ROCKY MOUNTAIN AREA PREDICTIVE SERVICES

2005 Seasonal Fire Weather/Fire Danger Outlook

July 19, 2005

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Rocky Mountain Area (RMA) Predictive Services provides fire weather and intelligence support to the 10 cooperating agencies of the RMA, which are the USDI Bureau of Indian Affairs, the USDI Bureau of Land Management, the USDI Fish and Wildlife Service, the USDI National Park Service, the USDA Forest Service, and the states of Colorado, Kansas, Nebraska, South Dakota and Wyoming.

A. Executive Summary

The objective of this report is to assess factors for the remainder of the 2005 wildland fire season in the Rocky Mountain Area (RMA) and provide information and recommendations that can improve preparedness for wildland fire management agencies. This report is based on past developments, current trends and conditions, and future predictions. Long-range predictions of fire weather and fire occurrence should be looked at with some degree of skepticism.

Drought conditions have significantly improved over the RMA over the past year, however moderate to severe drought conditions remain in place over northern Wyoming and the Black Hills region.

Hot and dry conditions across the RMA over the past three weeks have resulted in a significant increase of ERC-G values and decrease in 1000-hour fuel moisture. This combination has increased the potential of large fire activity. Fine dead fuel loading (grass) is excessive this year, thus increasing the potential for rapid fire growth.

The Southwest Monsoon will likely begin this week (July 22-24) over the Southwest United States, which will be the 2nd latest start date on record. The average onset date of the Southwest Monsoon for Tucson, Arizona is July 3rd, with July 25th being the latest onset date on record. Colorado and southern Wyoming typically experience a decrease in fire potential around mid July as humidity and wet thunderstorms increase. Mid to late July, northern Wyoming and the Black Hills typically experience and increase in fire potential.

The Climate Prediction Center (CPC) July 2005 outlook will likely not verify, with much of the RMA experiencing several days of above average temperatures and below average precipitation. However, precipitation outlooks for Colorado and southern Wyoming for the next 2 weeks, suggest an increase in wet thunderstorm activity. The outlook August, September and October, suggest near average precipitation. Average to above average temperatures are expected for the remainder of the summer.

For Colorado and southern Wyoming, above average potential for large fires currently exists over much of the state, however some moderation in fuel conditions are expected after July 23rd. This moderation may be short lived with some uncertainty of the 2005 Southwest Monsoon. Periods of above average potential for large fires will likely continue across northern Wyoming and the Black Hills through mid August. **Earlier expectations that the 2005 fire season would be busier than 2004 has been realized.**

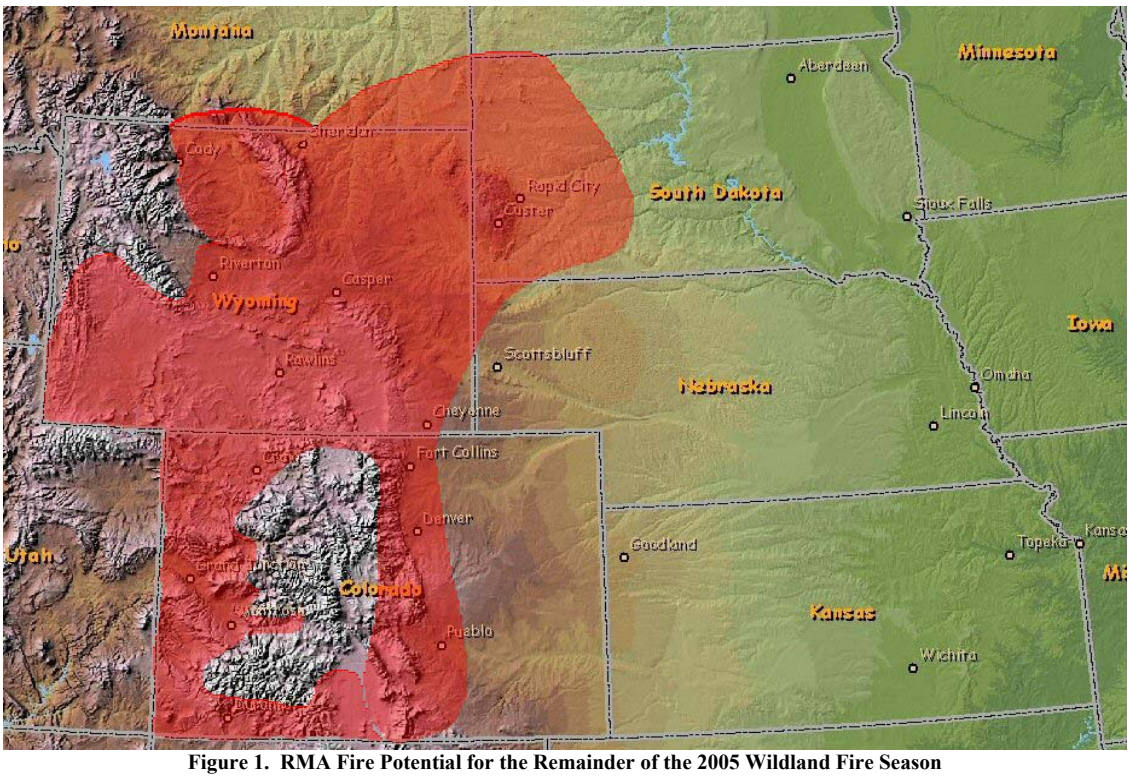

Figure 1. RMA Fire Potential for the Remainder of the 2005 Wildland Fire Season

B. Current Conditions and Comparisons with Historical Records

A comparison of the U.S. Drought Monitor to last year for about the same time (Figures 2 and 3), indicates that improvement has occurred over most of the RMA, and significant improvement has occurred when comparing current conditions to drought conditions in July 2003 (Figure 4) and July 2002 (Figure 5). Portions of Wyoming and the Black Hills region have the worst drought conditions in the RMA with indices in the "moderate" to "severe" categories. Moderate to severe drought conditions are also noted over northwest Wyoming, southwest Wyoming, and northwest Colorado.

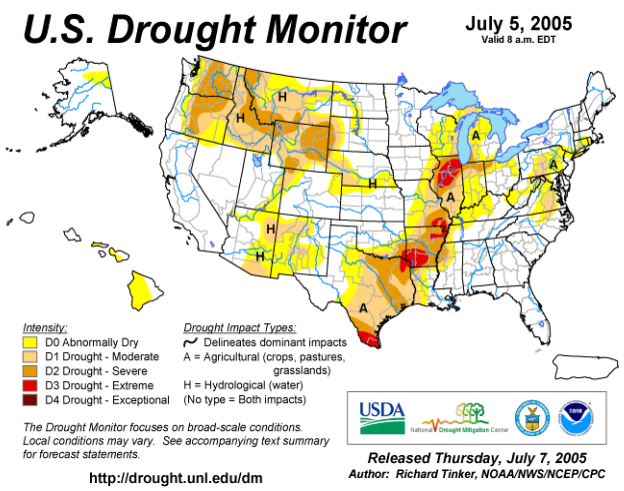

Figure 2. Drought Monitor for July 5, 2005.

