Eastern Area Spring 2004 Fire Weather/ Fire Danger Outlook

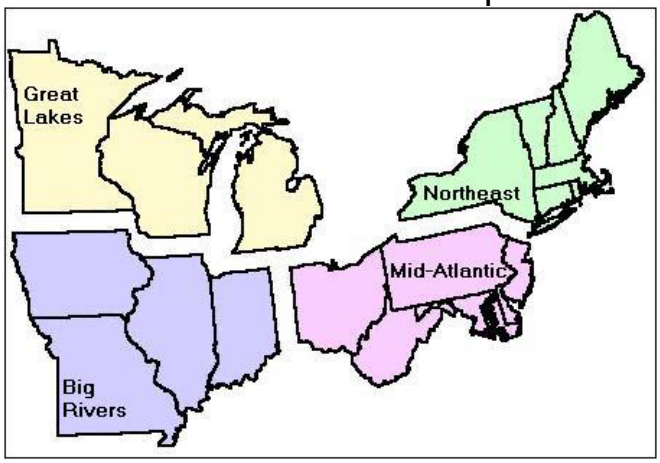
February 9, 2004

EACC Predictive Services

Introduction and Executive Summary

This outlook was compiled with the most recent weather and climate data available at the end of January 2004, and is an estimate of expected conditions for late winter and early spring in the Eastern Area. Information included in this outlook was presented at the 2004 Eastern/Southern Area Seasonal Assessment Workshop held in Shepherdstown, WV in late January, with the goal of providing fire management personnel an area wide outlook for the spring of 2004. Due to the variability in the data and weather computer model limitations, it is important for the local fire manager to know and monitor their own area of responsibility and to base their actions on local fuel conditions and weather variables.

Eastern Area State Compacts



Normal to above normal rainfall over much of the eastern Big Rivers, Mid-Atlantic, and Northeastern Compacts through the summer and fall of 2003 kept fire occurrence below normal over this period.

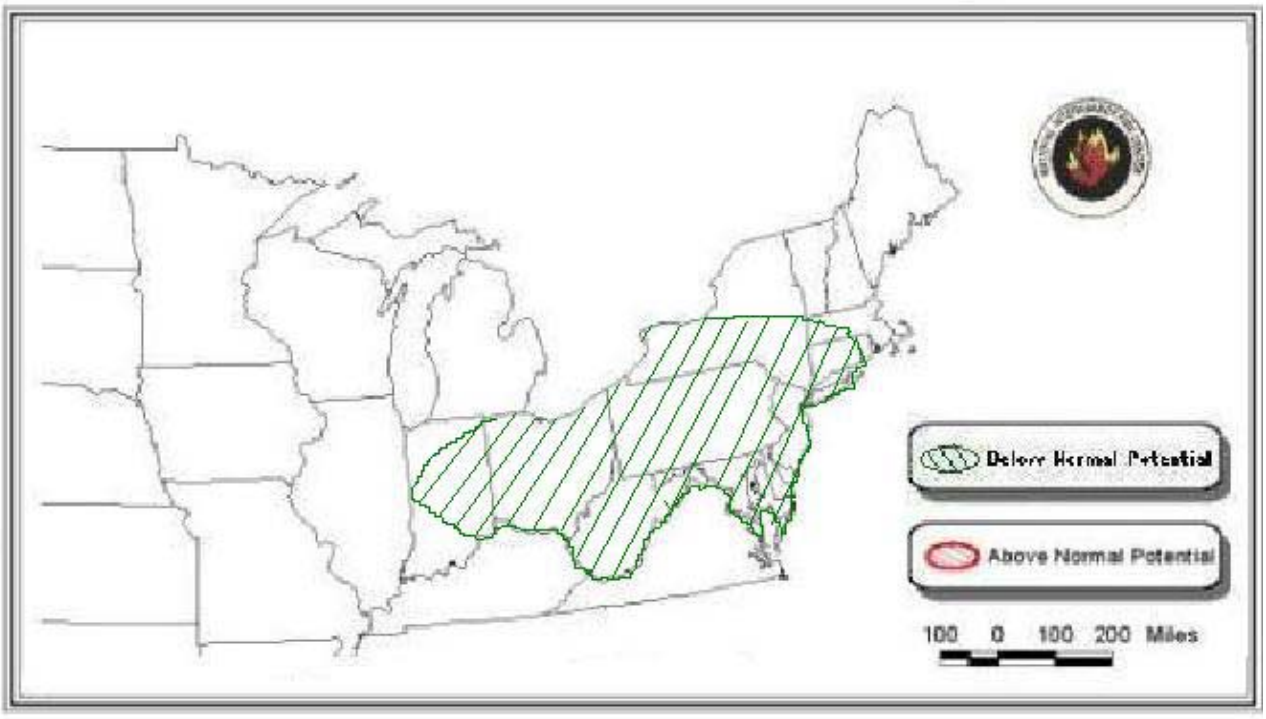
The El Nino Southern Oscillation (ENSO) through the winter of 2003-04 was in a neutral state, or in between El Nino and La Nina episodes, and will likely remain in a neutral state through the spring of 2004. Historically, neutral ENSO climatic impacts during this outlook period are uncertain across the Eastern Area. However, consensus climate forecasts for the spring of 2004 project a 55 to 60 percent chance of above normal temperatures over the western Great Lakes and northwestern Big Rivers Compacts from February to April. A 55 percent chance of above normal precipitation from May through July was indicated across the eastern half of the Big Rivers, mid-Atlantic and southern portions of the Northeastern Compacts.

The western Great Lakes and northwestern Big Rivers Compacts received below normal precipitation amounts through the latter half of 2003 and this was reflected in drought indicators and soil moisture anomaly maps available at the end of January and beginning of February 2004. Negative precipitation anomalies have been alleviated somewhat over the northeastern third of Minnesota and far northwest Wisconsin due to relatively significant snowfall and estimated water equivalent amounts in place at the end of January. However, negative precipitation anomalies and levels of drought remained over the rest of Minnesota, western Wisconsin, Iowa and northwest Missouri. If these areas do not see the expected slow improvement as projected in the consensus climate forecast and Seasonal Drought Outlook, they may experience the potential for multi-fire or large fire episodes during the spring 2004.

The eastern Big Rivers, Mid-Atlantic and Northeastern Compacts received above normal precipitation during 2003 and early 2004. This trend is expected to continue at least into the early spring months and this should sustain below normal fire potential to persist over much of these areas with no prolonged periods of fire activity expected.

The graphic displayed below shows expected fire potential for the spring of 2004. This outlook incorporates the condition of fuels across the Eastern Area based on the latest precipitation and soil moisture anomalies, drought and snow depth data. The outlook also utilizes the consensus climatic outlook presented at the 2004 Eastern/Southern Area Potential Assessment Workshop held at the end of January 2004.

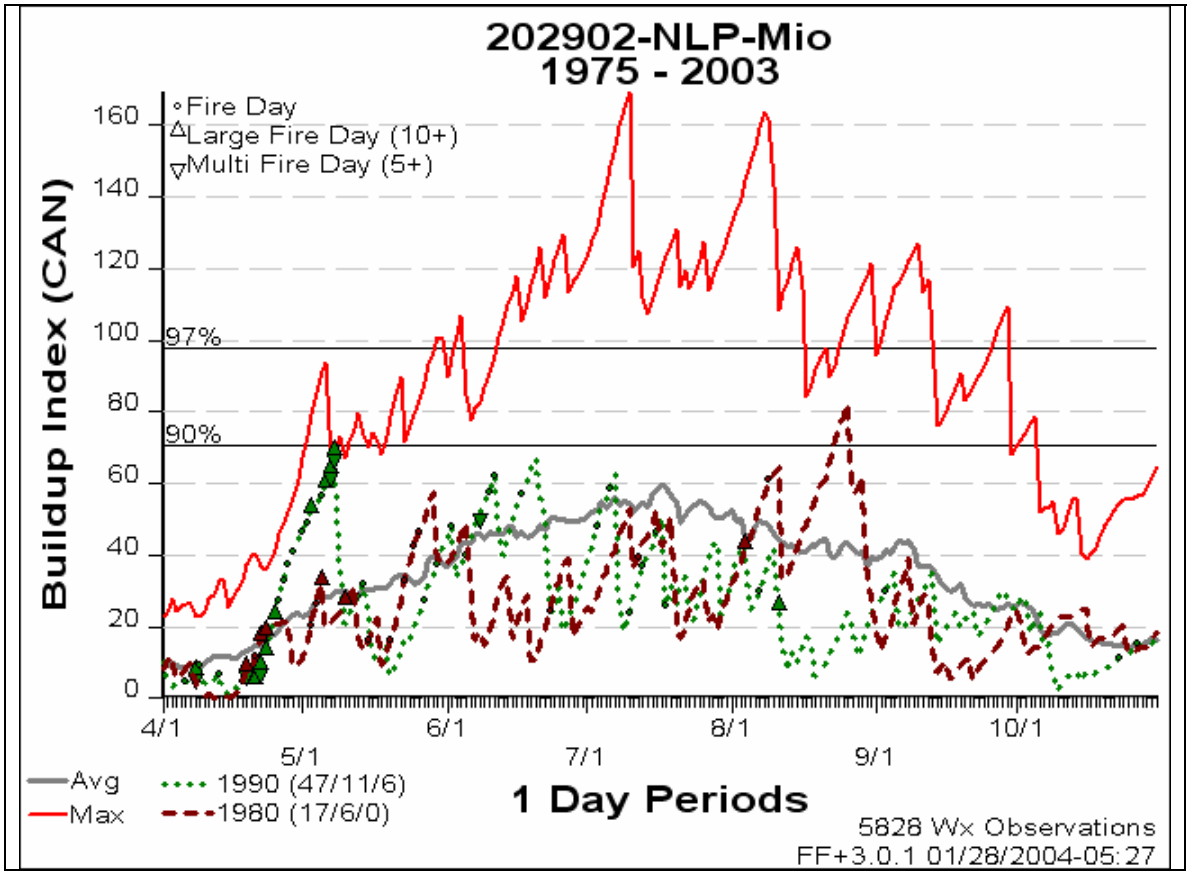
February through April 2004 Fire Potential



