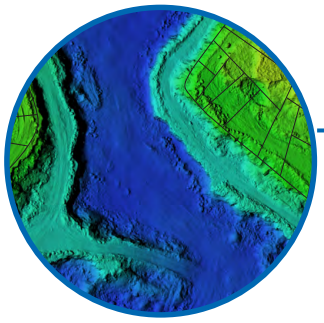
Helping ensure accurate and consistent data for mapping

CSA W229.1:25, *Airborne lidar data acquisition*

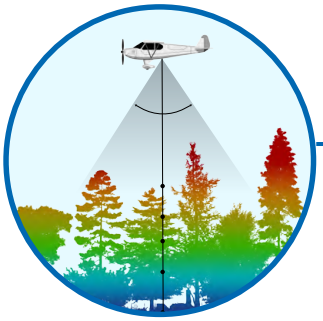
Lidar sensors mounted on airplanes, helicopters, or drones are extensively used across Canada for gathering information about the Earth's surface. Accuracy and consistency in collecting, processing, and validating this high-precision land elevation data is important for producing reliable mapping solutions for Canadian communities. These solutions can support flood mitigation and resilience actions, infrastructure planning, resource management, and many other applications.

Building on the Federal Airborne LiDAR Data Acquisition Guideline (Version 3.1, 2022) published by Natural Resources Canada, the new National Standard of Canada, CSA W229.1:25, provides requirements, recommendations, and guidelines for airborne lidar data acquisition to help ensure data consistency, accuracy, and quality while considering emerging sensor technology, software, and methods used by the industry.

Key aspects of airborne lidar data acquisition



Hydrologic analysis and flood modelling applications



Forest ecosystems and terrain morphology applications



Urban infrastructure mapping applications

PLANNING
of the project, including the flight plan, airborne and ground survey equipment details, data collection area, and methodology, should be documented in a project planning report

DATA COLLECTION
should consider the impacts of surface, atmospheric, and temporal conditions, such as extensive flooding, snowfall, smoke, or time of day, on the quality and quantity of lidar pulse returns

DATA PROCESSING AND MANAGEMENT
should ensure appropriate file formatting, recording, storage, identification, and compression of data, as well as point cloud classification and the use of coordinate reference system, point families, and tiling scheme

DATA VALIDATION
requires a quality check of lidar's vertical and horizontal positional accuracy, spatial distribution and regularity, pulse density, data voids, point cloud classification accuracy, relative accuracy, and classification

PROJECT DELIVERABLES
should include project reports covering project planning, progress, and completion, with final project deliverables including all documentation, images, notes, field data and lidar data



Topo-bathymetric lidar mapping applications

Who should use the standard?

- Federal, provincial, territorial, and municipal governments
- Geomatics professionals
- Natural resources managers
- Land use and urban planners
- Engineers

Adopting the requirements and recommendations of the standard CSA W229.1:25 can help:

Improve consistency

of airborne lidar data acquisition across Canada

Advance the accuracy

of flood mapping, forest ecosystems and terrain morphology mapping, urban infrastructure mapping, and other applications using lidar-acquired data

Reduce costs

of lidar data acquisition by helping strengthen the national elevation data set

Support decision-making

at all levels of government related to strategic development, emergency planning, and disaster management

Support emerging technologies

by providing non-prescriptive requirements and guidance and allowing for a holistic approach tailored to specific project needs

Get CSA W229.1:25

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For more on CSA Group research and standards for environment and natural resources, visit www.csagroup.org/EnvironmentNaturalResources

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