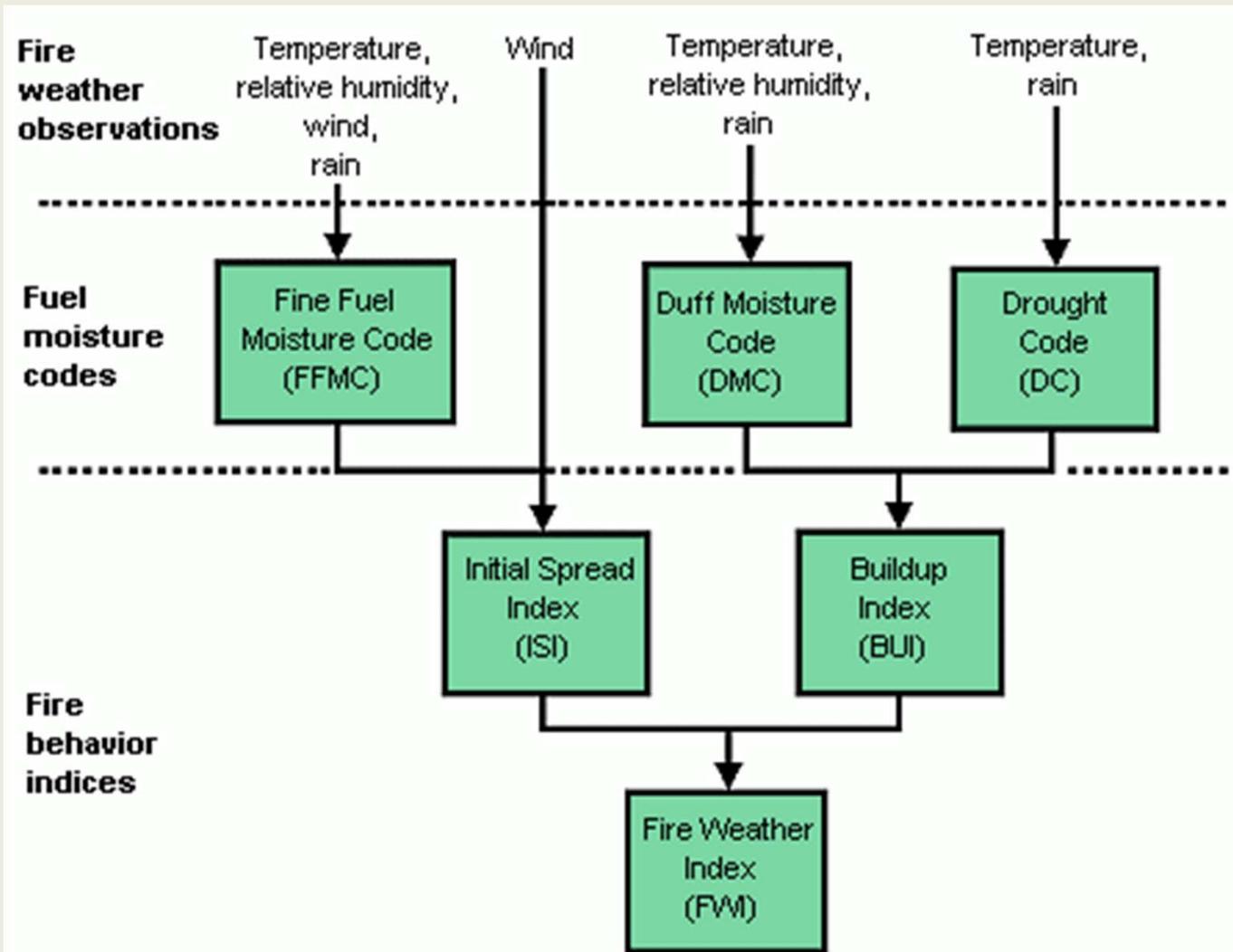
This product has been developed to support Predictive Services wildland fire weekly to seasonal forecasts. Means, min/max relative humidity, and accumulated precipitation have been derived from the Climate Forecast System Version 2.0 (CFSv2) model single runs. Means represent the average at 00Z over 7 days; min/max relative humidity represents the average min/max at 00Z over 7 days; and accumulated precipitation represents the total over all daily time steps (00/06/12/18 Z) over 7 days. Geopotential height represents a special case where 7-day mean CFSv2 values are contoured with their corresponding anomalies. Anomalies are derived using 30-year daily climatologies [1981-2010] computed from the NCEP North American Regional Reanalysis (NARR) and the Global Reanalysis I datasets. Vector maps show values for every other grid cell. Global maps are updated once per month on the 20th and North American maps are updated on each Sunday of the month.