The spring fire season is driven by fine dead fuels and the influence of relatively short term weather patterns/episodes. Developing a seasonal fire activity outlook based on this fuel component is difficult when referencing climate forecasts/projections. These climate forecasts indicate that these reestablished normal trends are likely to continue. If this materializes, it is likely the Mid Atlantic and the Northeast have a strong probability of experiencing below normal fire activity for the spring.

It is difficult to assess fuel conditions at this early date. Related to fire activity these fuels are responsive to short term weather variations versus seasonal trends. However, discounting the potential for major fires during the spring would be a serious mistake. Fire frequency peaks during the spring, due to the abundance of fine dead fuels and the absence of live green fuels. These fuels are readily available and respond to short term variations in weather that cannot be reliably inferred from the national situation and consensus forecast products included. Vegetation types that are grass dominated or that grow on thin or sandy soils respond to even short duration drying and are prone to burn aggressively in otherwise normal periods. Though this area of concern represents less than 10% of the total acreage in the Eastern Area, located largely on Cape Cod, Long Island, the New Jersey Pine Barrens, the Del-Mar-Va peninsula, and the northern Great Lakes, they are interspersed with widespread interface communities.

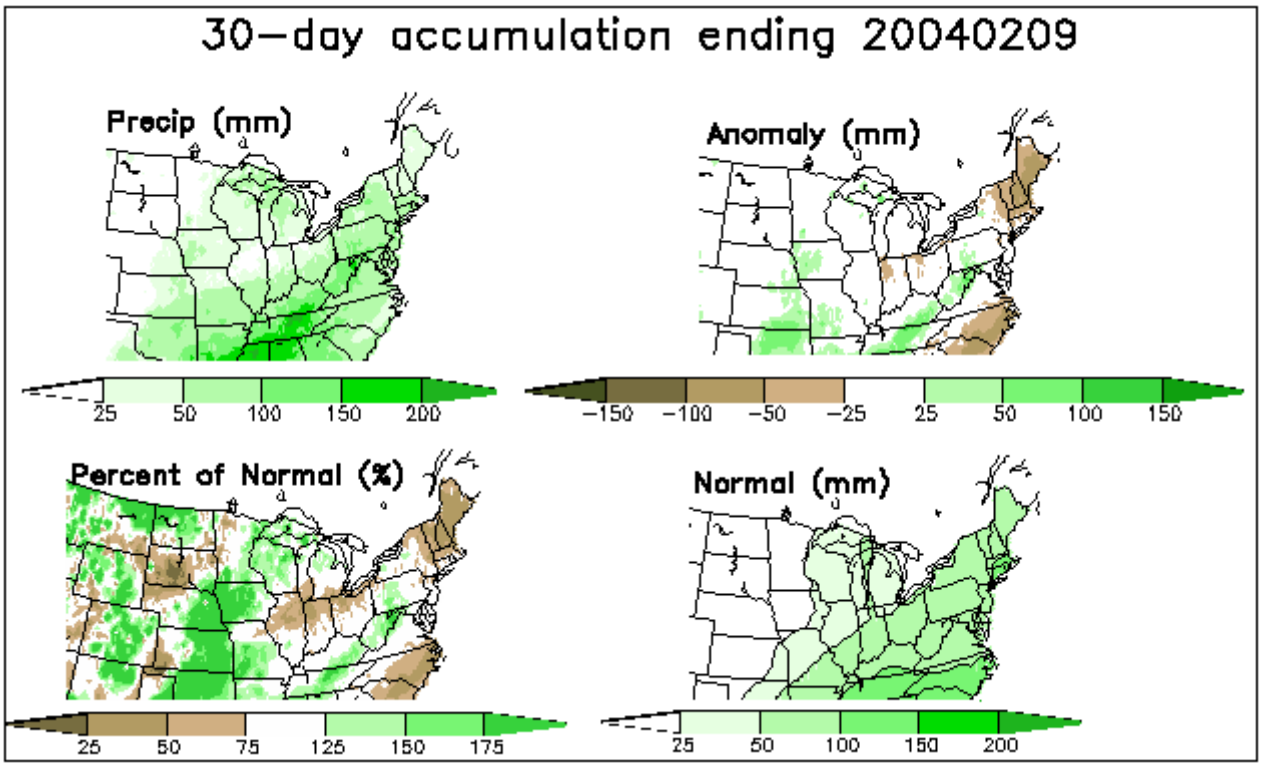
Two well known examples are the Mack Lake Fire of 1980 and the Stephan Bridge Fire of 1990, both in the Jack Pine plains of northern Michigan near Mio. While both seasons were relatively unspectacular overall, these two events devastated communities in their paths. The Mack Lake fire burned more than 20,000 acres and killed one firefighter on May 5th, 1980. It occurred only 4 drying days after 0.61" of rain on April 29-30 and normal rainfall during the month of April. The Stephan Bridge Fire burned 5,916 acres and destroyed 44 homes on May 7th. The attached season graph illustrates the overall character of these fire seasons and the short duration events that led to these fires:

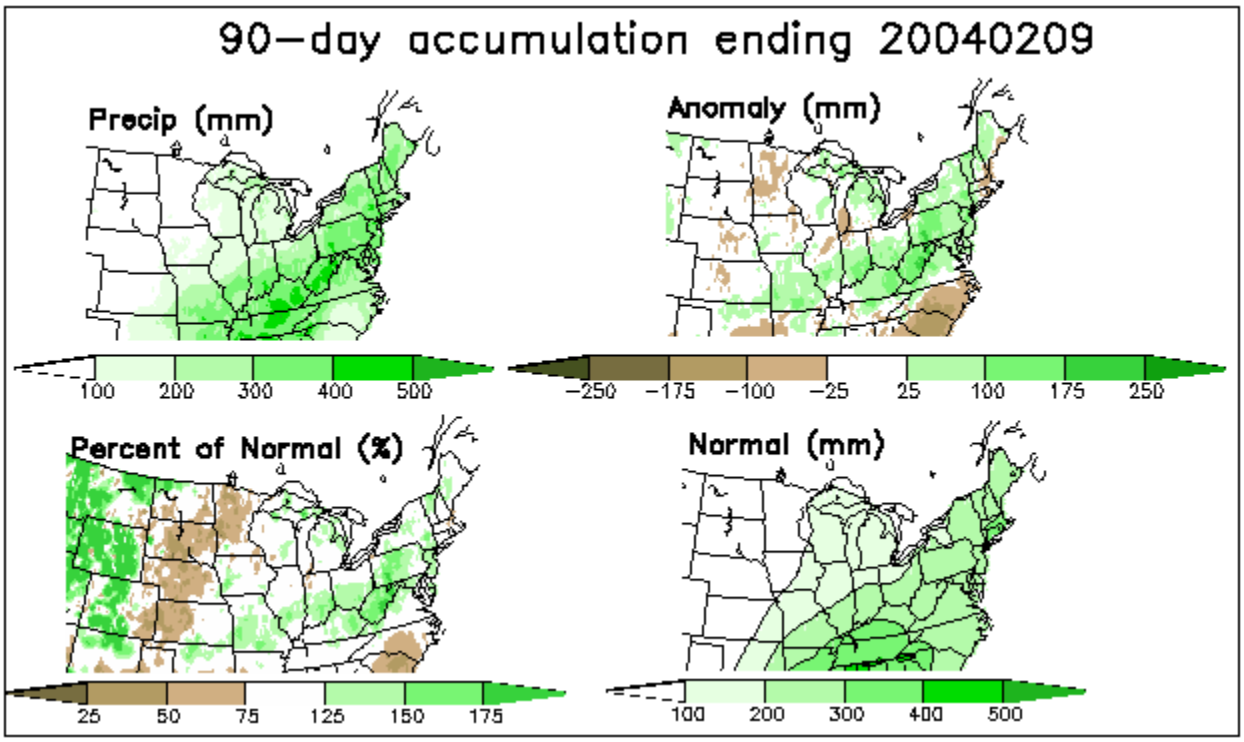

202902-NLP-Mio
1975 - 2003
Fire Day
Large Fire Day (10+)
Multi Fire Day (5+)
Buildup Index (CAN)
160
140
120
100
80
60
40
20
0
97%
90%
4/1
5/1
6/1
7/1
8/1
9/1
10/1
Avg
Max
1990 (47/11/6)
1980 (17/6/0)
1 Day Periods
5828 Wx Observations
FF+3.0.1 01/28/2004-05:27

