Categorization of Santa Ana Winds With Respect To Large Fire Potential

Tom Rolinski[1], Brian D'Agostino[2], and Steve Vanderburg[2]

[1]US Forest Service, Riverside, California.
[2]San Diego Gas and Electric, San Diego, California.

ABSTRACT

Santa Ana winds, common to southern California during the fall through early spring, are a type of katabatic wind that originates from a direction generally ranging from 360°/0° to 100° and is usually accompanied by very low humidity. Since fuel conditions tend to be driest from late September through the middle of November, Santa Ana winds occurring during this time have the greatest potential to produce large, devastating fires when an ignition occurs. Such catastrophic fires occurred in 1993, 2003, 2007, and 2008. Because of the destructive nature of such fires, there has been a growing desire to categorize Santa Ana wind events in much the same way that tropical cyclones and tornadoes have been categorized. The Offshore Flow Severity Index (OFSI), previously developed by Predictive Services, is an attempt to categorize such events with respect to large fire potential, specifically the potential for new ignitions to reach or exceed 100 ha based on breakpoints of surface wind speed and humidity. More recently, Predictive Services has collaborated with meteorologists from the San Diego Gas and Electric utility to develop a new methodology that addresses flaws inherent in the initial index. Specific methods for improving spatial coverage and the effects of fuel moisture have been employed. High resolution reanalysis data from the Weather Research and Forecasting (WRF) model generated by the Department of Atmospheric and Oceanic Sciences at UCLA is being used to redefine the OFSI. In addition to the new methodology, social scientists from the Desert Research Institute have been contracted to evaluate how this index might best be conveyed to the user so as to maximize its effectiveness. This paper will outline the methodology for developing the improved index as well as discuss how it might benefit fire agencies, private industry, broadcast media groups and the general public.