

## **Volunteered Geographic Information Coupled with Wildfire Fire Progression Maps: A Spatial and Temporal Tool for Incident Storytelling**

**Authors :** Cassandra Hansen, Paul Doherty, Chris Ferner, German Whitley, Holly Torpey

**Abstract :** Wildfire is a natural and inevitable occurrence, yet changing climatic conditions have increased the severity, frequency, and risk to human populations in the wildland/urban interface (WUI) of the Western United States. Rapid dissemination of accurate wildfire information is critical to both the Incident Management Team (IMT) and the affected community. With the advent of increasingly sophisticated information systems, GIS can now be used as a web platform for sharing geographic information in new and innovative ways, such as virtual story map applications. Crowdsourced information can be extraordinarily useful when coupled with authoritative information. Information abounds in the form of social media, emergency alerts, radio, and news outlets, yet many of these resources lack a spatial component when first distributed. In this study, we describe how twenty-eight volunteer GIS professionals across nine Geographic Area Coordination Centers (GACC) sourced, curated, and distributed Volunteered Geographic Information (VGI) from authoritative social media accounts focused on disseminating information about wildfires and public safety. The combination of fire progression maps with VGI incident information helps answer three critical questions about an incident, such as: where the first started. How and why the fire behaved in an extreme manner and how we can learn from the fire incident's story to respond and prepare for future fires in this area. By adding a spatial component to that shared information, this team has been able to visualize shared information about wildfire starts in an interactive map that answers three critical questions in a more intuitive way. Additionally, long-term social and technical impacts on communities are examined in relation to situational awareness of the disaster through map layers and agency links, the number of views in a particular region of a disaster, community involvement and sharing of this critical resource. Combined with a GIS platform and disaster VGI applications, this workflow and information become invaluable to communities within the WUI and bring spatial awareness for disaster preparedness, response, mitigation, and recovery. This study highlights progression maps as the ultimate storytelling mechanism through incident case studies and demonstrates the impact of VGI and sophisticated applied cartographic methodology make this an indispensable resource for authoritative information sharing.

**Keywords :** storytelling, wildfire progression maps, volunteered geographic information, spatial and temporal

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