Current Conditions

Accumulated Precipitation and Drought Review

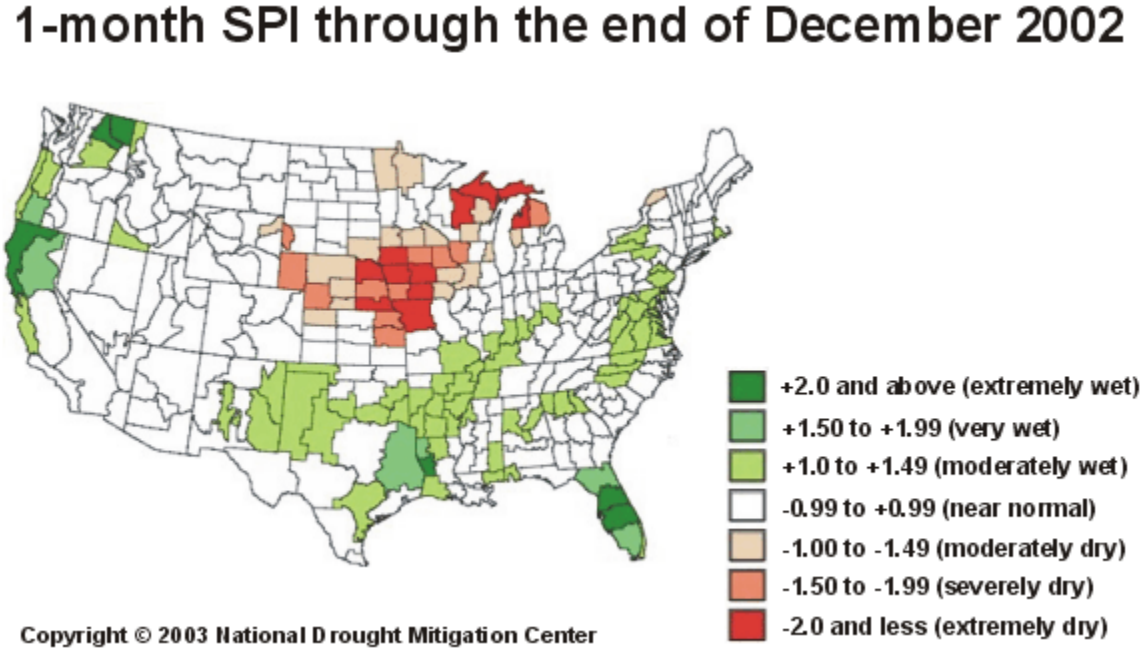
The following graphics display accumulated precipitation data for the previous 30 and 90 day periods ending on February 9, 2004. Over the 30 days leading up to February 9th, portions of the northwestern , Great Lakes and northeastern New England states received below normal amounts of precipitation while the northwestern Big Rivers Compact received above normal amounts. The 90-day period preceding February 9th produced below normal amounts across portions of the western Great Lakes and northwestern Big Rivers Compact. The 90-day precipitation anomalies ending on February 9th are also fairly similar to the latest U.S. Drought Monitor graphic.

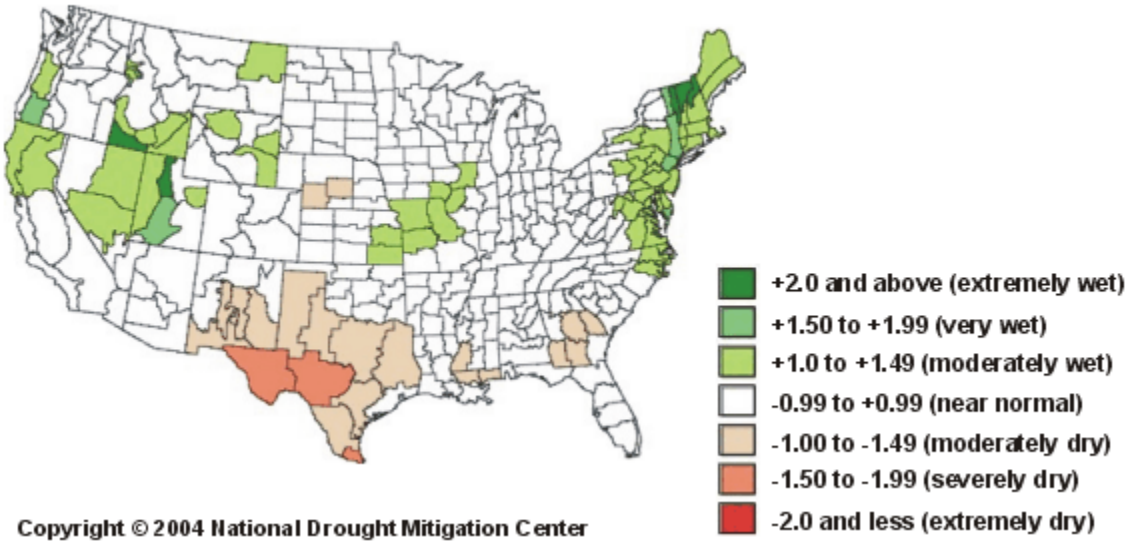




Standard Precipitation Index

December 2002 vs. 2003

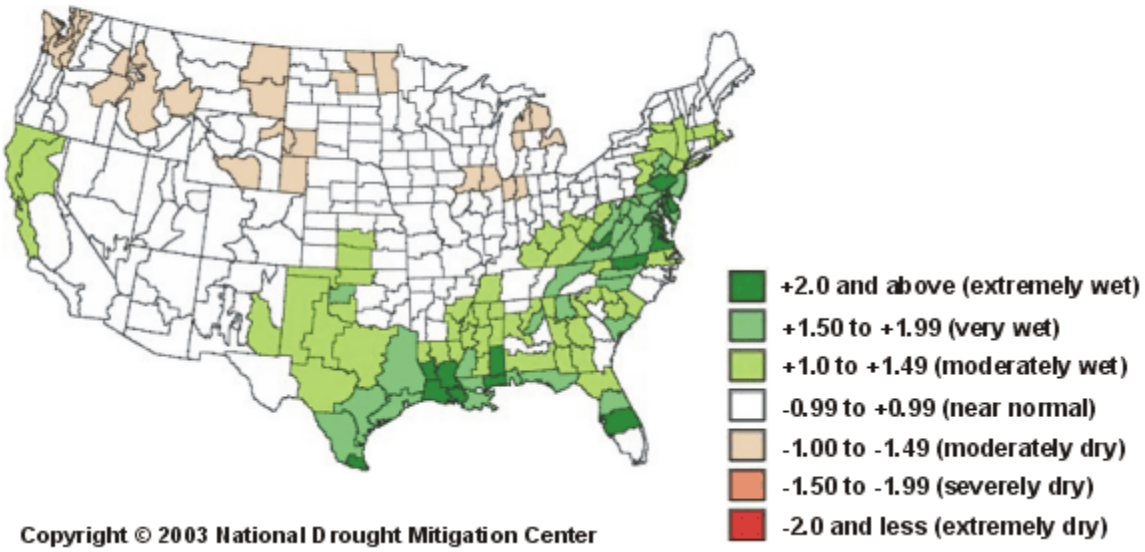




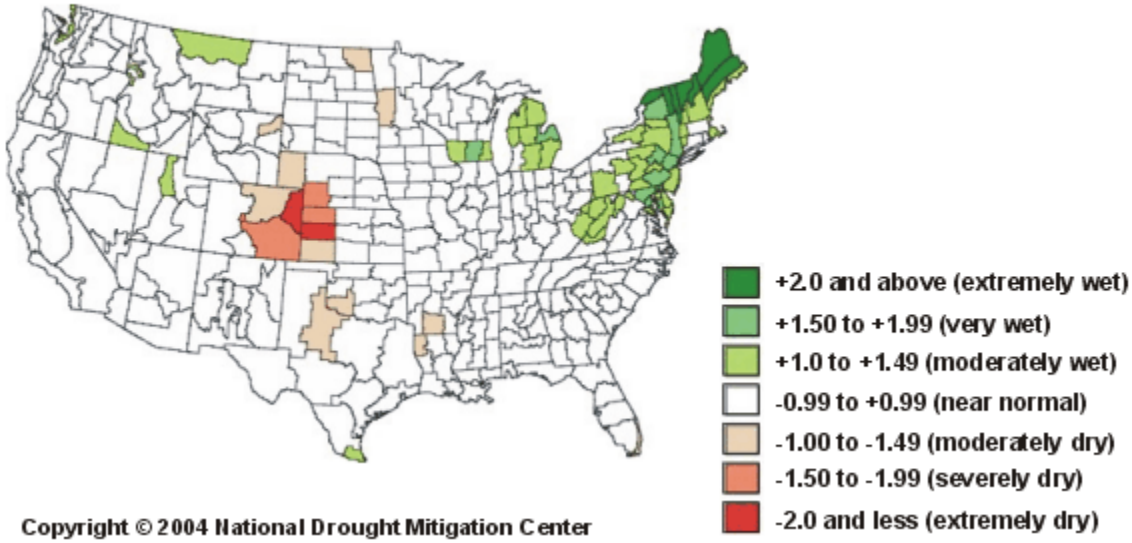
- One month Standard Precipitation Index maps show significant deficits in Dec 2002 compared to Dec 2003 across the Mid Mississippi Valley and northern parts of the Great Lakes
- One month SPI maps are similar across the eastern mid-Atlantic states when comparing December 2002 and December 2003 and have improved over the northern New England states