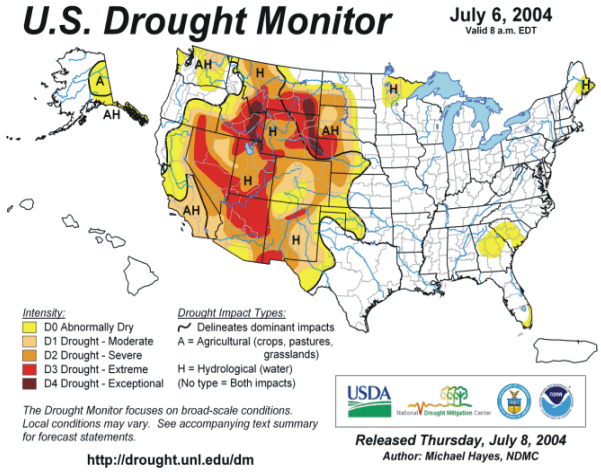

Figure 3. Drought Monitor for July 6, 2004.

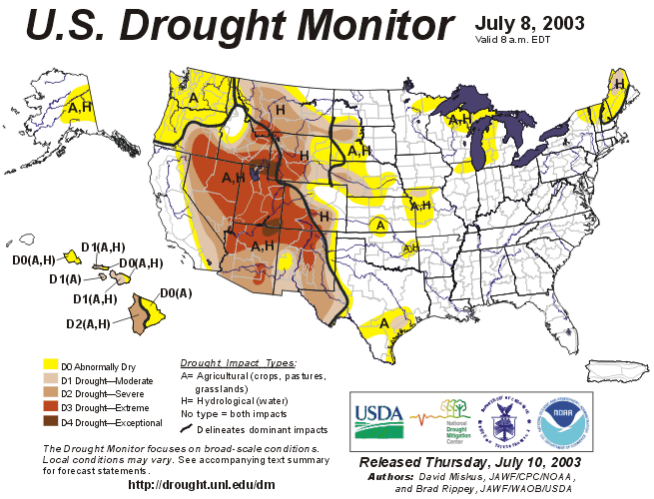

Figure 4. Drought Monitor for July 8, 2003.

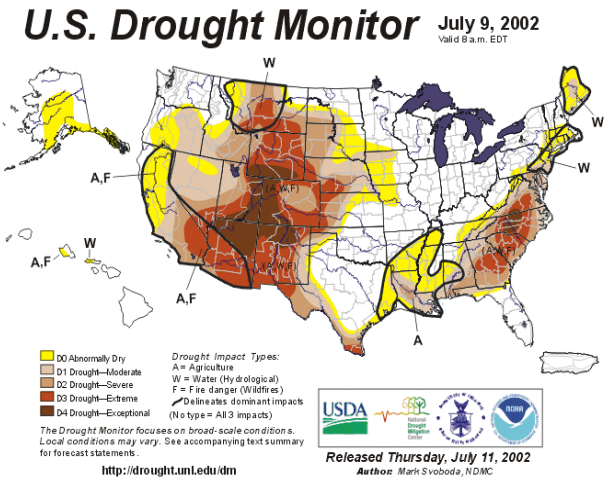

Figure 5. Drought Monitor for July 9, 2002

Figure 6 shows percent of average precipitation for the RMA for a 2-week period ending July 10, 2005. As indicated by the graphic, much of the RMA precipitation for the 2-week period is at 20% to 50% of average. The only exceptions include spotty areas of northeast Wyoming, western Nebraska, extreme eastern Colorado, and western Kansas, where thunderstorm activity over the past 2 weeks has brought above average precipitation. Figure 7, Percent of average precipitation for the past 30 days ending July 10, 2005 shows above average precipitation over western Colorado, extreme eastern Colorado, Kansas, southeast Wyoming, with below average precipitation over central Colorado, western Wyoming and the Black Hills.

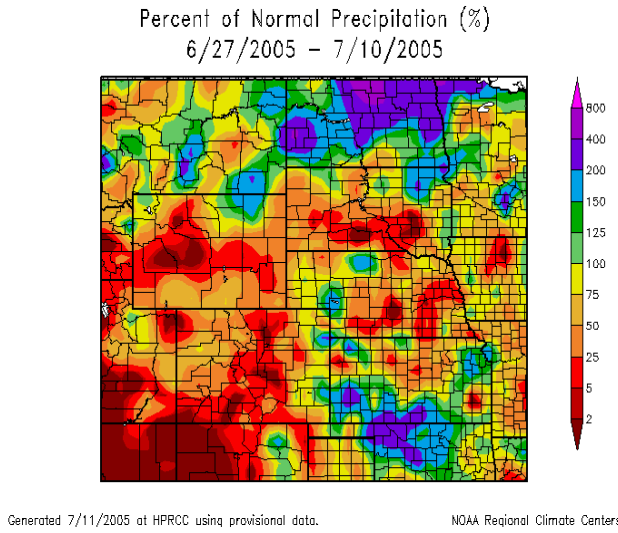

Figure 6. 2-Week Percent of Average Precipitation Ending July 10, 2005.

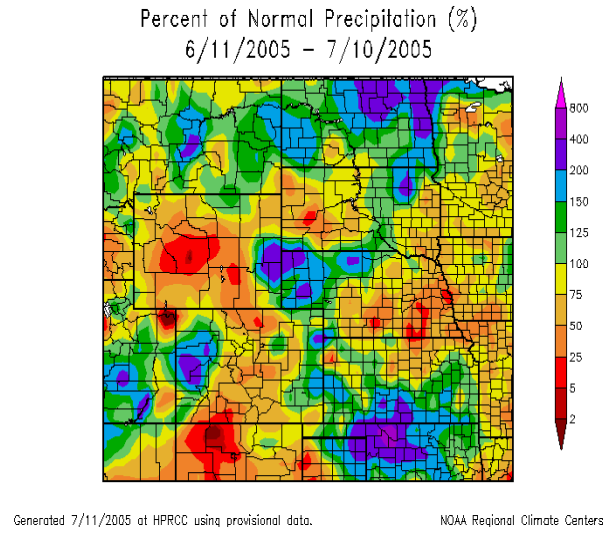

Figure 7. 30-Day Percent of Average Precipitation Ending July 10, 2005

C. Climate and Weather Outlooks For Summer and Early Fall

The precipitation and temperature outlooks from the CPC for July 2005 are shown in Figures 8 and 9. These forecasts suggest near average to below average precipitation for Colorado with near average to slightly above average precipitation trends for the remainder of the RMA. The temperature outlook for July suggests average to below average readings across the Rocky Mountain Area. Given the latest trends and long-range model analysis, the CPC forecasts below will likely not verify, given the above average temperatures and below average precipitation.

