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2016 Lava Mountain Fire. Photo credit: Forest Service.

## FINDINGS FROM A THIRD-PARTY ASSESSMENT OF THE FOREST SERVICE'S RISK MANAGEMENT ASSISTANCE EFFORTS

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In 2016, Forest Service leadership formed Risk Management Assistance (RMA) teams to support decision makers (i.e. line officers acting as agency administrators or “AAs”) on wildfires by offering enhanced risk analytics. The goal of RMA was to improve decision making quality and accountability during wildfire incident management. Examples of enhanced analytics include: incident timelines depicting resource use and decision points; maps of snag hazard, suppression difficulty, and potential control locations across the landscape; and risk trade-off analysis exercises. Our team of Colorado State University researchers conducted a third-party assessment of the RMA effort, interviewing 42 line officers, agency administrators, fire staff, and analysts who received or delivered RMA support in 2017 to 2019. Our findings revealed the factors that influenced the implementation and effectiveness of the approach and provided insights about integrating RMA and other analytics into fire management going forward.

### FINDINGS

**Line officers generally agreed that RMA spurred valuable discussion about complex risk management and helped them to explain decisions.** They valued RMA analytics for clarifying the rationale for their decisions and improving communication with partners. The trade-off analysis exercise prompted discussion about strategic alternatives for incident response and deliberation about values at risk among local political leaders, partners, and fire management personnel. Those discussions allowed for more structured and coordinated decisions. RMA analytics also helped improve accountability and transparency by carefully tracking costs and resource use.

**Using RMA to consider a range of fire management response options depended on social and political context, local relationships, and alignment of strategic risk management approaches.** Local biophysical conditions, fire history, and social and political pressure can leave AAs with limited space to consider anything other than aggressive attack, according to some line officers. In some places, varying interpretations of acceptable levels of risk to firefighters and other values during fire events across different agencies can also complicate or limit strategic response options.



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Firefighters attend a meeting during the 2018 Crescent Mountain Fire. Photo credit: InciWeb.

**Organizational factors also complicated the adoption of RMA.** Existing norms about who bears responsibility for decision making on fire incidents, disparate understandings among personnel of risk management principles, resistance to change, and a lack of clear leadership direction to embrace risk management approaches were the key barriers. Interviewees said line officer personality, such as interest in incorporating new scientific analytics, also affected receptivity to RMA.

**Interviewees said there is a need for a more comprehensive and common understanding of risk among agency leaders, line officers, fire staff, and partners.** There is disagreement within the Forest Service and among agencies about levels of acceptable risk to firefighters and how those vary depending on other values at risk. Interviewees said there is a decision bias on incidents towards aggressive fire response, rather than an equal sense of responsibility for and acceptability of a variety of decisions.

**Interviewees said diffusing RMA principles throughout the agency and fire management community depends on agency leadership, education about risk management principles, and consistent integration and adoption of new approaches.** There is a need for stronger agency-wide leadership around risk-informed decision making. Approaches such as RMA would also have to be adopted throughout the fire management community. Pre-season exposure, training, and integration into existing processes (e.g. WFDSS) may enhance RMA use.



*Decision makers on the 2019 Decker Fire discuss management strategies. Photo credit: Chad Kooistra.*

## 2019 DECKER FIRE: AN EXAMPLE OF RMA

**During the 2019 Decker Fire in Salida CO, we found early and repeated engagement with RMA and having well-trained local staff can enhance decision making quality during an unplanned ignition.** Interviewees said receiving RMA support within the first two days of ignition, before major decisions were made, meant RMA analytics could be better integrated throughout fire response. Ongoing dialogue exchanged between remote analysts and local staff trained in RMA provided valuable discussion and was useful for updating information as fire conditions changed. This is an ideal of example of how RMA can be used moving forward.

## IMPLICATIONS

**Line officers overall say that advanced analytics can help improve wildfire management decision-making quality.** Improving strategic decision making on wildfire incidents through enhanced analytics will take concerted effort and long-term investment to facilitate organizational learning and change. Institutionalizing efforts such as RMA requires leadership, education, training, building support, and integration into existing processes.

## MORE INFORMATION

For this and the complete report on results of the third-party review of the RMA efforts go to: <https://sites.warnercnr.colostate.edu/courtneyschultz/practitioner-papers/>

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