Late Autumn/Early Winter 2002 vs. 2003

3-month SPI through the end of December 2002



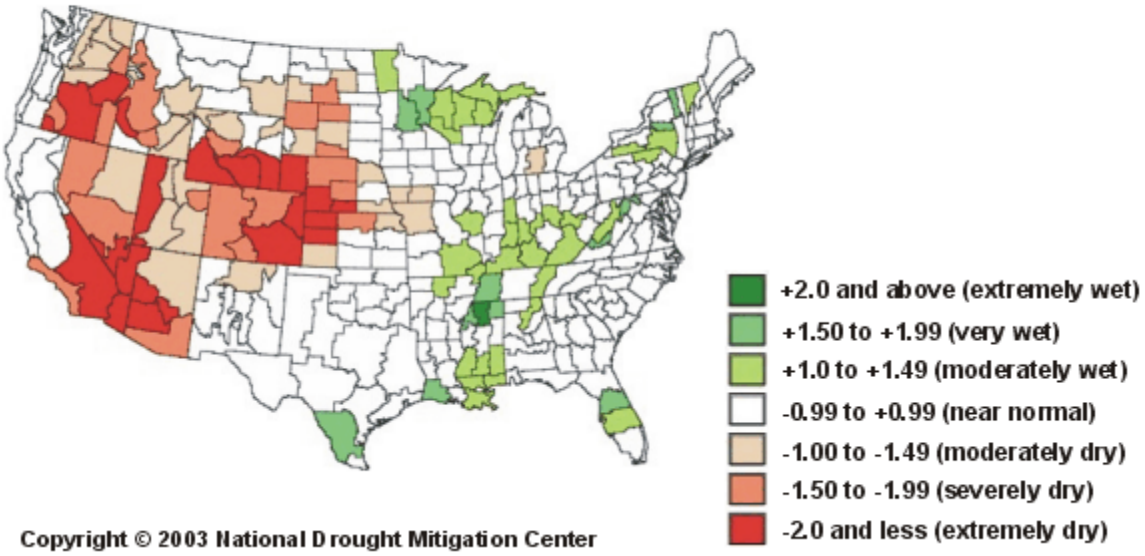
3-month SPI through the end of December 2003



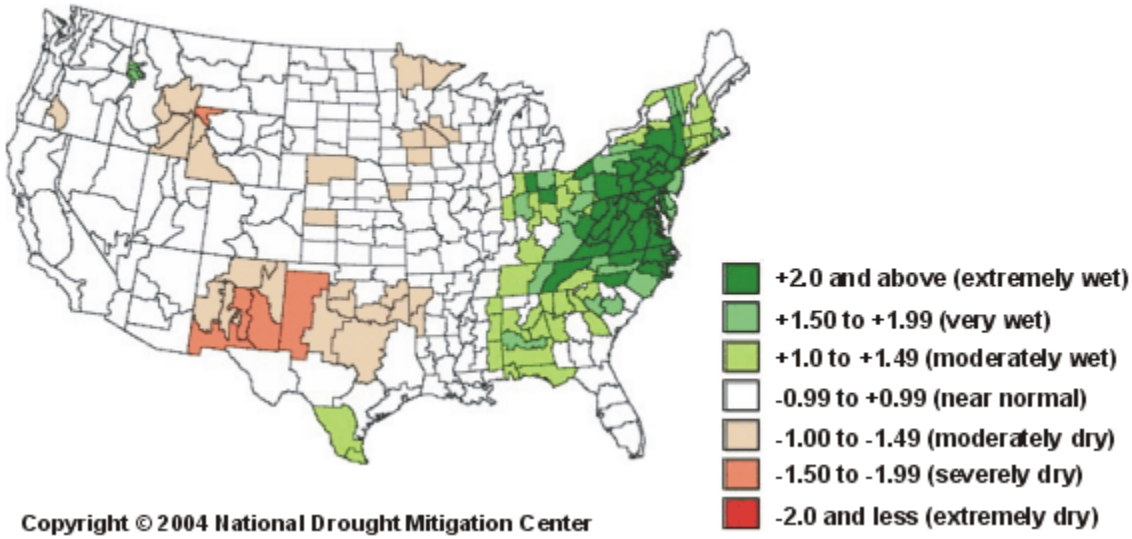
- Three month SPI maps indicate improved conditions over the northern Lower Peninsula of Michigan and New England when comparing 3-month SPI maps at the end of 2002 and 2003

12 Month Totals December 2002 vs. December 2003

12-month SPI through the end of December 2002



12-month SPI through the end of December 2003



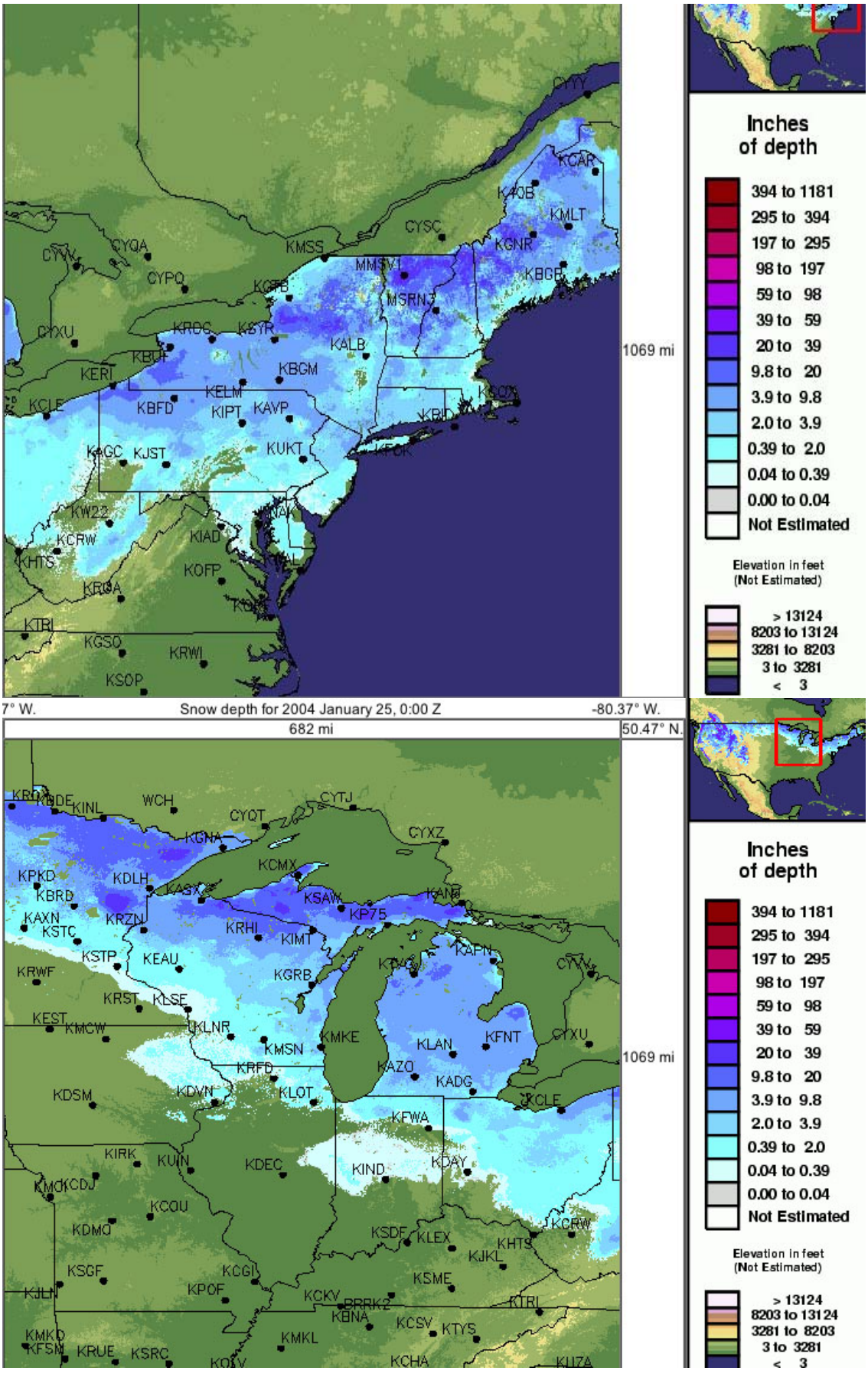
- Annual SPI maps indicate that the wet conditions increased dramatically across the eastern Mid-Atlantic, eastern Big Rivers, and southern Northeastern states when comparing the SPI maps ending in December 2002 and 2003. Meanwhile, conditions went from slightly wet to slightly dry over portions of the western Great Lakes during this same time span.