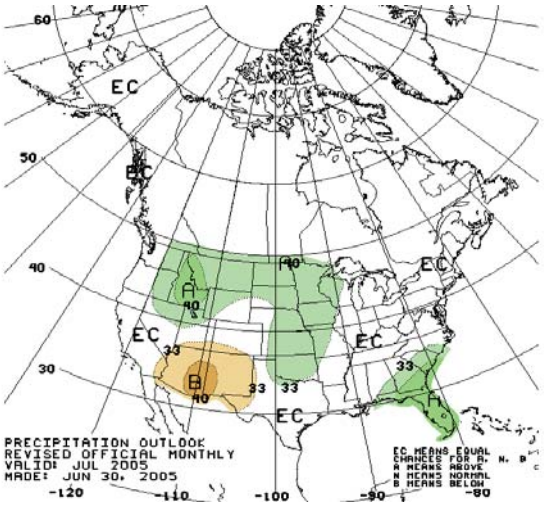

Figure 8. CPC Precipitation Outlooks For July.

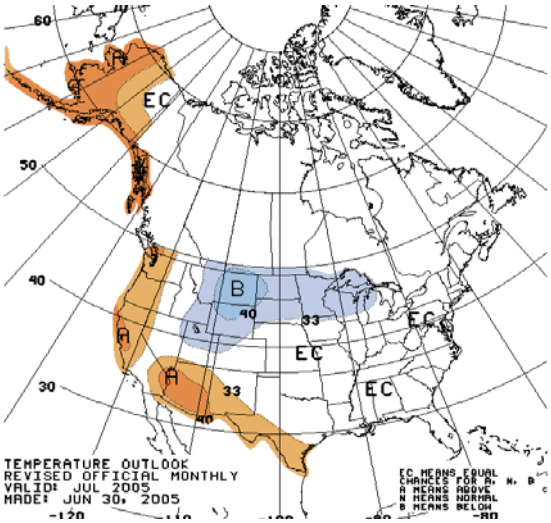

Figure 9. CPC Temperature Outlooks For July.

The outlooks for the remainder of the summer and early fall (August-October) suggest near average precipitation for the RMA and above average temperatures (Figures 10 and 11).

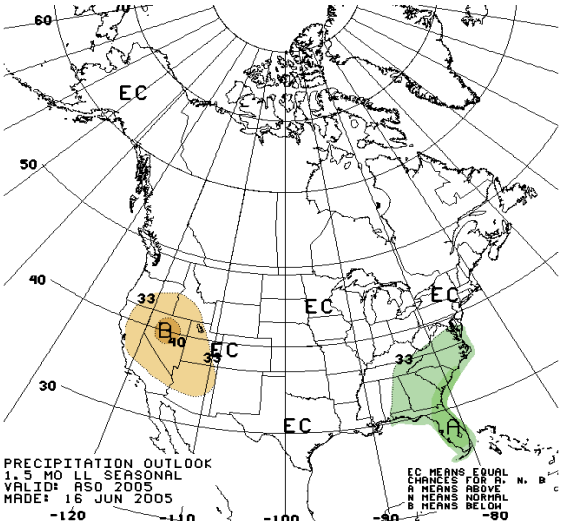

Figure 10. CPC Precipitation Outlooks For Summer/Fall (ASO).

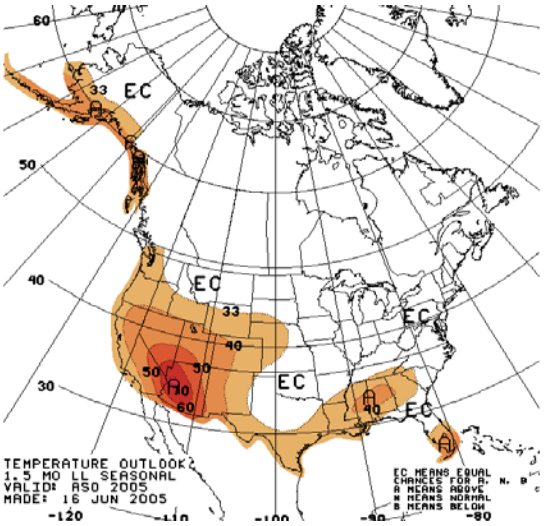

Figure 11. CPC Temperature Outlooks For Summer/Fall (ASO).

D. Fuels Analysis

The RMA Predictive Services group developed Predictive Service Areas (PSAs) based on historical RAWS data for all the available RAWS in the RMA. A statistical correlation test on minimum afternoon relative humidity resulted in PSA zones for the RMA shown in Figure 12 and RAWS SIGS for each zone for Fire Family Plus fuels analysis.

