16.020 Evaluating Single Photon and Geiger Mode Lidar Technology for the 3D Elevation Program (3DEP)

Qassim Abdullah¹, Jason Stoker², Amar Nayegandhi³
¹Woolpert, Inc., ²USGS, ³Dewberry

Recent advances in lidar technology, specifically new designs based on very sensitive detectors and focal plane array receivers offer unique possibilities for wide area acquisitions of dense lidar point clouds. The USGS National Geospatial Program (NGP), in collaboration with many Federal agencies in the 3D Elevation Program (3DEP) Working Group were interested in evaluating such capabilities and limitations of the single photon lidar and Geiger mode lidar, and to assess their suitability to meet quality requirements for the 3DEP. The USGS contracted Woolpert, Inc. and Dewberry for the tasks of designing a comprehensive evaluation plan, independently evaluating the data and publishing a report on the findings. A consortium of Federal agencies tasked to investigate emerging 3D technologies as they relate to 3DEP, the Emerging 3D-Working Group, also independently evaluated the data. Two data providers, namely Sigma Space and Harris, corp., who are using the new technology participated in the evaluation plan by acquiring data over a well-controlled site using their systems and makes it available for the evaluation. The presentation discusses details of the evaluation and final conclusions and recommendations.