[CFSv2 information and seasonal climate forecasts](#)

CFSv2 Forecast Grid Initialization: 2012/09/30



Canadian Fire Weather Index



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Global FWI Monthly Forecast

CFSv2 Forecast Grid Initialization: 2013/04/13

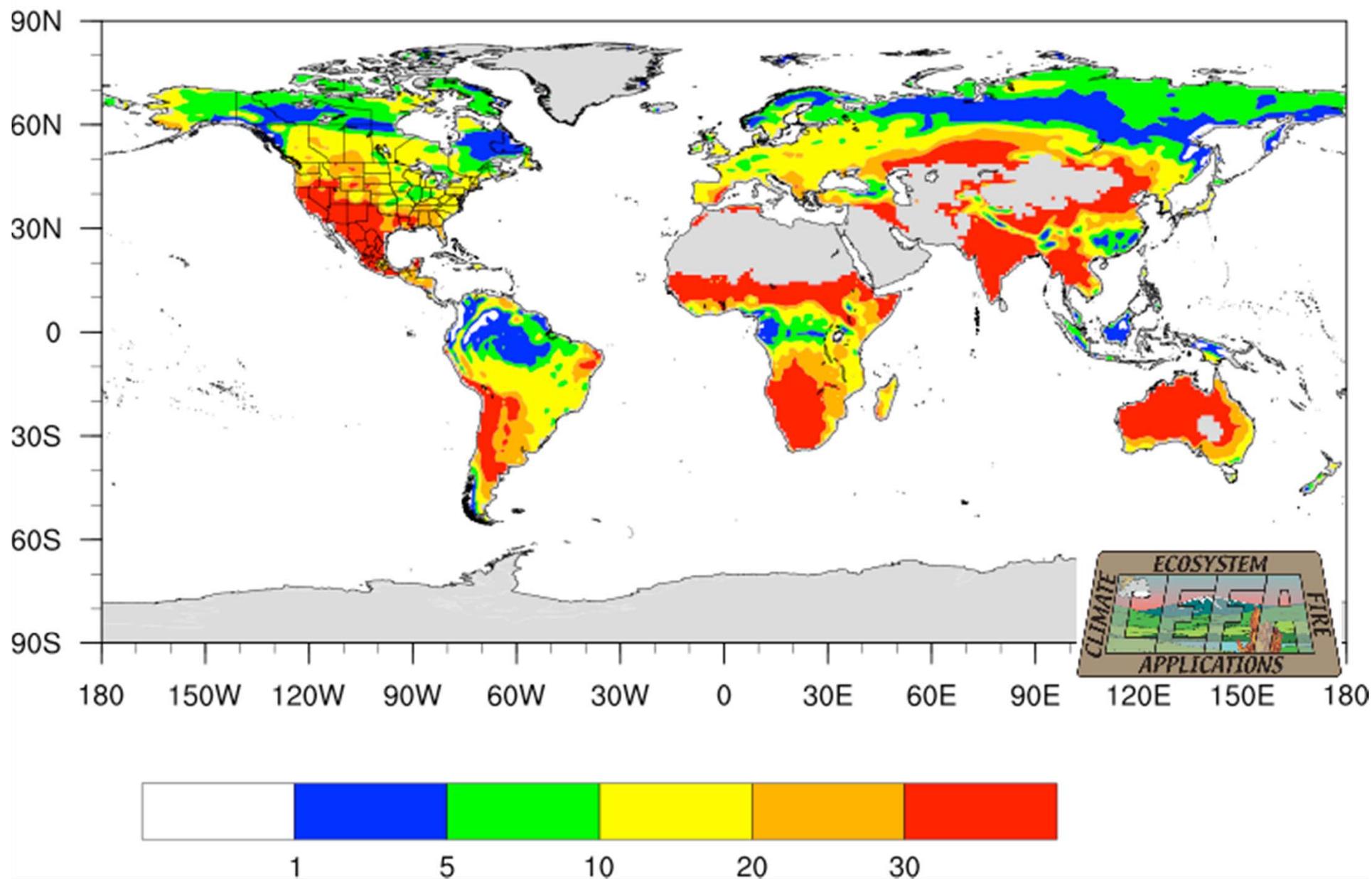
30-day Forecast Means											
Fire Weather Index	Loop	Grid	13Apr	13May	12Jun	12Jul	11Aug	10Sep	10Oct	09Nov	09Dec

This product supports the GOFC-GOLD Global Early Warning System for Wildland Fires. Mean values of the Canadian Fire Weather Index (FWI) have been derived from the Climate Forecast System Version 2.0 (CFSv2) model single runs. 30-day mean values of FWI are computed in the following manner: 4x daily data (of temperature, relative humidity, wind speed, and precipitation) are first interpolated to hourly; local noon values and rainfall accumulation are then used to derive daily values of FWI using equations from Van Wagner (1985); daily values of FWI are then averaged over a 30-day period. This product is updated on each Sunday of the month.

[CFSv2 information and seasonal climate forecasts](#)

Fire Weather Index

CFSv2 Initialization: 2013-04-13, Forecast Period: 2013-04-13 -> 2013-05-13



Global Fire Weather Index

CFSv2 Forecast Grid Initialization: 2013/04/14

