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## A New Model for Predicting Wildfire Risk in Northeastern Mojave Desert Landscapes

Wildfire prediction in the southwestern U.S. is of specific concern, given the increasing prevalence of severe fire on desert shrublands, as well as a lack of accurate fire prediction tools. But USGS researchers have now developed a fire risk GIS model to predict fire occurrence in a northeastern Mojave Desert landscape. It is presented in the *International Journal of Wildland Fire*.

The researchers sought to model fire risk — the interactions of fuel characteristics and environmental conditions conducive to wildfire — using remote sensing and field sampling. The risk model was developed with data from a fire year at Gold Butte, a large landscape managed by the Bureau of Land Management, and currently under consideration to be named as a National Conservation Area.

Researchers first built a spatial model that could predict fuel loads for the study area. This model uses remote sensing data layers including Normalized Difference Vegetation Indices (NEVI) and greenness to predict fuel loads based on fuel loading estimates taken from field sampling.

This fuel loads spatial model was then used to create the fire risk model — which also incorporates spatial data on ignition potential (lightning strikes and distance to roads), topography (elevation and aspect), climate (maximum and minimum temperatures), and fuel moisture levels. The final model developed for Gold Butte was validated at Coyote Springs Valley, a study landscape to the west. Model performance was accurate and similar at both Gold Butte and Coyote Springs Valley.

This study demonstrates that remote sensing techniques — used in combination with field surveys — can accurately predict wildfire risk in the Mojave Desert, and may be applicable to other arid and semiarid lands where wildfires are prevalent.

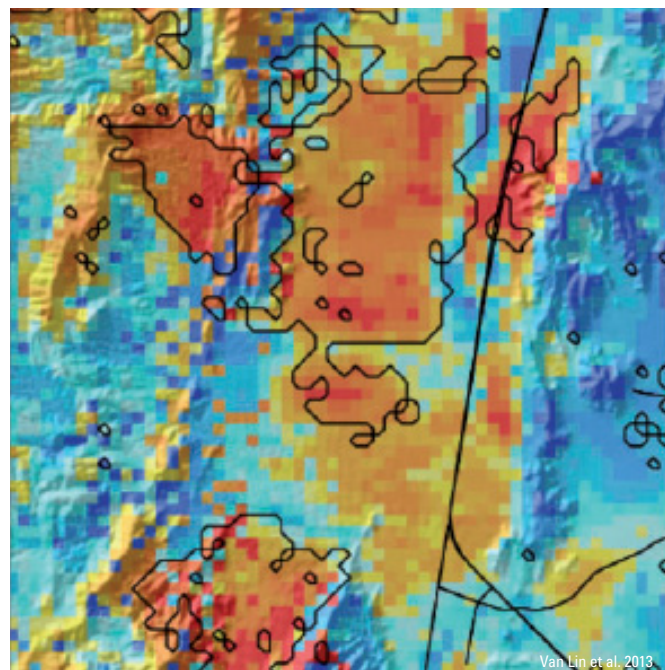
### Management Implications

- Predicting wildfires that affect broad landscapes is important for allocating suppression resources and guiding land management.
- A model has been developed to predict wildfire risk in northeastern Mojave Desert. The model incorporates remote sensing data as well as field sampling data to generate the predicted fire risk.

#### THIS BRIEF REFERS TO:

Van Linn III, PF, KE Nussear, TC Esque, LA DeFalco, RD Inman, SR Abella. 2013. Estimating wildfire potential on a Mojave Desert landscape using remote sensing and field sampling. *International Journal of Wildland Fire*. doi: 10.1071/WF12158

<http://www.werc.usgs.gov/ProductDetails.aspx?ID=4901>  
<http://www.werc.usgs.gov/nussear>  
<http://www.werc.usgs.gov/esque>  
<http://www.werc.usgs.gov/defalco>



Fire risk (blue being low; red being high) at the Coyote Springs Valley validation site, relative to the actual 2005 burn perimeter (black outlines). See Figure 5 in the study.