- Seasonal drought currently in place over the western Great Lakes and northwestern Big Rivers is not as extreme when looking at the SPI maps over an annual period. This shows the relatively short term nature of these precipitation deficits.

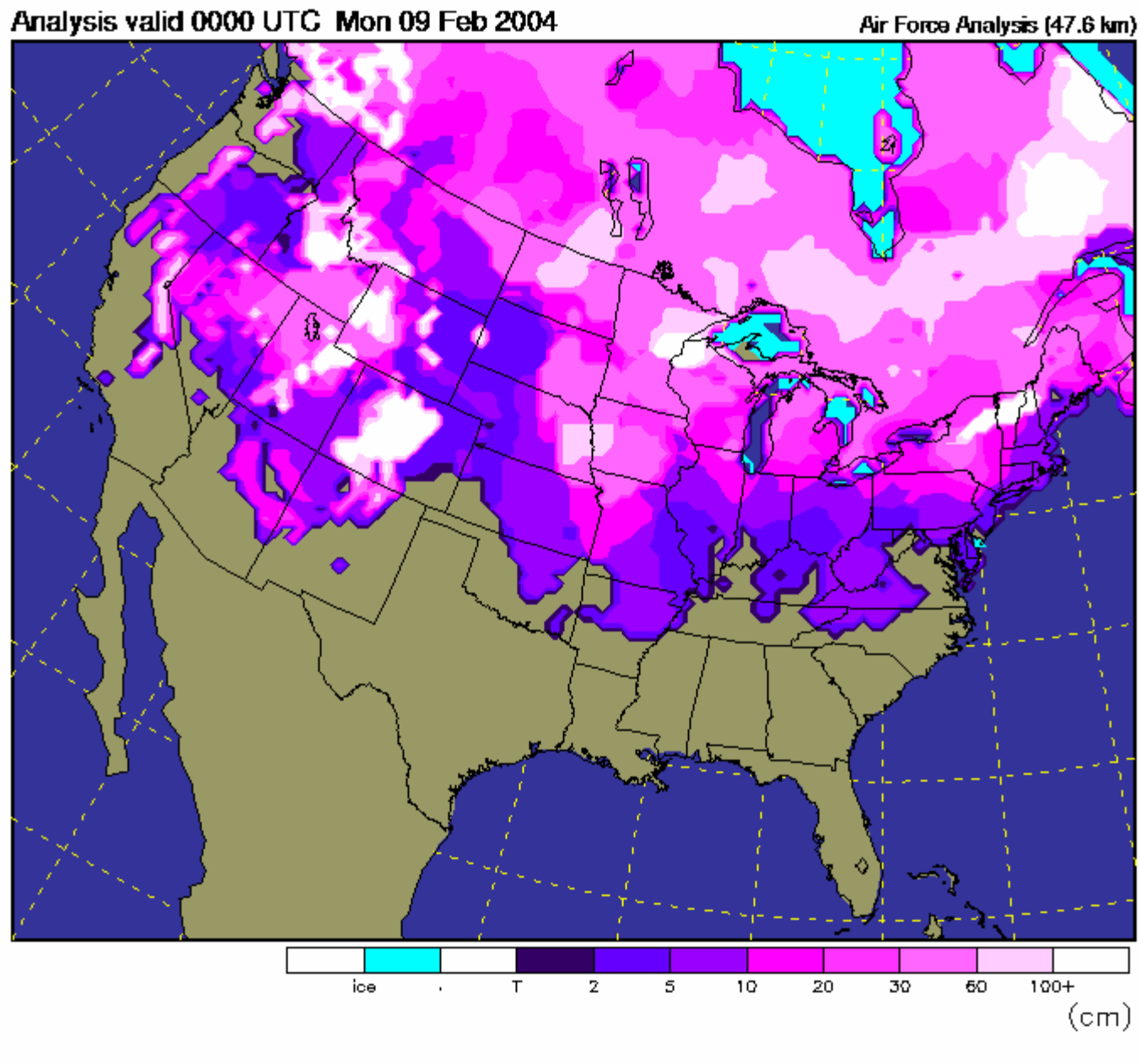
Standard Precipitation Index charts displayed above depict precipitation anomalies within each climate zone over the past 12, 3 and 1 month periods. Fairly frequent and significant precipitation events during the winter of 2002-03 provided some relief to the long term drought which was in place across the Mid-Atlantic states and eastern seaboard at the end of the Fall of 2002. Above normal precipitation amounts continued over the above areas through the rest of 2003 and led to the extremely wet conditions in place at the end of January 2004. Meanwhile, precipitation deficits across parts of the western Great Lakes and northwestern Big Rivers Compacts remain in place.

What is the Standardized Precipitation Index?

Estimated Snow Water Equivalent

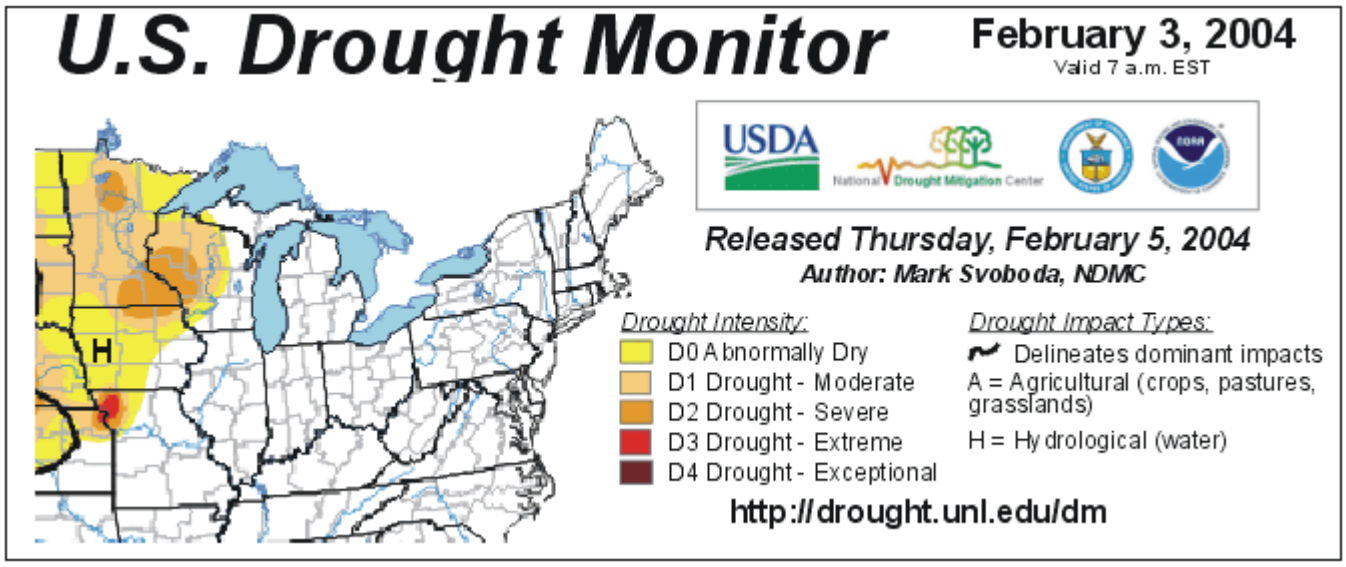


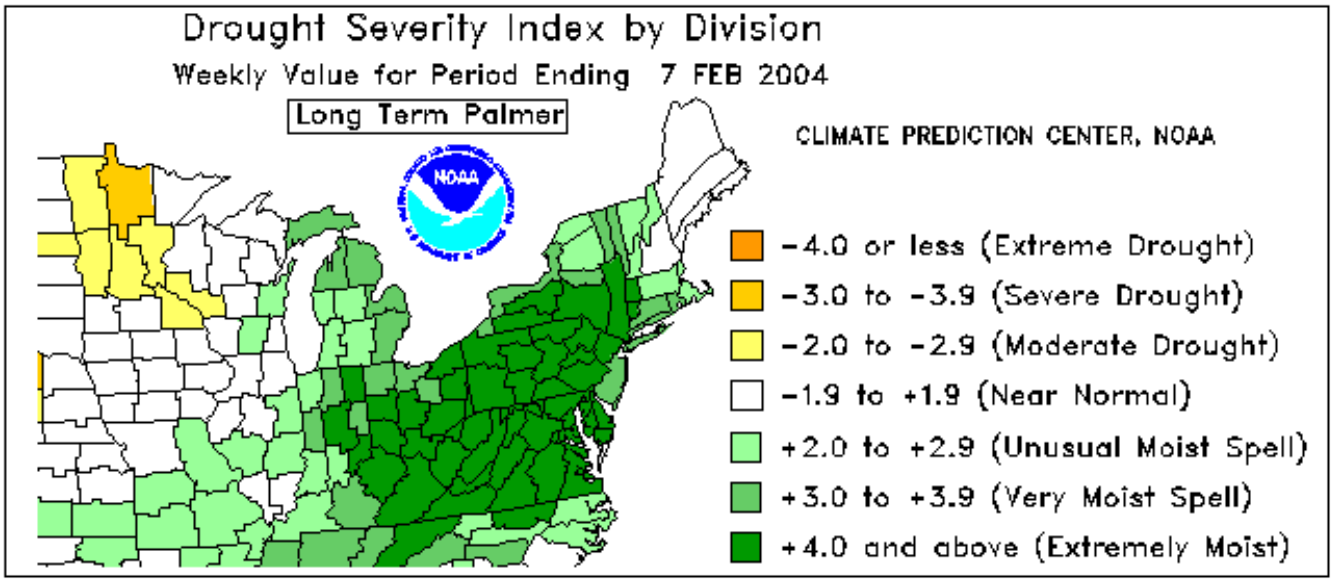
Snow depth (cm)



