

ing a GIS. The Maritimes experiences storm surges, which are a result of low atmospheric pressure and wind raising the water level, on the order of 1–2 m above normal levels. When storm surges coincide with high spring tides many areas are at risk of coastal flooding and erosion. There have been several studies utilizing this technology to construct flood risk maps including: Charlottetown, PEI; southeast New Brunswick and Annapolis Royal, Nova Scotia. GIS is used to map the storm surge still water level and route the water on-land ensuring connectivity of the ocean to the low lying areas inland. In order to determine the risk or probability of a high water event occurring, a time series of water levels are analyzed. Tide gauge records provide these data in order to generate the return periods of high water events and can be assigned to the flood inundation maps to produce flood risk maps. Future sea-levels projections as a result of climate change and local crustal subsidence can be incorporated into the probability statistics of high water levels. Natural Resources Canada has recently funded a climate change adaptation project with the Atlantic Provinces (Regional Adaptation Collaboration – RAC). One component of this project is to evaluate the coastal risk for several communities in Nova Scotia utilizing LiDAR. The communities include: Yarmouth, Lunenburg County, Minas Bite, Oxford to Port Howe, and the Tantramar marsh-Amherst Fundy shore. The Halifax regional municipality is also undertaking a flood risk mapping project as part of the RAC initiative.

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### Airborne LiDAR for coastal zone risk mapping in the Maritimes

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Several coastal areas around the Maritimes have been surveyed with airborne LiDAR sensors to construct high-resolution digital elevation models (DEMs). This type of sensor uses a narrow laser pulse that is able to measure ground elevations to a high precision even under the forest canopy. These high density high precision elevation points are used to construct bare earth DEMs that can be used to route water flow utiliz-