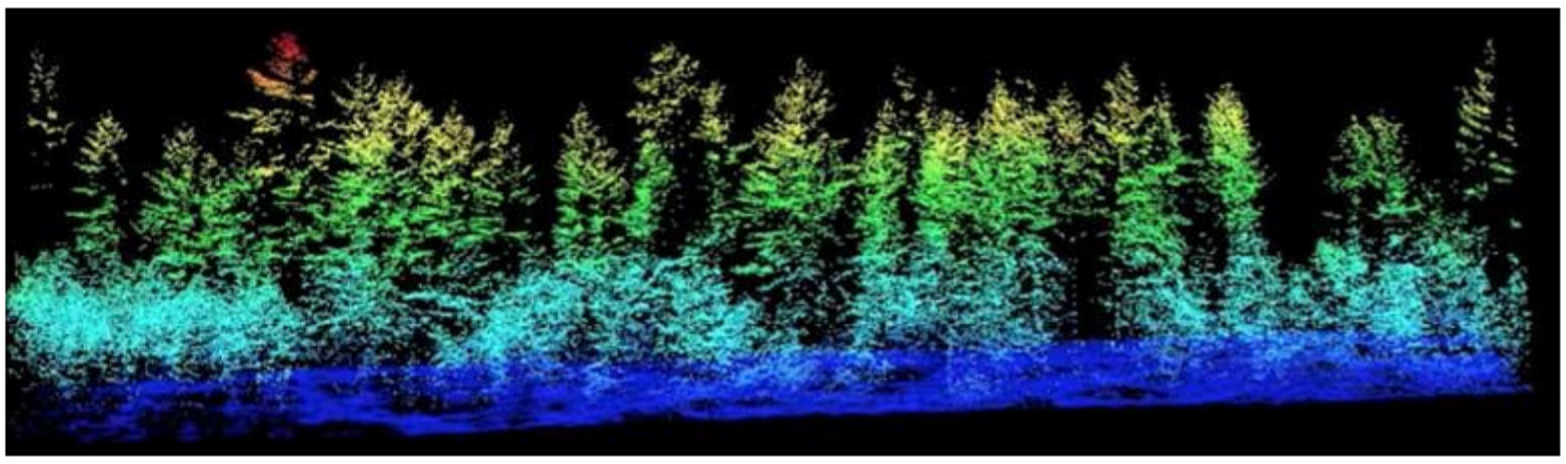
Workshop: Applied LiDAR Analysis for Forest Inventory and Assessment

Introducing new tools and techniques to Minnesota's natural resource managers is an important part of the Sustainable Forests Education Cooperative's purpose. As an example, LiDAR data can give natural resource managers new ways to quantify and understand forest structure and condition. We were pleased to offer our first two-day LiDAR workshop to SFEC members in October 2014.

LiDAR, which stands for light detection and ranging, is a remote sensing technology typically deployed from an airplane, that uses a high-density pulsed laser to measure variations in the range, or distance, from the instrument to objects on the ground, or the ground itself. LiDAR outputs are often displayed as "point clouds" with different colored points indicating distance from the ground. The figure below is an example.



Building on webinars that we've offered in recent years, Mike Falkowski of the U's Department of Forest Resources developed and led a two-day workshop in October 2014. We promoted the program as

… a hands-on, two-day workshop composed of classroom, computer lab, and field-based exercises. Attendees will learn the underlying principles of LiDAR data collection, including how LiDAR responses vary across different forest structural conditions and species compositions. A significant portion of the course will deal with integrating LiDAR with field inventory data to develop spatial predictions (i.e., maps) of inventory attributes across large spatial extents.

The combination of classroom, computer lab, and field components allowed learners to view the same spot on the ground as a LiDAR "point cloud" in the computer lab and in the field. While high-density LiDAR point clouds can pretty clearly outline the shape and structure of a patch of forest, the opportunity to see a variety of different forested patches in different ways was quite useful. We analyzed and visited stands composed of relatively young even-aged red pine, old growth red pine, a regenerating seed-tree treatment, and thinned and unthinned 110-year old red pine on flat and variable terrain.

After getting to know LiDAR data in the computer lab and field, we came back inside to focus on quantitative analysis of LiDAR data. The remaining labs introduced the R statistical package and ArcMap extensions that enabled statistical analysis of the point cloud data we had generated.

Contact Us

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Brian Palik gave a great talk yesterday called Adaptive Silviculture for Climate Change: Lessons for timber-oriented managers.

If you missed it, here's the recording: sfec.cfans.umn.edu/2022-webinar-s...

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Starting in 15 minutes: Adaptive