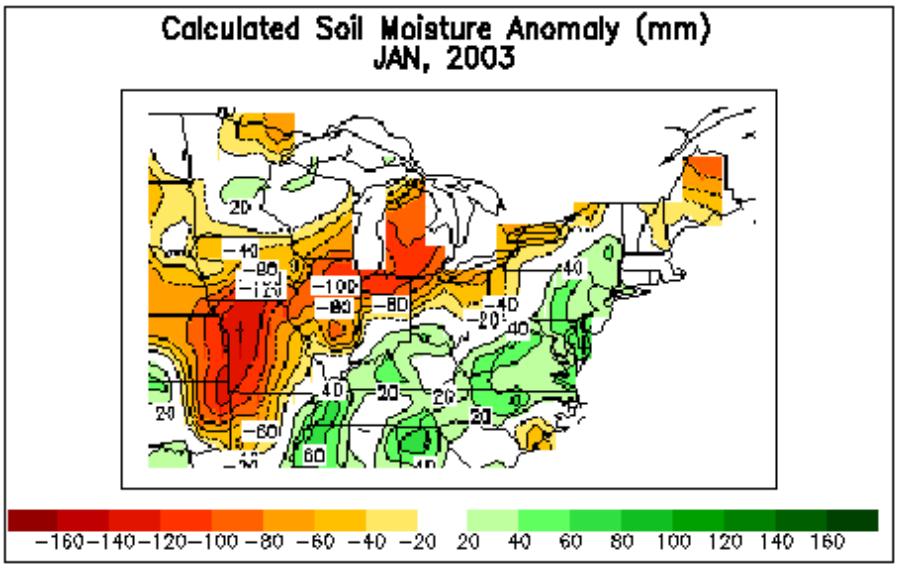
Snow depth information ending on February 9, 2004 is displayed above. The graphic displayed at the top of this page depicts the current snow depth as of this date. The deepest snow cover as of February 9th was found over the north to northwest Great Lakes, northwestern Big Rivers, and north central Northeast Compacts. A series of low pressure systems have recently (Late January into early February 2004) have produced additional precipitation over much of the Eastern Area.

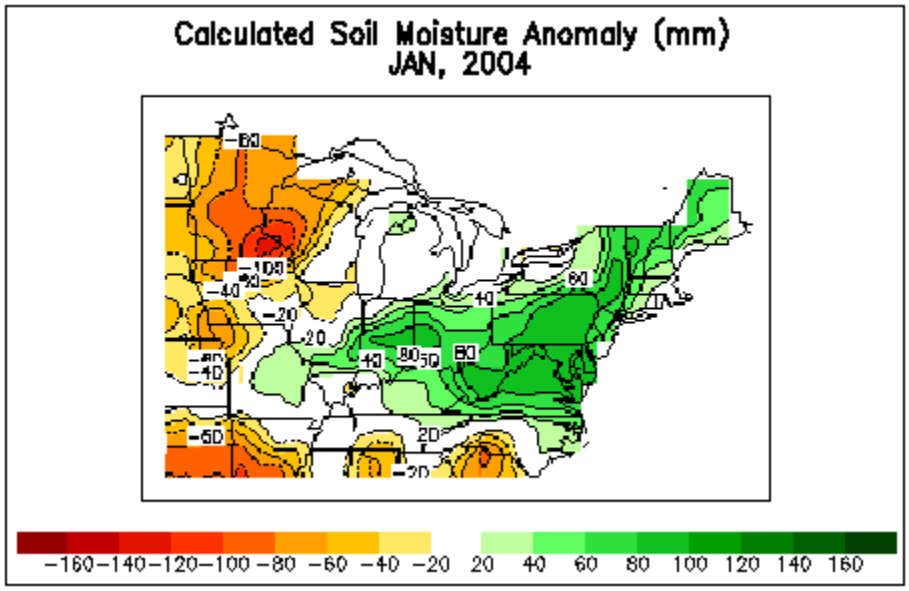
Drought Indicators and Soil Moisture Anomalies





12 Month Anomalies





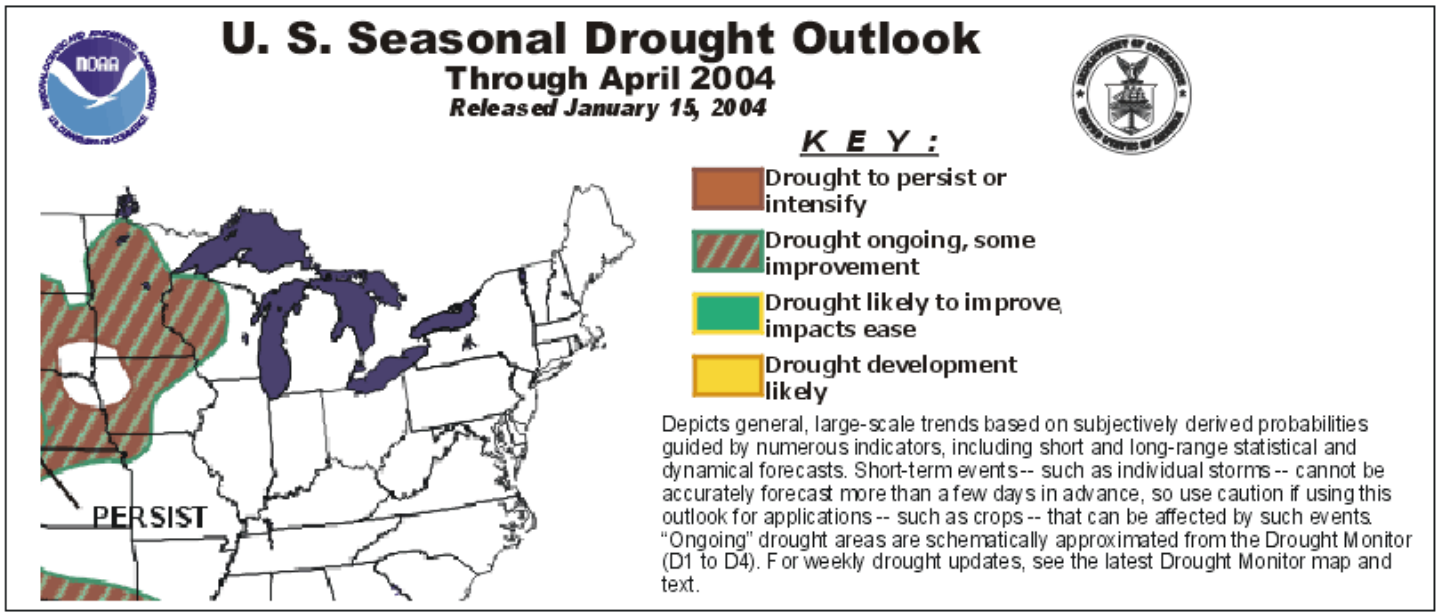
The above graphics displaying the latest Long Term Palmer Drought Index reflect the areas where the highest precipitation anomalies are in place. While portions of the western half of the Great Lakes are currently in a moderate to severe drought, much of the eastern Big Rivers, Mid-Atlantic and southern New England state compacts are recording high levels of moisture. The U.S. Drought Monitor graphic displayed below also reflects where the highest precipitation deficits are in place at the beginning of February 2004.

Soil moisture anomalies can be used as a valuable indicator of not only the possibility of fire ignition but also incident longevity. 12 month soil moisture deficits shifted from the Big Rivers and eastern Great Lakes to the western Great Lakes during 2003 as depicted by the 12 month soil moisture anomalies ending in January 2003 and January 2004 displayed above.

