

Optimizing Wildfire Response Planning under Uncertainty

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The occurrence and behavior of large-scale wildfires is very uncertain. In this talk, we present an application of stochastic programming to strategic wildfire resource planning for initial response for a given fire season. This approach combines fire behavior simulation, wildfire risk, probabilistically constrained stochastic integer programming, and the level of risk the fire manager is willing to take when making deployment plans. A computational study of Texas District 12, a part of the fire planning unit managed by the Texas A&M Forest Service will be discussed. The study reveals that the fire manager's level of risk on deployment decisions has a significant impact on the firefighting resources positioned at each operations base, expected fires contained and total containment cost.