



# HAWAIIVIEW 2023 - 2024

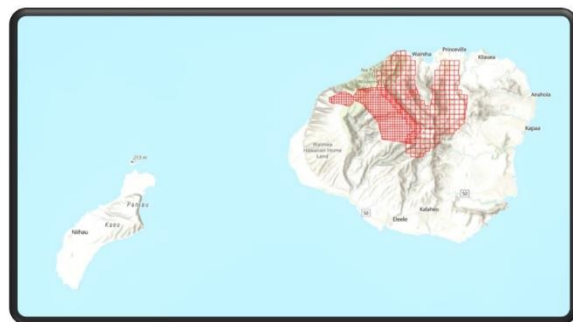
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## HAWAIIVIEW 2023 - 2024 ACTIVITIES

Lidar is the most accurate technology for mapping vegetation height. However, the existing airborne lidar data over Kauai, which were acquired for individual conservation and environmental projects, only cover a relatively small portion of the island in the north side. To fill in the gap, we combined island-wide Landsat-8 cloud-free mosaic (generated from the GY19 activities, <https://bit.ly/2ILmzJo>) and airborne lidar data to map vegetation height over Kauai's mountainous areas (KMA). We first estimated vegetation height over lidar coverage areas, then used the data over the overlap areas to create a model of predicting lidar-based height from Landsat imagery, and finally predicted height over mountains using the model and the Landsat-8 mosaic.



Landsat-8 Cloud-free Mosaic



Airborne Lidar

*Integration of Landsat-8 Cloud-free Mosaic, Airborne Lidar, and Machine Learning for Island-wide Tree height Mapping*



HawaiiView is a member of the AmericaView Consortium, a nationally coordinated network of academic, agency, non-profit, and industry partners and cooperators that share the vision of promoting and supporting the use of remote sensing data and technology within each state. AmericaView is funded by USGS grant agreement G23AP00683.

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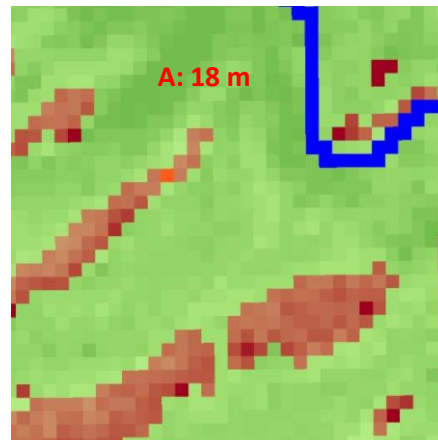
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## BENEFITS TO HAWAIIVIEW

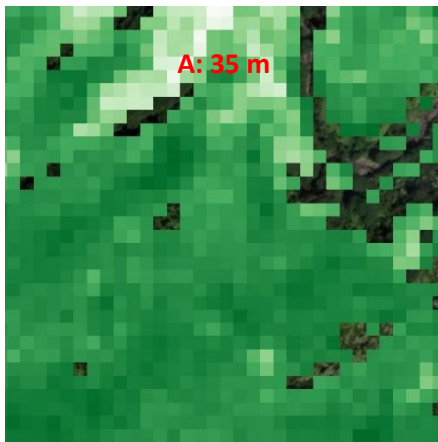
- We produced a new map of vegetation height over the forest areas in Kauai using massive airborne lidar-derived vegetation height as the reference, which led to a much better accuracy than the existing vegetation height maps in Hawaii (such as the LANDFIRE Existing Vegetation Height, EVH) (see Figures below as an example).
- This new map (<https://tinyurl.com/34wryu9f>) of vegetation height provides a critical input for understanding the role of forests in ecosystem functioning and services (such as water supply, carbon storage, and biodiversity conservation) in the island of Kauai.
- One master graduate student was trained and supported for airborne lidar data processing and vegetation height modeling and mapping.



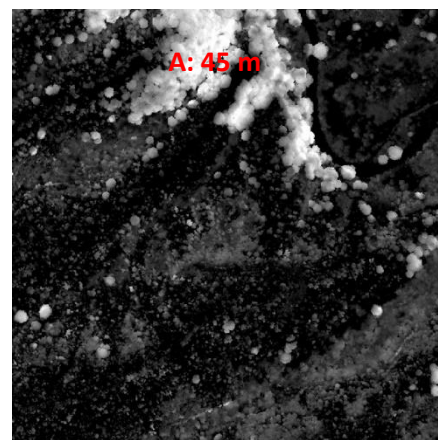
*ArcGIS Base Imagery (Locations A)*



*Landfire Existing Vegetation Height Maps*



*Our product: L2FHM*



*Airborne lidar point cloud*

*Note: Numbers at locations A and B indicate the vegetation heights from different products*

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