Scientists play key role in developing new Santa Ana Wildfire Threat Index

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UCLA atmospheric scientists were instrumental in the creation of the Santa Ana Wildfire Threat Index—a new tool to classify the fire threat potential of the powerful, hot, dry Santa Ana wind, which can turn a spark into an inferno. The index was introduced Sept. 17 by the U.S. Forest Service, in collaboration with UCLA and San Diego Gas and Electric.

The index includes four classification levels ranging from "marginal" to "extreme" that will be used to help fire agencies and other emergency responders, the media and the public determine the appropriate actions to take based on the likelihood of a catastrophic wildfire fueled by high winds.

The UCLA research team was led by Robert Fovell, professor and chair of the department of atmospheric and oceanic sciences, and also comprised doctoral student Yang Cao and postdoctoral researcher Scott Capps. The three scientists performed high-resolution modeling for a large number of Santa Ana wind events, extending back decades.

"This effort has led to an enhanced understanding of the evolution of the Santa Ana winds, their potential for sparking and spreading fires, and their spatial and temporal variation," said Fovell, a faculty member in the UCLA College. "We not only have a new, deeper understanding of how the San Diego-area terrain influences weather, especially wind, which is crucial to SDG&E's operations, but we also have been able to make improvements in weather modeling that will benefit forecasters

around the world."

The team undertook the difficult tasks of assessing "live fuel moisture"—essentially, the moisture content of chaparral —and ground cover conditions using meteorological data alone. Those data points are important components of the index.

"Given the current state of fuel conditions, we have the potential to see devastating fires this fall should significant Santa Ana winds occur," said Tom Rolinski, a Forest Service meteorologist. "This tool will directly benefit fire agencies by allowing us to better anticipate what kinds of resources may be needed, as well as where and when we could face the greatest challenges."

The threat index has four levels of increasingly severe fire potential:

- Marginal: Upon ignition, fires may grow rapidly
- Moderate: Upon ignition, fires will grow rapidly and will be difficult to control
- High: Upon ignition, fires will grow very rapidly, will burn intensely and will be very difficult to control
- Extreme: Upon ignition, fires will have explosive growth, will burn very intensely and will be uncontrollable

Each level includes recommended actions that escalate in accordance with the possible severity of the fire.

The Forest Service, a part of the U.S. Department of Agriculture, is the agency responsible for determining and issuing the alerts, which can be found on its website.

Tips for the public during fire season include closely monitoring fire conditions, registering phones to receive 911 warnings for the latest

information about an emergency, making sure phones are charged, ensuring vehicles' gas tanks are full, and reviewing emergency evacuation plans at work and at home.

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