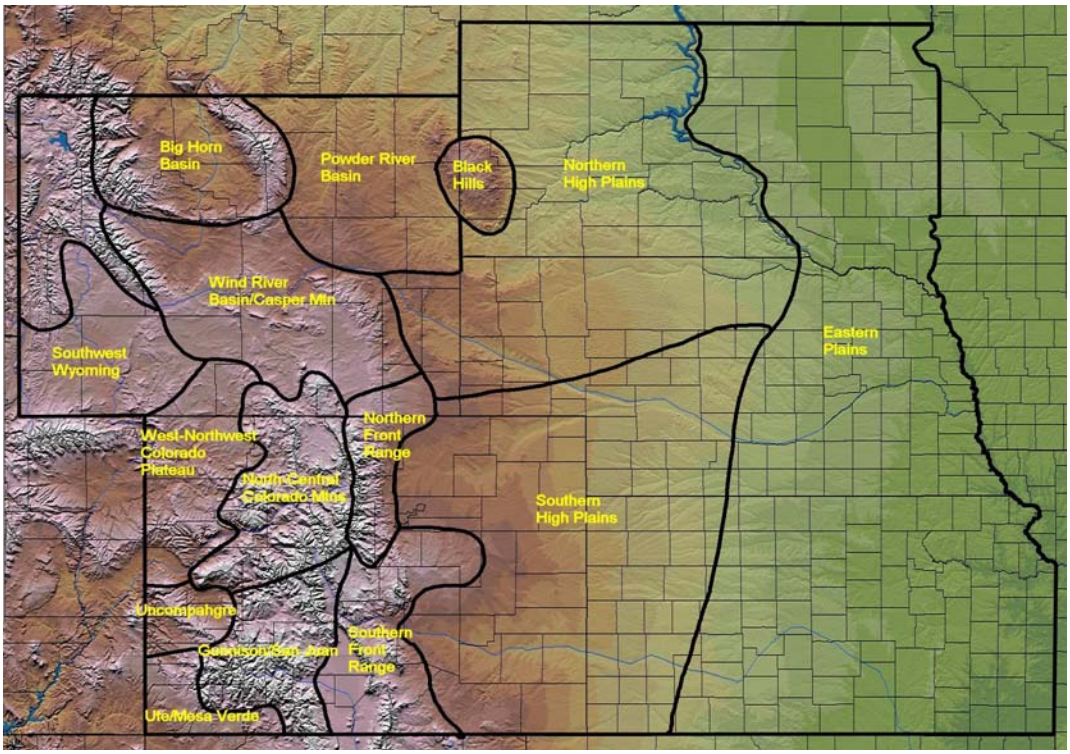

Figure 12. Rocky Mountain Predictive Service Areas (PSAs). Zones developed from RAWS statistical analysis.

All fuel analysis trends (shown in Figure 13 through 30) are the same across the RMA, with a significant increase in ERCs and decrease in 1000-hour fuel moisture during the past 2 to 3 weeks. Three Predictive Service Zones including the Northern Front Range, Southern Front Range, and Wind River Basin/Casper Mountain are currently setting new record high ERCs. Several zones such as, Southwest Wyoming, West-Northwest Colorado Plateau, North-Central

Colorado Mountains, Uncompahgre, Gunnison-San Juan, and Ute-Mesa currently have ERC indices at or above the 90th percentile. ERCs in Powder-River, Black Hills, and Big Horn Basin zones are currently below the 90th percentile but are on the increase.

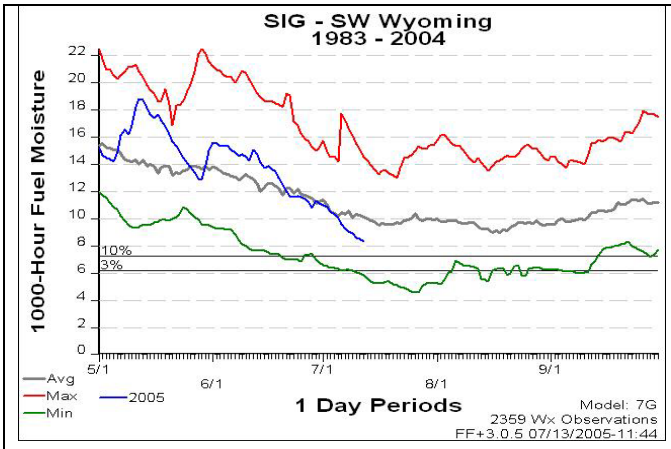

Figure 13. 1000-hour fuel moisture analysis for the Southwest Wyoming PSA.

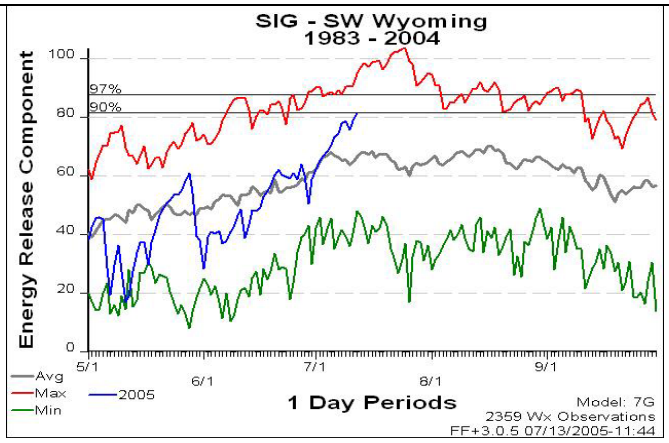

Figure 14. ERC analysis for the Southwest Wyoming PSA.

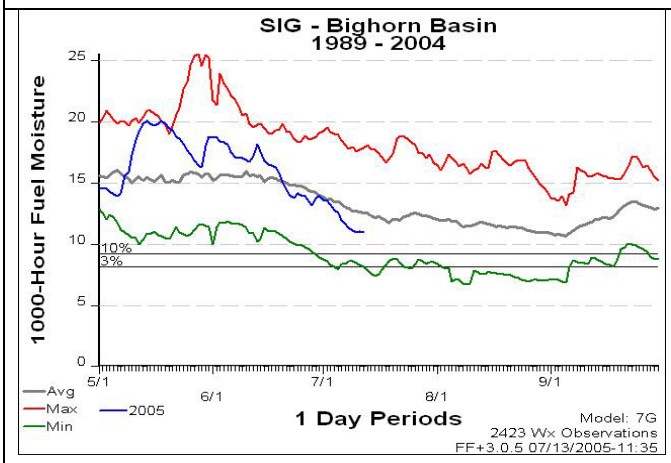

Figure 15. 1000-hour fuel moisture analysis for the Big Horn Basin PSA.

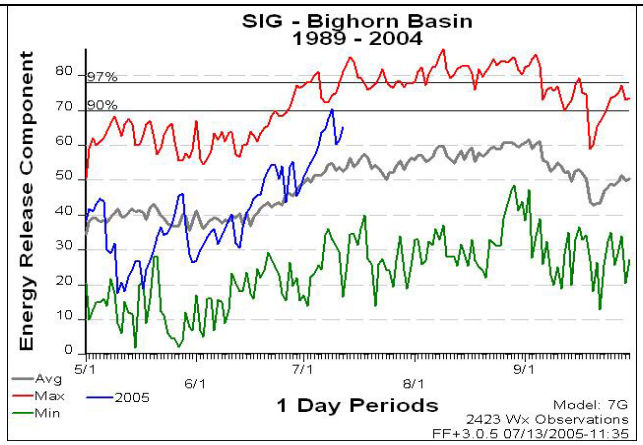

Figure 16. ERC analysis for the Big Horn Basin PSA.

