Managing Wildfire Across Boundaries

• Cross-boundary fire management is key to achieving the Cohesive Strategy goals
  • Fire adapted communities
  • Restore and maintain resilient landscapes
  • Safe and effective wildfire response

• Mapping risk from large wildfires and partitioning it among landowners and communities is a complicated problem

• New concepts and tools are needed to build a common understanding of cross-boundary risk
The Role of Wildfire Risk Assessments

• Pre-Fire Planning
  • Treatment prioritization and strategic fuels management
  • Identifying stakeholders
  • Community planning (WUI codes, regulations, CWPP)

• Wildfire Response
  • Delineation of wildfire response zones
  • Effective communication between agency officials, incident management teams, and the public

• Overall: integration of wildfire management with land management objectives
What is a Wildfire Risk Assessment?

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- Wildfire Risk: A measure of the probability and consequences of uncertain future wildfire events.
- Wildfire Hazard: A physical situation with potential for negative consequences from wildfire.
- Wildfire Exposure: The spatial intersection of wildfire hazard with something of value.
Methods: Gather Input Data

Stakeholder Input & Data

- Fuels
- Topography
- Weather
- Fire Occurrence

Community Information

Fire Modeling

Likelihood

Intensity

Values
Methods: Fire Modeling

FSim

Models a wide range of conditions over an entire season

1,000s of Iterations
Methods: Fire Modeling

FSim
Models a wide range of conditions over an entire season

FlamMap
Models a specific weather scenario

1,000s of Iterations
Methods: Fire Modeling

National FSim Modeling


Methods: Calculate And Summarize Outputs

- Pixel-based outputs
  - Likelihood
  - Intensity
Methods: Calculate And Summarize Outputs

- Pixel-based outputs
  - Likelihood
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- Derived metrics
  - Hazard
  - Exposure
  - Fireshed
Methods: Calculate And Summarize Outputs

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• Summarize to polygons
  • Watersheds
  • Political Units
  • Neighborhoods
Landscape Assessment

Watershed scale (12-code HUC) – FSIm Modeling

Likelihood \times \text{Intensity} = \text{Hazard}
Landscape Assessment

Watershed scale (12-code HUC) – FSim Modeling

Landscape Wildfire Hazard By Subwatershed

Likelihood  Intensity  Hazard
Local Assessment

Smaller watershed scale (catchments) – FlamMap Modeling

Likelihood × Intensity = Hazard
Community Fireshed

- The potential source area for wildfires that could impact the community
- Similar in concept to a watershed
Other Related Products

Wildland Urban Interface Map

Mitigation Difficulty Map

Based on The 2010 wildland-urban interface of the conterminous United States. [https://www.nrs.fs.fed.us/data/WUI/](https://www.nrs.fs.fed.us/data/WUI/)
Other Related Products

Wildfire Exposure and Transmission Analysis
Other Related Products

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Wildfire Network Analysis

For more on concepts related to firesheds and wildfire networks, see: https://www.fs.fed.us/pnw/sciencef/scifi189.pdf
Resources

• Risk assessment information

• National fire occurrence and FSim modeling data
  • Short and others. 2016. Spatial dataset of probabilistic wildfire risk components for the conterminous United States. [https://doi.org/10.2737/RDS-2016-0034]

• WUI mapping information and data
  • [https://www.nrs.fs.fed.us/data/WUI/]

• Community Planning Assistance for Wildfire (CPAW)
  • [https://planningforwildfire.org/]

Greg Dillon  |  gdillon@fs.fed.us  |  406-829-6783