Long Range Drought and Precipitation Outlooks

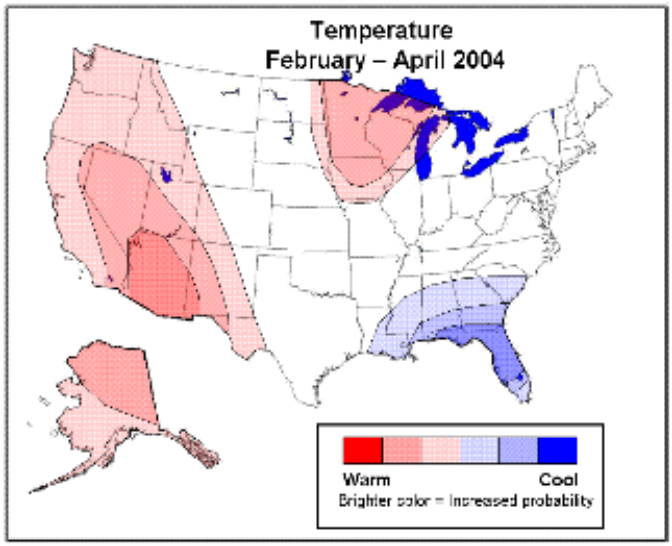
Drought Outlook

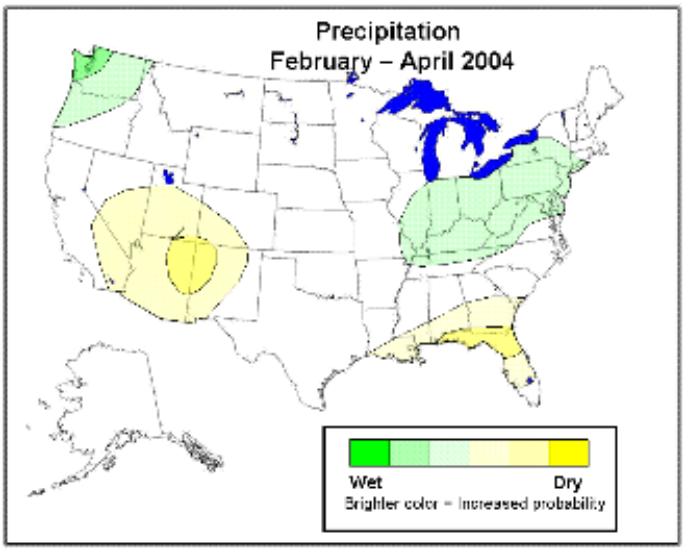
Based on the Climate Prediction Center's 90-Day temperature and precipitation outlooks for February through April of 2004 the graphic below indicates areas where drought is expected to expand, persist or improve. While drought continues across portions of the Great Lakes and northwestern Big Rivers, some improvement is expected over these areas through the late winter and early spring of 2004.

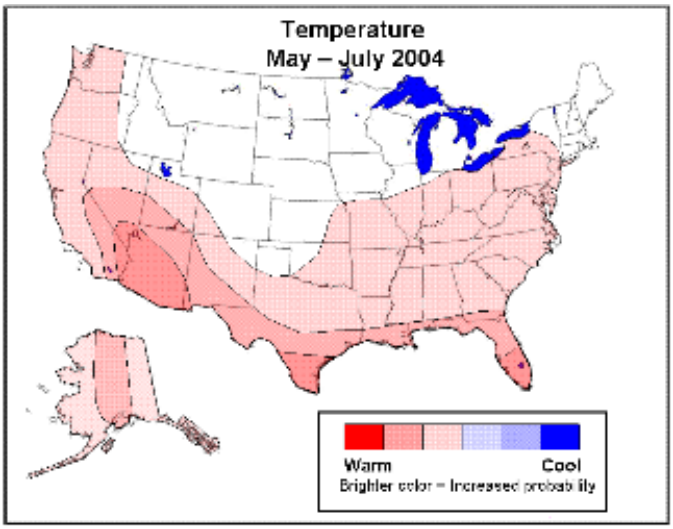


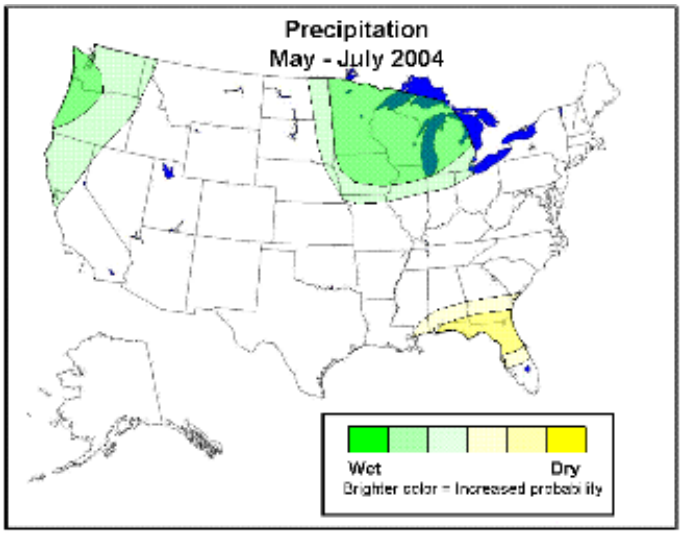
Long Range Precipitation and Temperature Outlook

The following graphics below display the temperature and precipitation outlooks for the spring of 2004 assembled by various climate experts at the 2004 Eastern/Southern Area Seasonal Assessment Workshop. The areas contoured in light to medium pink in the northwestern Big Rivers and western half of the Great Lakes in the graphic on the left below indicate a slight to moderate chance of above normal temperatures during February through April of 2004. The areas contoured in light green in the graphic on the right indicate a slight chance of above normal precipitation over the same time period.



