

Vibrant Planet's canopy height model found to lead the industry in accuracy

Trained on 12 million acres, the VibrantVS model excels in accuracy, temporal currency, and cost.

TRUCKEE, CA, UNITED STATES, March 19, 2025 /EINPresswire.com/ -- [Vibrant Planet](#), an emerging



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Dr. Andreas Gros, Technical Lead, Machine Learning, Vibrant Planet

leader in wildfire risk management software, today announced [peer-reviewed findings](#) pointing to the accuracy of its core canopy height model (CHM), a leap forward in forest monitoring technology. The company's proprietary model, VibrantVS (VS for vegetation structure), has been found to more accurately measure canopy heights than other benchmark models, including those produced by technology leader Meta, academic researchers ETH Zürich, and the LANDFIRE program (Landscape Fire and Resource Management Planning Tools; a collaboration of the U.S. Forest Service and U.S. Department of Interior). When studied across a broad

range of ecoregions across the western US (EPA L3 ecoregions; Figure 1), VibrantVS was found to most accurately predict canopy heights at 0.5 meter resolution. This model maps vegetation more frequently and cost effectively when compared to lidar, breaking down common barriers for assessing a landscape and its vegetation.

The outputs of this model can be used across a variety of applications. Land managers can better estimate forest structural components like trees per acre, biomass, and timber volume, which are critical inputs in mitigating wildfire risk and improving forest health. Additionally, utilities can see individual trees that might pose hazards to their infrastructure. Finally, fire districts, counties, and HOAs can more effectively prioritize parcel and neighborhood level defensible space improvements that, when combined with home hardening, can keep insurance intact and affordable.

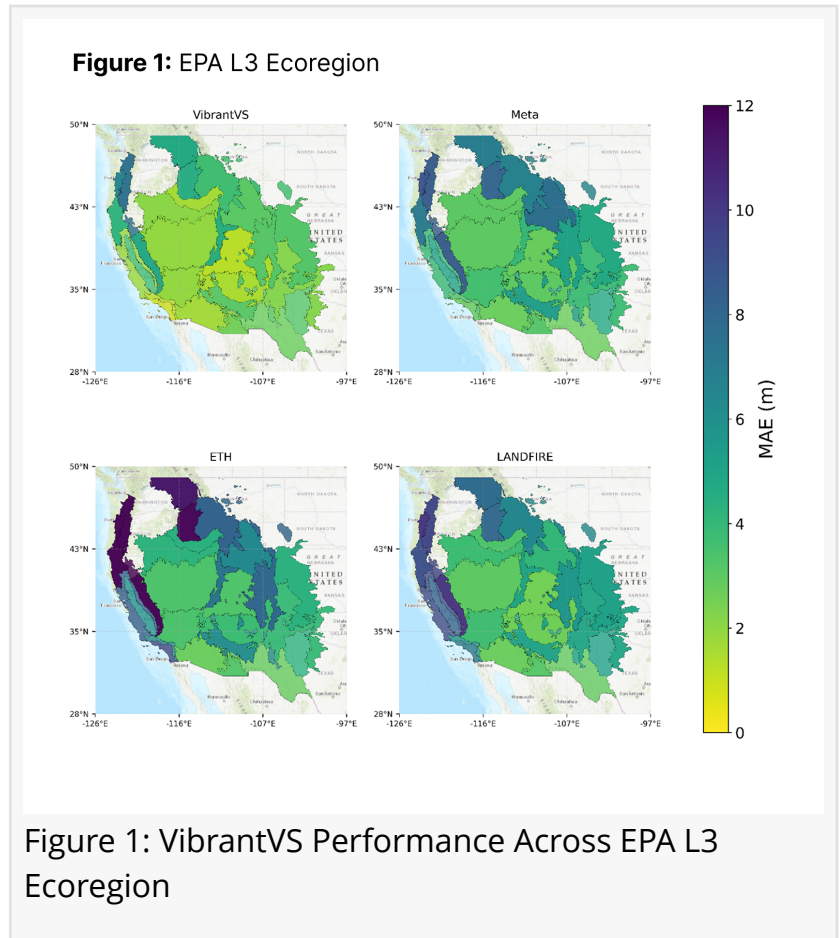
Although aerial lidar provides the most comprehensive canopy height data at scale, its prohibitive costs, limited availability, and static nature make it increasingly impractical for monitoring rapidly changing forest conditions. The research suggests that, while other models can provide high precision in localized areas, and global models from Meta and ETH provide

value through their massive geographical coverage, the VibrantVS model has substantial advantages across a broad reach of ecoregions in the western United States. VibrantVS is proven to deliver higher accuracy and precision, and generate updated inference at a cadence of three years or less, and high spatial resolution, thanks in part to free, publicly available NAIP (National Agricultural Imagery Program) data.

"Our VibrantVS model represents a leap forward in our industry's ability to understand and manage forest ecosystems and keep communities safe," comments Dr. Andreas Gros, Technical Lead for Machine Learning at Vibrant Planet, "by delivering more accurate and frequent forest structure data, in the context of an adaptive decision support application, we're empowering land managers, fire districts, and utilities to make more informed decisions about forest health, wildfire risk mitigation, and ecological restoration."

Across more than 200,000 0.5 km² sample tiles, the study tested the abilities of LANDFIRE Forest Canopy Height (FCH), Meta's DINOv2 vision encoder, and ETH Global canopy height model. VibrantVS outperformed all baseline models with an overall median mean absolute error (MAE), which measures the distance of a modeled prediction from observation, with lower values representing more accurate predictions. Summarized across the western US, VibrantVS's MAE was 2.71 meters, whereas Meta's was 4.83 meters, LANDFIRE was 5.96 meters, and the ETH Zürich model's was 7.05 meters. VibrantVS achieved this best-in-class predictive performance primarily via the use of a robust training dataset and careful, iterative selection of model improvements, although other factors such as the use of higher resolution NAIP imagery contributed as well. The model was trained on approximately 10 terabytes of training data including over 12M acres of lidar from a wide range of the western US.

With the development of VibrantVS, Vibrant Planet can now provide unprecedented and cost effective accuracy in measuring forest canopy heights. The model and its outputs are embedded within Vibrant Planet's wildfire risk mitigation platform, and are also available as individual solutions. The research comes at a crucial time, as wildfire seasons continue to grow in severity.



About Vibrant Planet

Vibrant Planet is the emerging leader in wildfire risk management software and partner of choice for federal, state, and local land/fire management agencies in the West. The company leverages next-generation technology and cutting-edge fire and ecological science to help wildfire managers protect critical assets, more effectively manage their resources, and successfully adapt to rapidly increasing wildfire risk and climate change.

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