



FULL COMMITTEE

HEARING CHARTER

“Enhancing Fire Weather Prediction and Coordination”

Wednesday, July 12, 2023

10:00 a.m.

2318 Rayburn House Office Building

Purpose

The purpose of the hearing is to examine current fire weather prediction capabilities. The hearing will assess the collaboration between the National Oceanic and Atmospheric Administration (NOAA), state and local officials, and commercial partners to ensure the safety of lives and property. This hearing will be an opportunity for Members to discuss potential areas of improvement and their priorities related to the collection, distribution, and use of fire weather data, including the accessibility of both long- and short-term fire weather data and gaps.

Witnesses

- **Mr. Mark Goeller**, State Forester/Director, Oklahoma Department of Agriculture, Food and Forestry.
- **Mr. James Peverill**, Founder/CEO, GreenSight.
- **Dr. Ali Tohidi**, Assistant Professor of Mechanical Engineering and Wildfire Dynamics, San Jose State University.

Overarching Questions

- What steps can be taken to streamline communication and data assimilation efforts between NOAA and state and local emergency officials to better prepare for wildfires?
- What are some of the most pressing research gaps in the field of fire weather prediction and forecasting?
- How can NOAA most efficiently partner with the commercial sector to utilize new technologies that are currently available for use?
- How do we ensure that the research being conducted at other federal agencies in this field is not duplicative of NOAA and private sector work?

Background

This hearing will include testimony from individuals involved with state emergency management, the commercial sector, and the academic community to enhance the sustainability and accuracy of fire weather information as the Committee identifies needed legislation to better prepare communities and regions facing the rapid spread of fires. This conversation will include insight on what data is currently accessible; how people, such as emergency managers and the public, understand and use the data; and what gaps need to be filled in the short and long term.

Fire weather is the use of meteorological parameters such as relative humidity, wind speed and direction, mixing heights, and soil moisture to determine conditions that factor into fire growth and smoke dispersion. NOAA's National Weather Service issues several fire weather products on a daily basis and when conditions warrant. These products are generally intended for land management agencies and provide meteorological data which help these agencies make decisions relating to fire weather, such as when to execute controlled burns and when to expect a higher probability of wildfires.

State Response, Commercial Partners, Academia

According to the National Interagency Fire Center, there were a reported 68,988 fires that burned 7,577,183 acres in 2022.¹ There has been beneficial fire weather progress at the state level in areas like Oklahoma and California due to their partnerships with the National Weather Service (NWS) and NOAA. By utilizing NWS weather forecasting offices and personnel, state and local emergency managers can position people and resources in areas most susceptible to severe fire weather conditions.

For example, Oklahoma Forestry Services has partnered with the National Weather Service to innovate the Fire Warning Process, and recently presented their work at the American Meteorological Society's 35th Forest, Fire and Agricultural Meteorology Meeting. This partnership and effort have resulted in fire warnings similar in accuracy and application as the well-understood tornado warning. While fires will continue to have dozens of triggers and some will remain unpredictable, utilizing NWS data, techniques, and partnerships for prediction will enable first responders and emergency managers to be better prepared to act when facing the potential for a severe event.

Even with increased data or observations, NOAA can utilize the private sector to maximum model and forecast accuracy. Over the past few years, a surge of startup commercial companies have developed new technologies that increase capabilities related to fire detection. Companies like GreenSight have embraced robotics and drone technology to collect data through uncrewed systems, which avoids placing an unnecessary burden on first responders and emergency officials.

GreenSight's weather detection system, WeatherHive, is a tactical weather measurement system that enables hyper-precise forecasting in tactical scenarios utilizing swarms of nano-UAVs.

¹ *Wildfires and acres*. National Interagency Fire Center. (n.d.). <https://www.nifc.gov/fire-information/statistics/wildfires>

WeatherHive is optimized for minimal size, weight, and production cost in large quantities so that systems can be carried by local officials in a compact, portable, dispensing canister.²

To complement private sector innovation and capabilities, academia provides research and development to further enhance fire weather capabilities. Representing this crucial piece at this hearing is Dr. Ali Tohidi, an Assistant Professor of Mechanical Engineering and Wildfire Dynamics at San Jose State University. Dr. Tohidi's research has focused on developing the next generation of operational wildfire behavior models and characterization of the near-term risk for grid resiliency.

Collaborative efforts in the academic community, including San Jose State's Wildfire Interdisciplinary Research Center (WIRC) and Fire Weather Research Laboratory, enable the development of products that can be used in different geographies and scenarios. For example, the WIRC conducts research that focuses on all aspects of wildfire science and management to better understand fire in California and around the world.³ The research conducted at these academic facilities is critical to both NOAA and to the commercial sector for continued innovation.

Prior Legislative Efforts

In the 117th Congress, Ranking Member Lofgren introduced H.R. 5781, the National Wildland Fire Risk Reduction Program Act. This bill was marked up by the Committee in November 2021. H.R. 5781 would require the President to establish a National Wildland Fire Risk Reduction Program to achieve major measurable reductions in the losses of life and property from wildland fires.

In the 118th Congress, Representatives Mike Garcia (R-CA), Young Kim (R-CA), Julia Brownley (D-CA), and Judy Chu (D-CA) introduced H.R. 550, the Fire Information and Reaction Enhancement (FIRE) Act, to enable the NOAA to develop technology that improves the prediction of wildfire intensification, the forecast of smoke dispersion, information dissemination and risk communication, and early detection of wildfires. This bill would also authorize the construction of a "fire-weather testbed" to develop and test new technologies created for these purposes.⁴

² Defense. (n.d.). <https://www.greensightag.com/defense>

³ "Wildfire Interdisciplinary Research Center." *Wildfire Interdisciplinary Research Center (WIRC) | Wildfire Interdisciplinary Research Center*, www.sjsu.edu/wildfire/. Accessed 6 July 2023.

⁴ "Reps. Garcia, Kim, Brownley, Chu Introduce Bipartisan Bill to Improve Wildfire Detection." *U.S. Representative Mike Garcia*, 26 Jan. 2023, mikegarcia.house.gov/news/documentsingle.aspx?DocumentID=940.