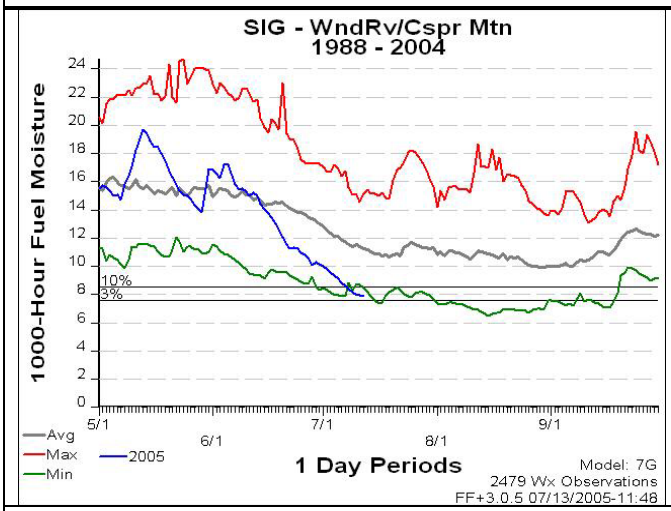

Figure 17. 1000-hour fuel moisture analysis for the Wind River/Casper Mountain PSA.

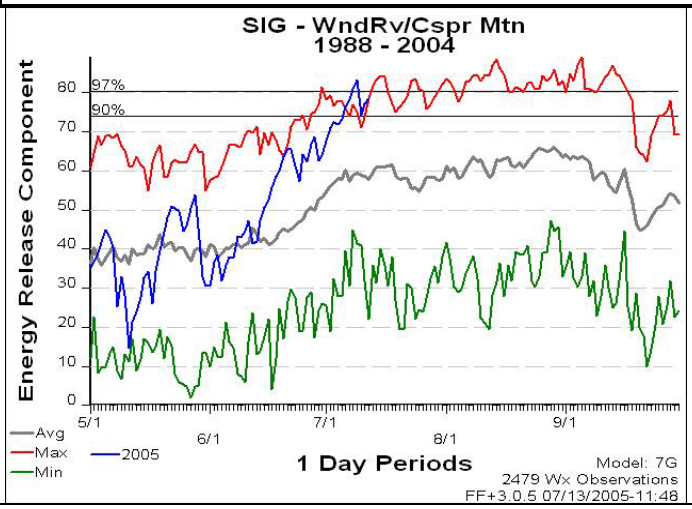

Figure 18. ERC analysis for the Wind River/Casper Mountain PSA.

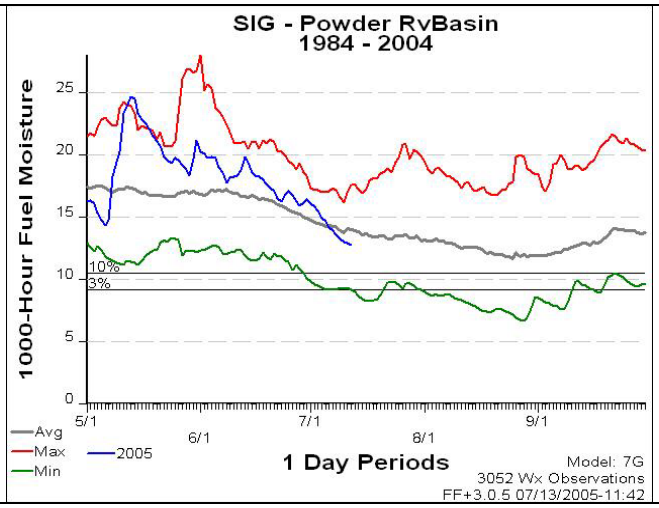

Figure 19. 1000-hour analysis for the Powder River Basin PSA.

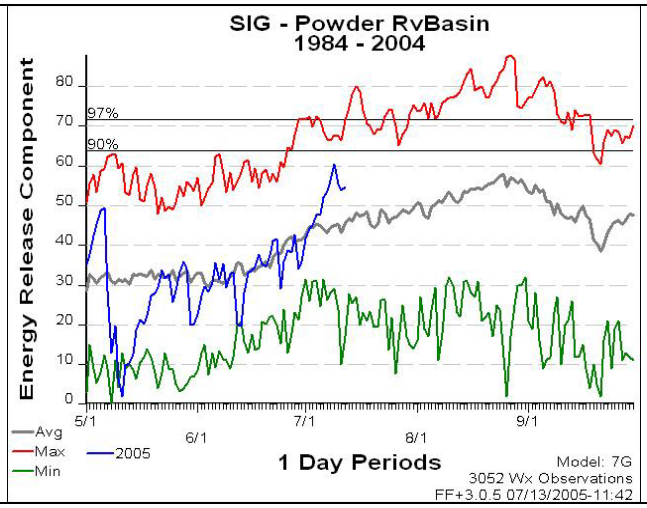

Figure 20. ERC analysis for the Powder River BasinPSA.

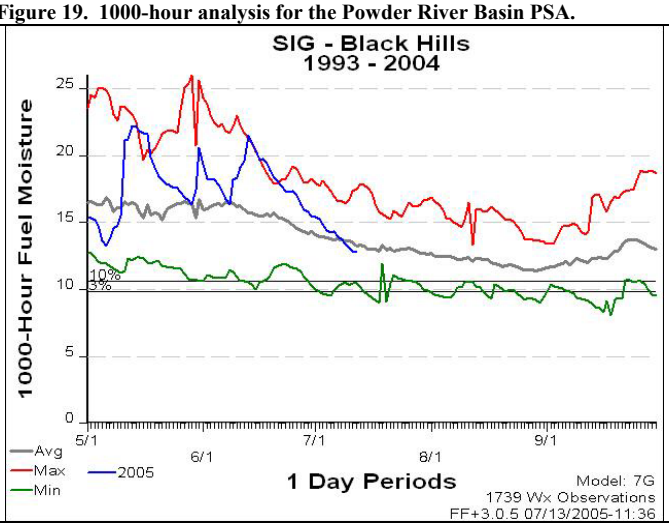

Figure 21. 1000-hour analysis for the Black Hills PSA.

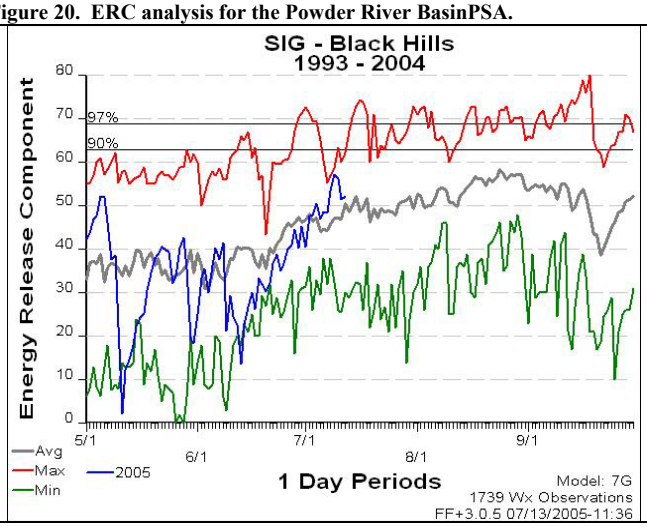

Figure 22. ERC analysis for the Black Hills PSA.

