Experimental monthly to seasonal ensemble fire dange forecasts

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Keywords: Fire Danger, Seasonal Forecasts

The Scripps Experimental Climate Prediction Center (ECPC) has been making experimental, near real-time, weekly to seasonal US fire danger forecasts for the past 5 years with the Regional Spectral Model (RSM). These fire danger forecasts are based on standard indices from the National Fire Danger Rating System (NFDRS), which include the: Ignition Component (IC), Energy Release component (ER), Burning Index (BI), Spread Component (SC), and the Keetch Byram drought index (KB). The Fosberg Fire Weather Index (FWI), which is a simplified form of the BI, has been previously used not only for the US but also for other global regions and has also been included for comparison. As shown by Roads et al. (2005: Seasonal fire danger forecasts for the USA. International J. Wildland Fire, 14, 1-18), all of these indices can be predicted well at weekly times scales and there is also significant skill out to seasonal time scales over many US West locations. The most persistent indices (BI, ER, and KB) tend to have the greatest seasonal forecast skill although, FWI, ER and BI tend to be best related to observed fire characteristics such as fire counts (CN) and acres burned (AC) over the US West. We are attempting to transfer this experimental fire danger forecasting methodology to the US National Centers for Environmental Prediction (NCEP) by now using the recently developed NCEP global and regional seasonal forecast ensemble forecasts. In particular, an ensemble (7) of 7-month global and regional fire danger forecasts, initialized from continuous simulations of the fire danger indices, forced in part by 1-day RSM forecasts and in part by observed precipitation, are now being made for every month beginning 1982 to present. Preliminary evaluations indicate that these new multi-seasonal fire danger forecasts have significant forecast skill at weekly to seasonal time scales and thus may be useful for the USFS and other fire communities, which need long-horizon and high-resolution fire danger forecasts for resource allocation and community preparedness.