

The Power Grid/Wildfire Nexus: Using GIS and Satellite Remote Sensing to Identify Vulnerabilities

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Wildfires pose a significant threat to lives, property, and critical energy infrastructure. Conversely, a number of large wildfires were started by the electrical power grid in recent years. As a result of wildfires or the risk of wildfire, utilities must manage unplanned or preemptive power outages. To address this problem, a power grid/wildfire database is being developed that seeks to identify areas where the power grid is most vulnerable to wildfire. Two study areas were identified in Idaho based on current wildfire Burn Probability (BP) data. The selected study areas both contained a high density of power grid infrastructure but highly differentiated BP. To characterize power grid vulnerability to wildfire, remotely sensed driver variables including precipitation, lightning strikes, wind speed, vegetation biomass and moisture content, and topography were examined using Geographic Information Systems (GIS). By evaluating these variables within each study area, comparisons will be made and conclusions drawn to determine the variable(s) that most influence vulnerability. The resulting geodatabase will consolidate information across the fire and energy fields to create a resource that enables land and utility managers to gain actionable information that will support well-informed decisions.