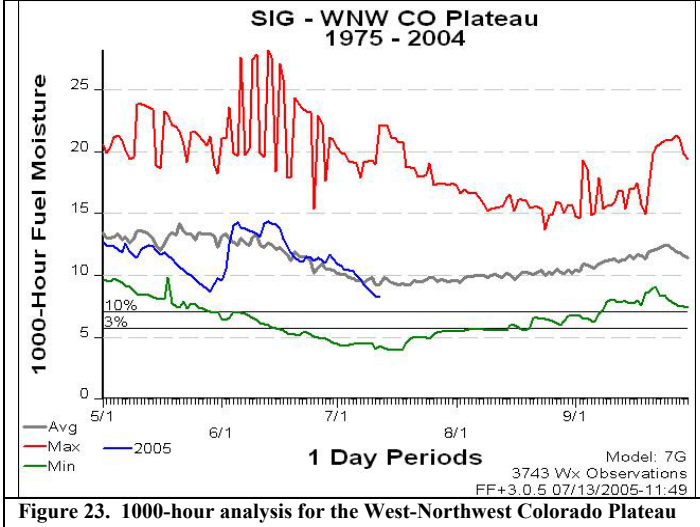

Figure 23. 1000-hour analysis for the West-Northwest Colorado Plateau PSA.

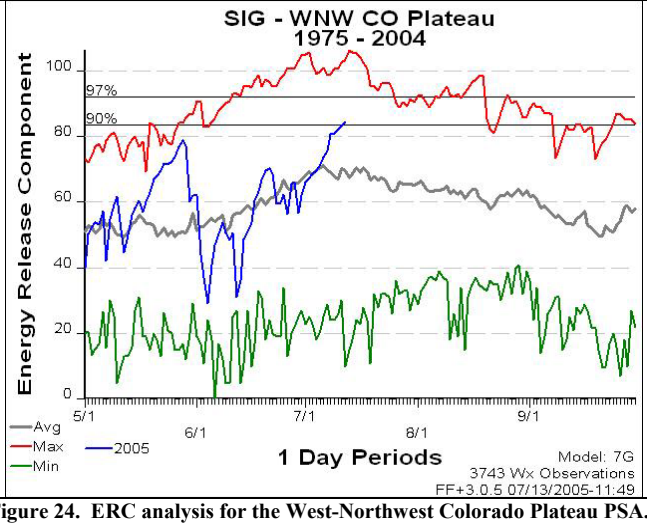

Figure 24. ERC analysis for the West-Northwest Colorado Plateau PSA.

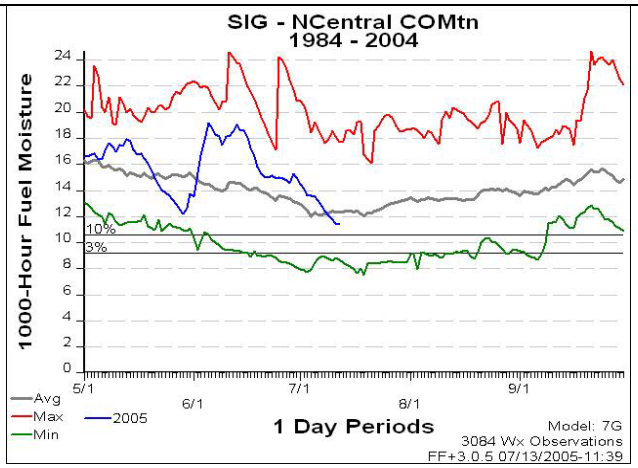

Figure 25. 1000-hour analysis for the North Central Colorado Mountains PSA.

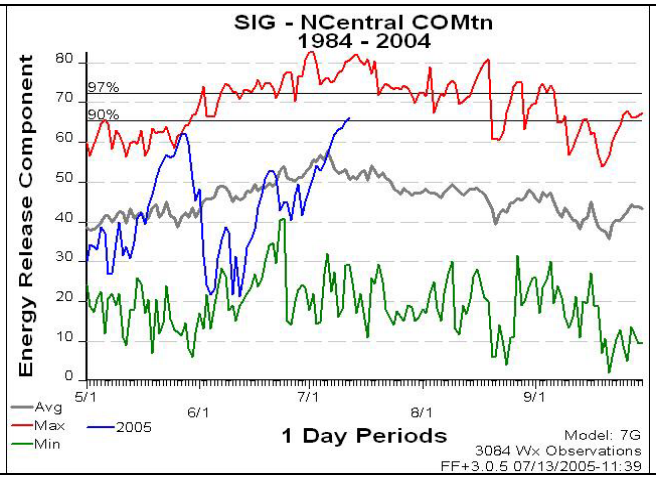

Figure 26. ERC analysis for the North Central Colorado Mountains PSA.

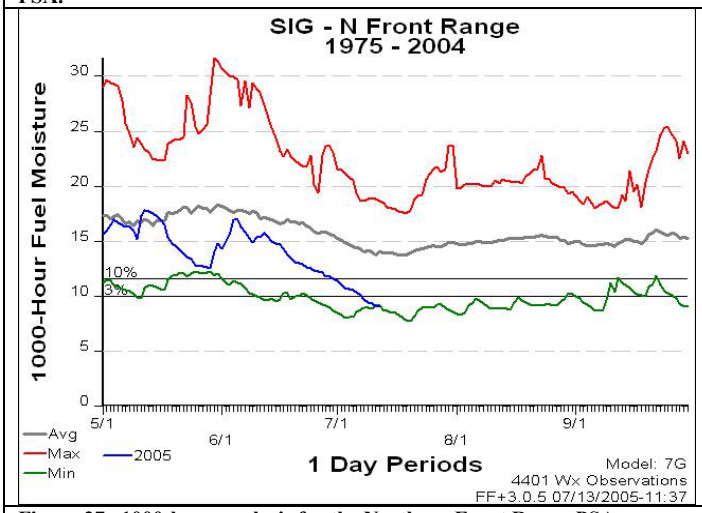

Figure 27. 1000-hour analysis for the Northern Front Range PSA.

