

## A crash course in PODs

*Enhancing preparedness, communication, and responder safety*

### What are PODs?

Think: *container, or operationally relevant fire management unit*

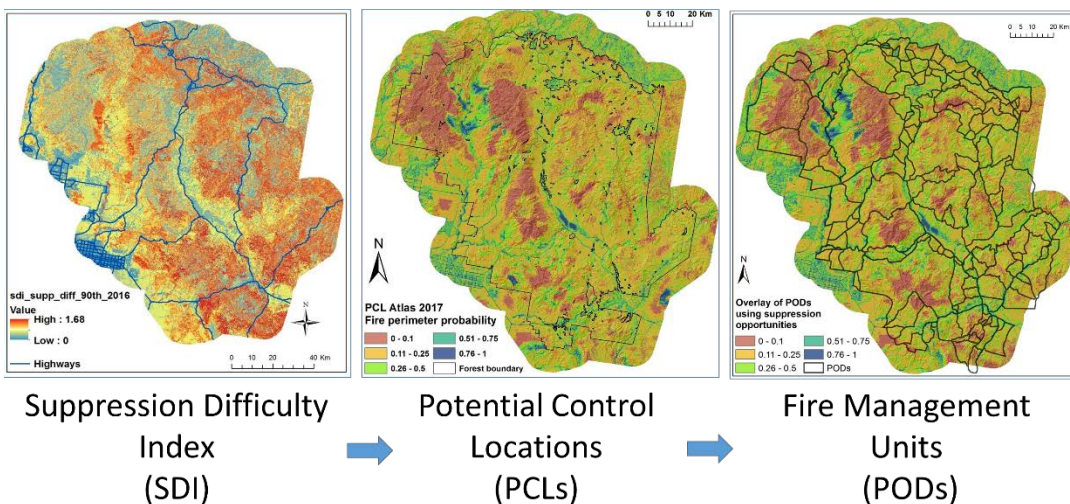
Potential wildland fire operations delineations (PODs) are polygons whose boundary features are relevant to fire control operations (e.g., roads, ridgetops, and water bodies). PODs are useful for summarizing wildfire risk and planning strategic response to unplanned ignitions accordingly. In an operational response context, POD boundaries can be used to guide choices of where to construct or hold fire line as well as where to conduct burnout operations. PODs may also prove useful for strategic fuels planning, with potential applications for designing controlled burn units, reinforcing existing POD boundaries, or prioritizing treatment opportunities within PODs. By vetting and mapping POD boundaries, we are essentially formalizing and institutionalizing the knowledge of fire management experts.

### Why use them?

A basic principle of risk management is to get ahead of problems one may face down the road. Doing so can help reduce time pressure, reduce uncertainty, and expand options – ultimately facilitating safer and more effective response. The Red Book embraces this idea, describing pre-season preparedness work as a key element of risk management that is critical to success when a fire starts. Pre-fire planning can provide a valuable means for building capacity within the organization, communicating hazards and opportunities with key stakeholders and partners, and sharing risks and responsibilities. The Red Book and the Forest Service Wildland Fire Risk Management Protocols both call for managers to collaboratively “predetermine” response strategies that balance protection of values at risk with firefighter and public exposure. Developing PODs, we think, is a good first step to meeting the intent of these requirements. Pre-fire planning with PODs is intended to provide actionable information and to expand flexibility, and not to make decisions.

