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Video: Developing software that more accurately predicts wildfire movement

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Fire season in San Diego County is a yearly battle against the elements for homeowners, firefighters, first responders and government officials. To help in that battle, the SDSU Visualization Center has partnered with New Mexico–based company SimTable to develop and test modeling software that helps predict how wildfires will spread.

The software uses a map projected onto a sandbox filled with walnut shell powder, which creates less dust than actual sand. Users can then mold and shape the powder into miniature mountains and ravines to create a three-dimensional geographical overlay of a particular area. Using a lighter—more for effect than necessity—users can spark a virtual flame anywhere on the overlay.

The program then crunches data on topography, time of day, wind speed and direction, and fuel types known to be in the area in order to predict where and how a [fire](#) is most likely to spread.

Justin Freiler, manager of the Visualization Center, is himself a former [firefighter](#). He said firefighters receive training on how these factors affect fire speed and direction, but actually seeing it simulated on a three-dimensional surface and play out in real-time could help firefighters develop a much better intuitive sense of fire behavior under a variety of conditions.

"When I was a firefighter, you'd see a fire coming at you and you'd need to count on everyone knowing what to do and where to go," Freiler

explained. "This technology gives a much more hands-on experience, which offers a better understanding of the full aspect of a fire."

Beyond predicting wildfire movement, the software can also help firefighters devise strategies for fighting it. Using a laser pointer to interact with the interface, users can simulate various extinguishing and containment methods such as water drops, firetruck crews, bulldozed fire lines and controlled burns to estimate the effects these methods might have.

SDSU and SimTable are also working on an app version of the software that firefighters could pull up on their phones to receive current information from central control and track how the fire is spreading—important factors in keeping firefighters safe. SDSU's primary role in the partnership is researching and testing how people use the software and how it can be made more user-friendly and intelligible.

"We're hoping to put this into the hands of first responders who can use it to save lives and structures," said Lance Larson, assistant director in the SDSU graduate program in homeland security.

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