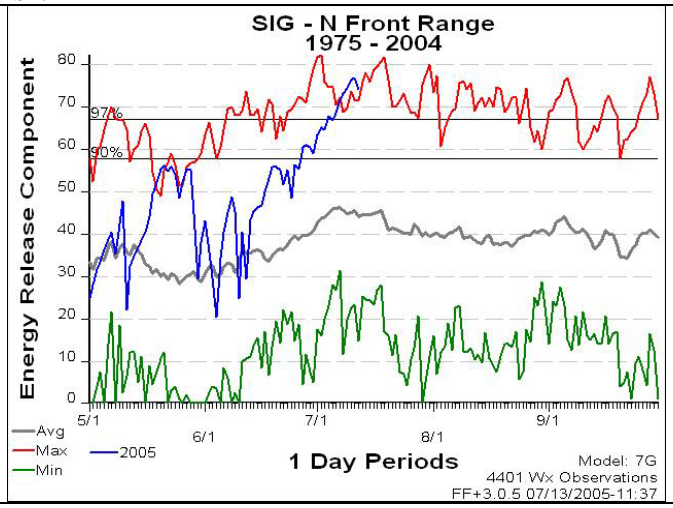

Figure 28. ERC analysis for the Northern Front Range PSA.

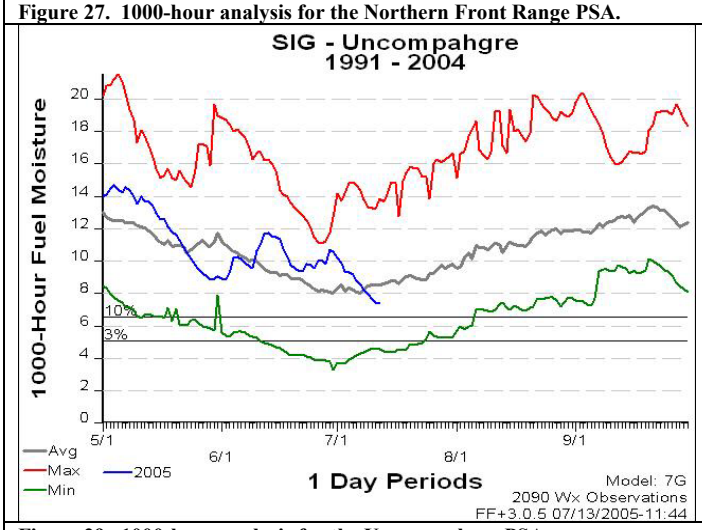

Figure 29. 1000-hour analysis for the Umcompahgre PSA.

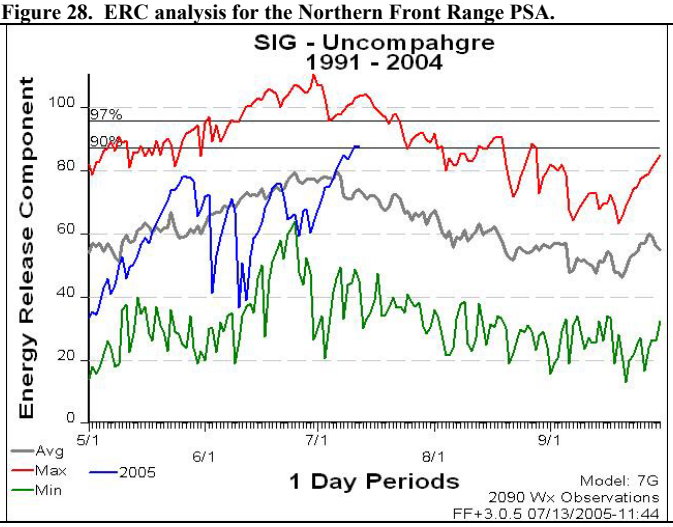

Figure 30. ERC analysis for the Uncompahgre PSA.

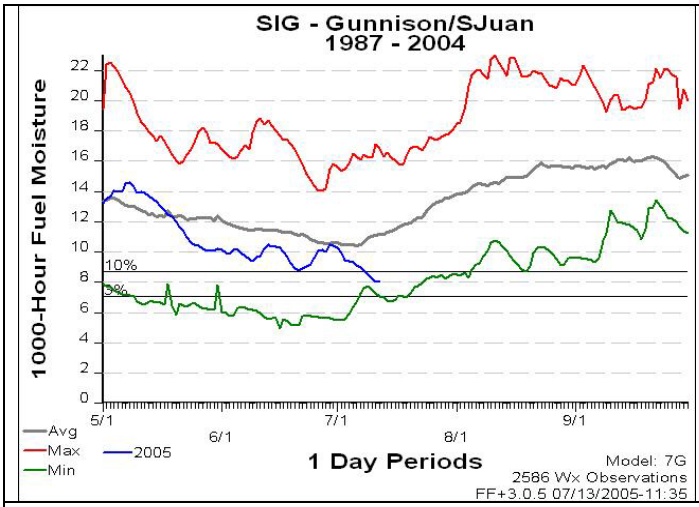

Figure 31. 1000-hour analysis for the Gunnison/San Juan PSA.

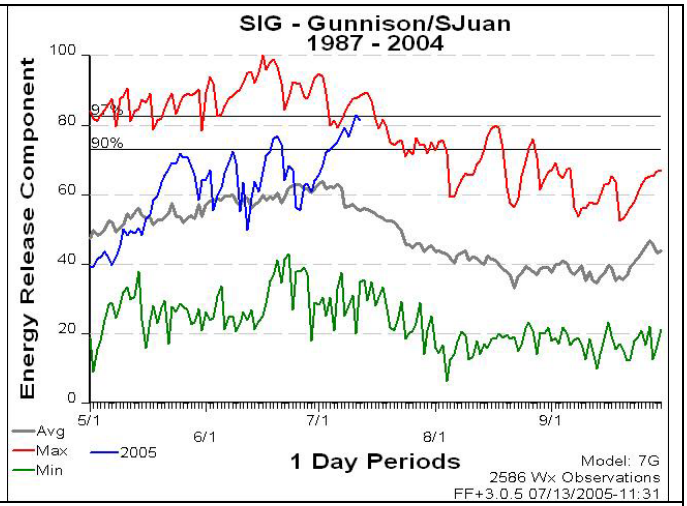

Figure 32. ERC analysis for the Gunnison/San Juan PSA.

