

Forest Service Suppression Cost Forecasts and Simulation Forecast for Fiscal Year 2010 Fire Season Updates – June 2010

Executive Summary

Fiscal year (FY) 2010 emergency suppression expenditures, including cost pool projections and national aviation contracts (estimated at \$355 million), are forecast to be \$1,327 million plus/minus \$282 million.

This forecast makes use of available fire information and year-to-date expenditure information. This forecasting tool is designed to be used starting in June of each year to provide agency leadership with monthly forecasts of total, fiscal year fire suppression expenditures.

Overview

Background

The high level of suppression expenditures since FY 2000 has led to budgetary complications for the agency, often forcing spending reallocations within fiscal years. To give the Forest Service some advance warning (before the summer fire season ensues) of possible funding problems, researchers have developed models that can provide forecasts in the fall and the spring of the current fiscal year. This research is a collaborative effort of the Rocky Mountain Research Station (Krista Gebert) and the Southern Research Station (Jeffrey Prestemon and Karen Abt), funded by National Fire Plan research and Forest Service Fire and Aviation Management. This forecast was used for the previous reports to Congress. Once fire season (i.e. summer) begins, a monthly forecast that uses a different methodology is used to monitor expected emergency fire suppression expenditures to ensure they remain within budgetary authorization. The main advantage of this forecasting tool is that forecasts can be easily updated. Rather than making a once-and-for-all annual forecast, forecasts can be revised and refined as the fire season progresses. Up-to-date information on year-to-date expenditures, as well as revised forecasts of fire activity, can be used to refine the forecasts. This is important because of the difficulty of anticipating the magnitude of the upcoming fire season when the first expenditure forecasts are needed.

Modeling Framework for the Fire Season (Summer) Forecasts

The response (forecasted) variable is monthly, fire suppression expenditures. Predictor (explanatory) variables for the model include Forest Service acres burned, Forest Service acres burned from the previous month, and number of Forest Service fires in the previous month. Equations are updated yearly.

Forecasts: The statistical models are incorporated in an Excel spreadsheet used to produce monthly forecasts of annual expenditures, starting in June of each year. The actual forecast process consists of three steps: 1) determining year-to-date expenditures; 2) forecasting future fire activity; and 3) combining information into the forecast of expenditures.

Step 1 – Actual year-to-date expenditures: Starting with the end of May, accounting-system queries are run to retrieve actual month-end, year-to-date fire suppression expenditures from the agencies' accounting systems. Month-end expenditures are normally available by the 7th of the next month.

Step 2 – Forecast of upcoming fire activity: Situation Report data on year-to-date fires and acres burned are entered into the spreadsheet by RMRS personnel for the month just ended. The spreadsheet is then sent to personnel at NICC and Predictive Services in Boise, Idaho, who are responsible for making and entering projections of expected fire activity for the upcoming months of the fiscal year. Included in the spreadsheet are graphs depicting the predictor variables used to forecast expenditures.

Step 3 - Fiscal Year Forecast: Once we have the year-to-date expenditures from the financial system and the projections of fire activity from the National Interagency Fire Center (NIFC), the spreadsheet calculates predicted expenditures for each of the remaining months of the fiscal year (using the statistical models developed by Rocky Mountain Research Station and future fire season information provided by NIFC) and adds these forecasts to the actual year-to-date expenditures. This results in a forecast of total fiscal year fire suppression expenditures. A confidence interval (an upper and lower bound for the forecast) is then calculated.

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