### How are PODs created?

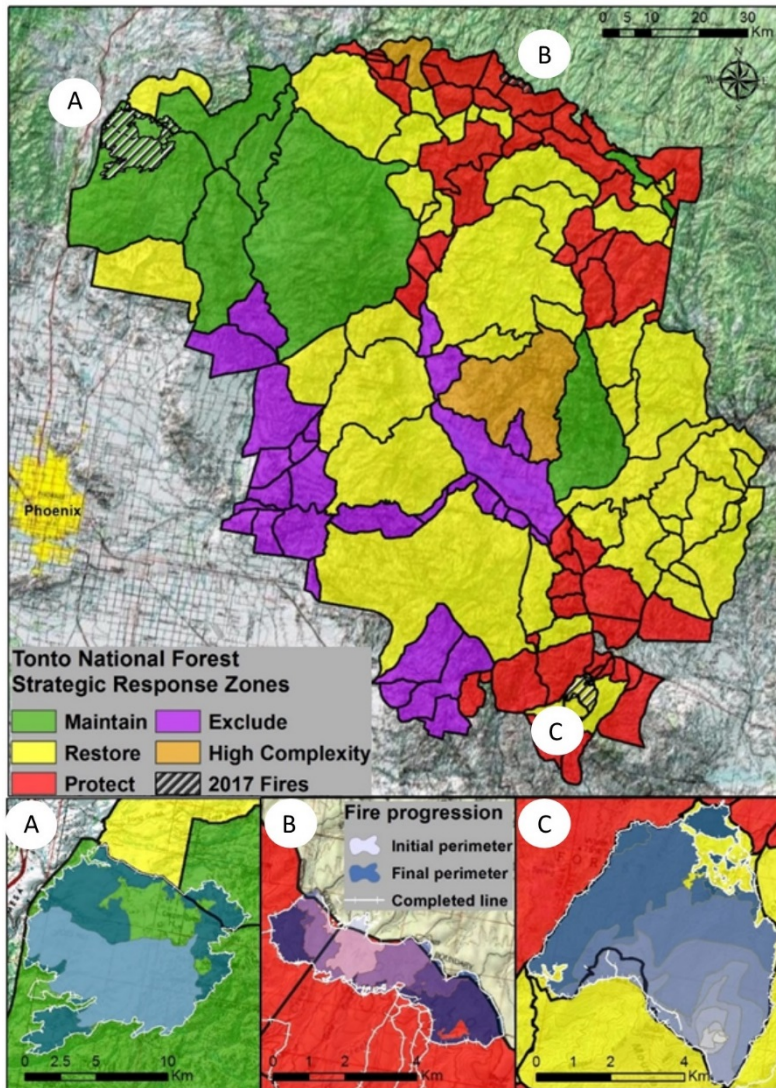
The basic ingredients are local expertise, maps, GIS, and getting out in the field to ground truth. No amount of shiny analytics can or should tell a manager where to locate a POD boundary. That said, RMRS has developed a few tools that we think can help managers evaluate their landscapes to determine areas of high suppression difficulty and to identify potential control locations.



Further reading: <https://www.fs.usda.gov/treearch/pubs/50797>; <https://www.fs.usda.gov/treearch/pubs/52280>; <https://www.fs.usda.gov/treearch/pubs/54858>; <http://www.mdpi.com/1999-4907/8/12/469/htm>

## Tonto National Forest Applied Risk-based Spatial Fire Planning, Fire Season 2017 (credit: Kit O'Connor, RMRS)

Although not the first National Forest to implement the POD concept, the Tonto National Forest was the first to develop their POD layer in concert with RMRS scientists using recently developed tools to map potential control locations. The map below shows POD boundaries, accompanying strategic response zones with locally-defined fire management objectives, and the locations of three large fires experienced in the 2017 fire season.



The Brooklyn Fire (Panel A) ignited in a wildfire maintenance response zone near the end of the pre-monsoon fire season during PL4 conditions. Due to resource limitations a single Type 1 team was brought in to manage this fire and two nearby ignitions. The fire grew to more than 30,000 acres in four days before the onset of monsoon rains in the second week of July stopped fire growth. **The western POD boundary represents the edge of a steep plateau and significant fuels change. The Northern POD boundary is a major road.** Note that due to the time of year, containment actions were taken to exclude the fire from the restoration zone to the north while allowing the fire to continue burning into the adjacent maintenance zone.

The Highline Fire (Panel B) occurred in the mid-June peak of fire season and was managed as a Type 1 incident in a protection zone with significant values at risk. **The northern POD boundary corresponds to the Mogollon Rim. The POD boundary bisecting the fire to the west was a proposed fuel treatment for the fall of 2017 and did not represent a potential control feature during the fire.** This type of fire is a good candidate for using the potential control location atlas to inform containment strategies that keep a high-risk fire as small as possible while incorporating the safest and most effect control locations under a specific set of fire weather conditions.

The Pinal Fire (Panel C) was an early season wildfire with significant potential for management for resource objectives. **The pre-identified POD boundaries in the restoration strategic response zone were used for planning and execution of the operational objectives of reducing surface fuel loading and potential for future crown fire behavior.** Two weeks into the fire, fuel moistures in the mid and lower elevation chaparral fuels dropped more than 20% in one day, coinciding with a Haines index of 6 and ridge top winds approaching 30 mph. A decision was made to transition from a local Type 3 team to a regional Type 1 team due to the complexity of the fire behavior and proximity to the city of Globe, Arizona. **The Type 1 team used the POD boundary in a firing operation along the northern edge of the fire to halt progression toward Globe while backing fire to the western POD boundary using aerial ignitions;** continuing the strategy of managing for

surface fire behavior through the timber to meet resource objectives, reduce fuel loading, and mitigate future fire hazards.