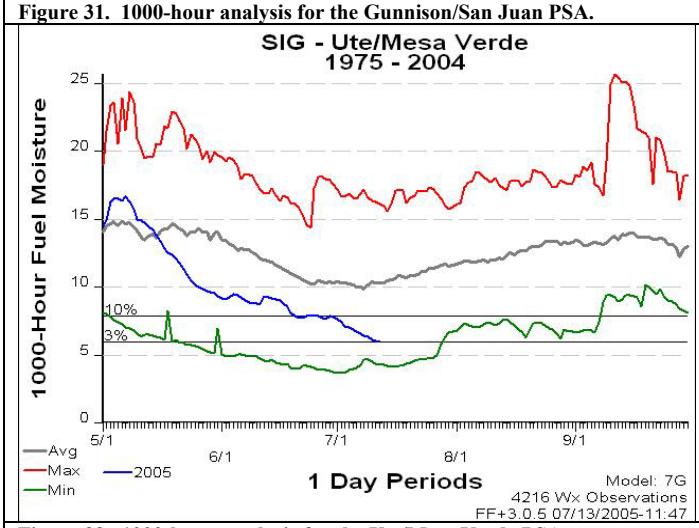

Figure 33. 1000-hour analysis for the Ute/Mesa Verde PSA.

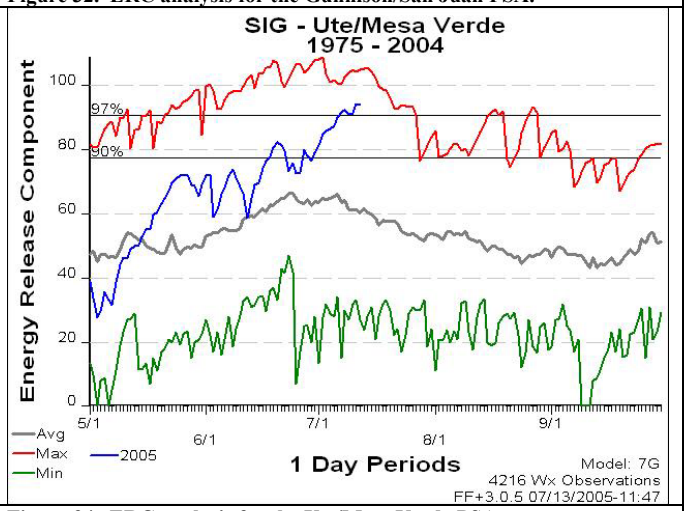

Figure 34. ERC analysis for the Ute/Mesa Verde PSA.

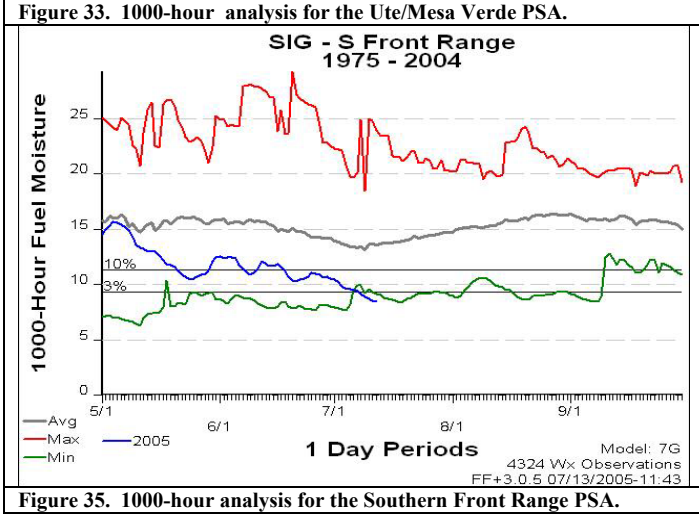

Figure 35. 1000-hour analysis for the Southern Front Range PSA.

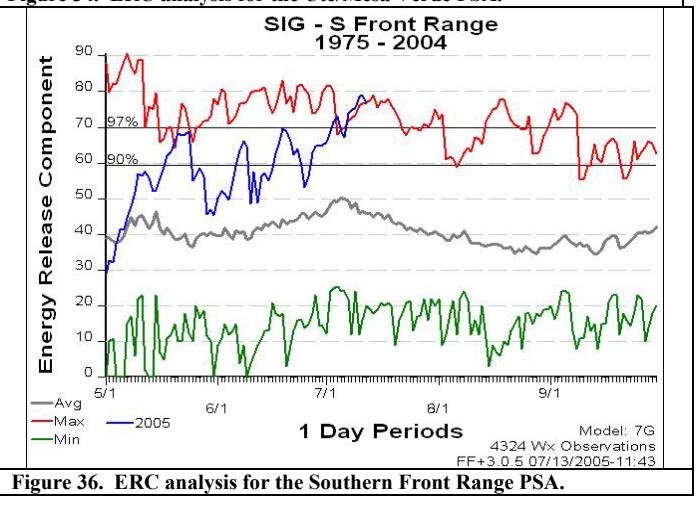

Figure 36. ERC analysis for the Southern Front Range PSA.

E. Summary

This report is a look at what the remainder of the RMA fire season may be in 2005. The information provided in this report is the best information available at this time.

Drought conditions have improved across the RMA over the last year, however "severe" drought conditions are still noted over northern Wyoming and the Black Hills region despite improvement during the spring.

Fine fuel loading is extreme this year with some field reports suggesting 2000 tons/acre in some areas of the RMA. ERC and 1000-hour fuel moisture analysis suggests above average fire potential for much of the RMA with moderating conditions expected soon over Colorado and portions of southern Wyoming. Above average fire potential may continue through mid August across northern Wyoming and the Black Hills region.

Long-range outlooks to do not support another wet and cool summer as much of the RMA experienced in the summer of 2004.

Bottomline, the 2005 fire season will be busier than 2004.

Acknowledgements

The following individuals contributed to the national climate consensus forecast referred to in this outlook:

Tim Brown, Desert Research Institute
Klaus Wolter, NOAA-CIRES Climate Diagnostic Center
NOAA Climate Prediction Center

Web Sites for Graphics in this Document

US Drought Monitor	http://www.drought.unl.edu/dm/monitor.html
Mountain NRCS Snotel Basin Average Snow Water Content	http://www.wrcc.dri.edu/snotelanom/basinswe.html
Colorado Statewide Snowpack	http://www.co.nrcs.usda.gov/snow/data/basinplotstate04.gif
Colorado Snow Water Equivalent by Basin	http://www.wcc.nrcs.usda.gov/cgibin/snowup-graph.pl?state=CO
Wyoming Snow Water Equivalent (Map)	http://www.wrds.uwyo.edu/wrds/nrcs/snowmap/snowmap.html
Wyoming Snow Water Equivalent by Basin	http://www.wcc.nrcs.usda.gov/cgibin/snowup-graph.pl?state=WY
Black Hills Snotel Sites	http://www.wcc.nrcs.usda.gov/snotel/South_Dakota/south_dakota.html
Percent of Normal Precipitation	http://www.hprcc.unl.edu/products/current.html
NDVI Departure from Average Greenness	http://www.fs.fed.us/land/wfas/wfas11.html