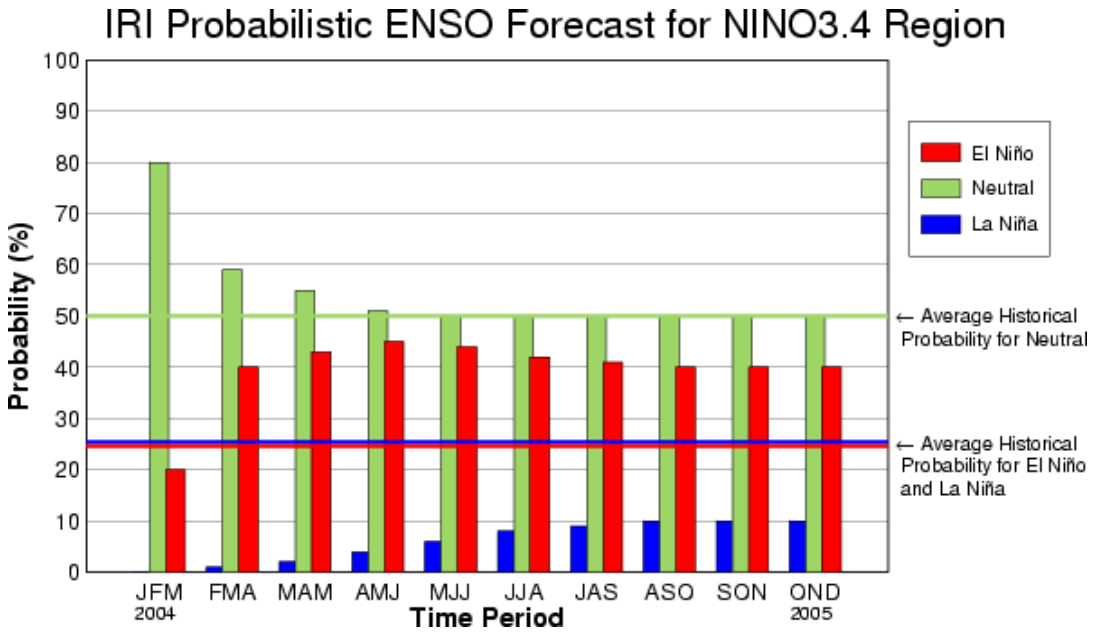






El Nino/Southern Oscillation Discussion

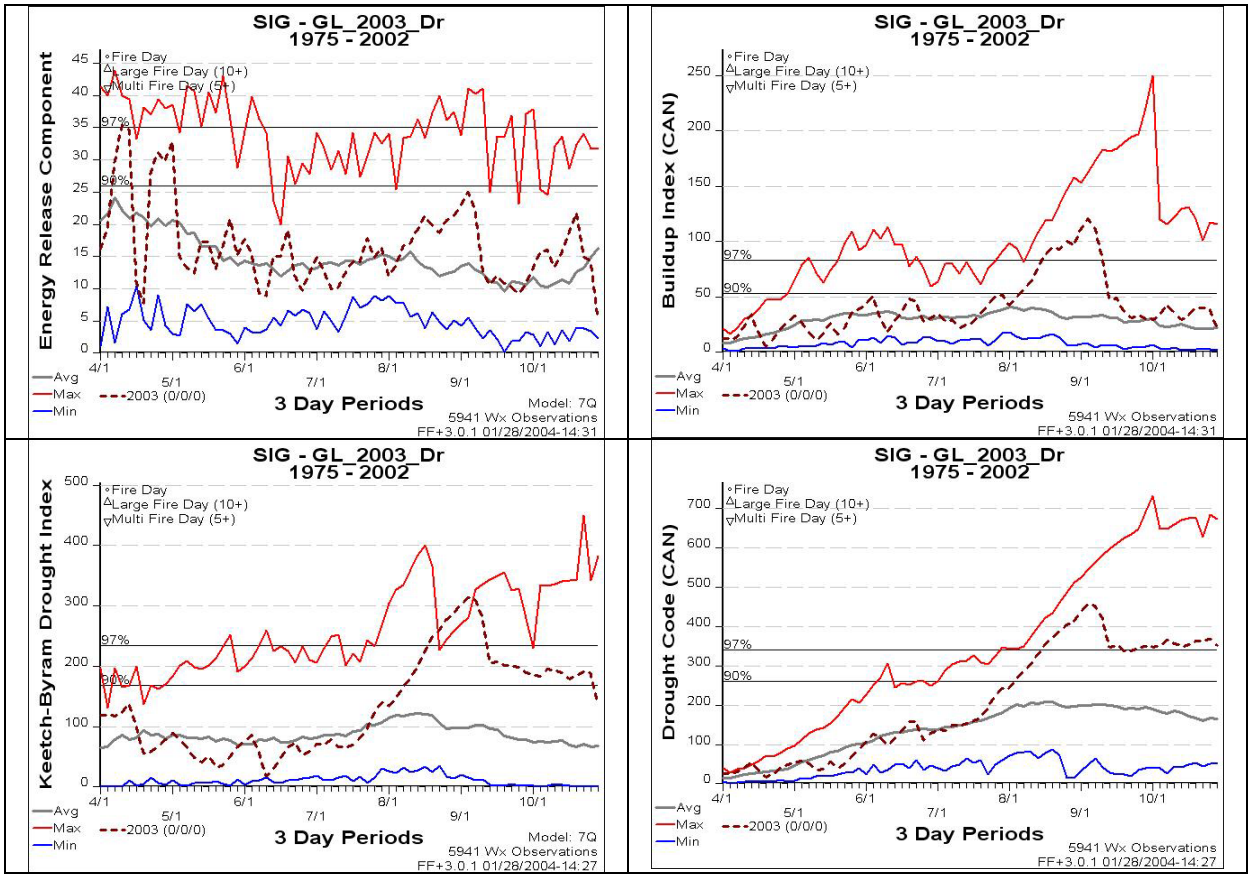
The El Nino/Southern Oscillation (ENSO) refers to anomalies in sea surface temperatures (SST) across the southern Pacific Ocean. An El Nino episode refers to warmer than normal SST's over the eastern tropical Pacific while a La Nina episode refers to cooler than normal SST's over the same area. The El Nino Southern Oscillation (ENSO) through the winter of 2003-04 has been in a neutral state, or in between El Nino and La Nina episodes, and will likely remain in a neutral state through the spring of 2004. Neutral ENSO climatic impacts during this outlook period are uncertain across the Eastern Area. However, consensus climate forecasts for the spring of 2004 project a 55 to 60 percent chance of above normal temperatures over the western Great Lakes and northwestern Big Rivers compacts from February to April. A 55 percent chance of above normal precipitation from February through April was indicated across the eastern half of the Big Rivers, mid-Atlantic and southern Northeastern states.



State Compact Outlooks

Great Lakes and Northwestern Big Rivers Outlook

Based on the integration of precipitation assessment tools reviewed above and the drought indicators shown here, lingering precipitation deficits and their effect on large fuels and organic soils do exist in Iowa, nortrhwest Missouri, Minnesota, and western Wisconsin. While the seasonal variables ERC and BUI fell to typical minimums by the end of the 2003 season, Drought Code and Keetch-Byram Drought Index values remain elevated. This condition may contribute to increased fire behavior and mop-up difficulty where fires occur in those areas.



With no expectation that late winter precipitation will deviate from climatological norms, even those dry areas are expected to experience some improvement. Based on this, prolonged periods of above normal fire activity are not expected over much of the Great Lakes.

Mid-Atlantic, eastern Big Rivers, Northeast Compacts

Based upon the most recent weather and climate data available, the early spring fire season forecast is for below normal activity. Prolonged periods of fire activity are not expected through the spring fire season. It is difficult to assess fuel conditions at this early date, but the Spring fire season in these areas are driven by fine, dead fuels and the factors that influence them. Related to fire activity, these fuels are responsive to short term weather variations versus seasonal trends.

Following a drought pattern that existed during the previous 5 years, normal precipitation and temperature patterns returned to the NE and the Mid- Atlantic regions of the Area in spring 2003. Through the course of the summer and fall of 2003 precipitation amounts mitigated the precipitation deficits that resulted from the drought period. Climate indicators and forecast

models indicate that this portion of the Area is no longer categorized in drought conditions. Into the winter, normal precipitation patterns and snowfall amounts continue to exhibit normal trends. However, it is important to acknowledge that several days to a week of moderate to high fire danger can create fuel conditions that may produce an episode of fires or a major fire, particularly in areas of sandy soils.

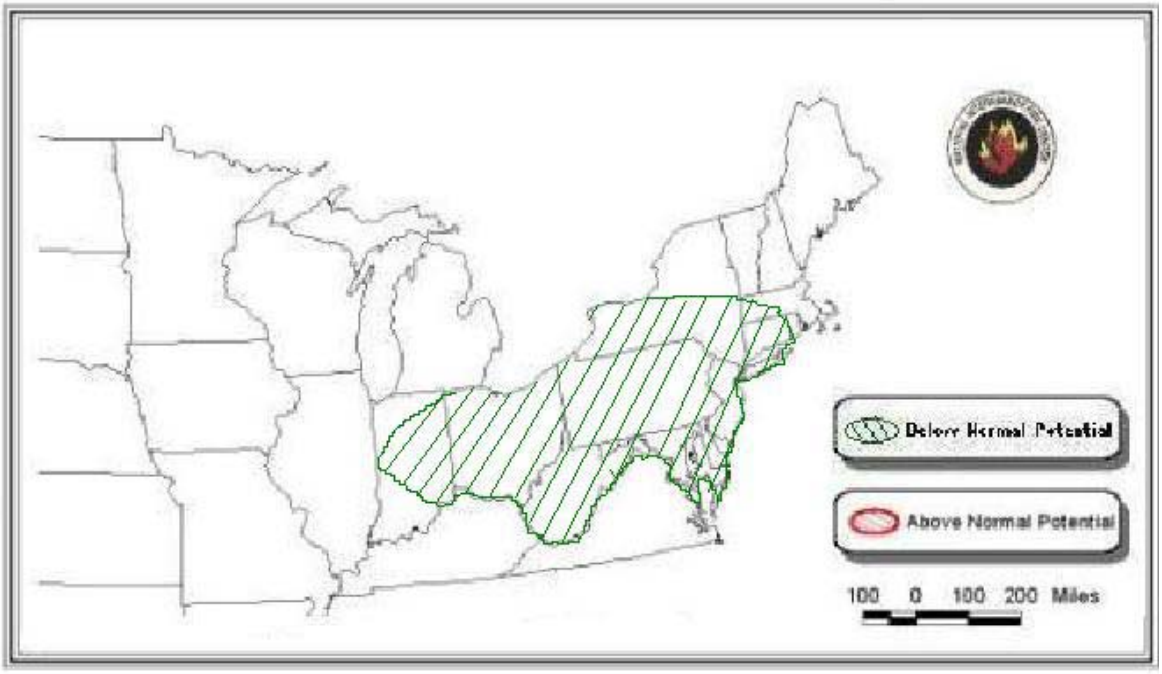
Resource Outlooks

Historically the Eastern Area does not import large amounts of resources. However, based upon current information the spring 2004 fire season across portions of the western Great Lakes and northwestern Big Rivers could potentially be robust in nature if adequate precipitation amounts/events do not occur in certain areas. Despite the late January storm which created new snowfall amounts across northern and eastern parts of the Eastern Area, some of the areas in precipitation deficits before this precipitation event remain so, especially over southern Minnesota and northern Iowa. If these below normal snow depths/snow amounts are not alleviated through the remainder of the winter months grasses will not be compressed and remain standing. These fine fuels will then be readily available for ignition after snow melt and may create a high resource need if any periods of high fire danger occur before green-up. Fires in the peat soil areas may also be very problematic if spring time rainfall events/amounts are minimal.

Without strong indications for above or below normal wildfire potential, there may be increased opportunities for prescribed fire, especially in the northern and western portions of the eastern area. Conditions throughout the area could also allow for sharing of resources with the rest of the country.

Eastern Area Spring 2003 Fire Potential Outlook

February through April 2004 Fire Potential



The consensus climatic outlook for the spring of 2004 was made by the following people:

Joe Kennedy, New York State Forest Ranger
Ric Lillard, Regional Fire Manager, Maryland DNR
Steve Marien, Fire Weather Program Manager, Eastern Area Coordination Center
Don Scronek, Forest Assistant Fire Management Officer, Allegheny NF, PA
Robert Ziel, Fire Behavior Analyst, Michigan-DNR

Climate Consensus Forecast Contributors:

Tony Barnston, International Research Institute for Climate Prediction (IRI)
Tim Brown, Program for Climate, Ecosystems and Fire Applications (CEFA)
Daniel Graybeal, Northeast Regional Climate Center
Russell Martin, NOAA-Climate Prediction Center
John Roads, Scripps Institution of Oceanography
Kevin Scasny, Southern Area Coordination Center