geometry of the meanderbelt fluvial systems that developed in the Carboniferous, in response to the gradient of the coastal plain and increased vegetation.

Preliminary investigations also indicate the intensity of the return values of the LiDAR data represent a contrast in lithology with unique, distinguishable return signatures. This is being explored as a potential avenue for lithology identification using LiDAR.

Stratal-geometry architecture of meanderbelt systems and vegetation density in the Carboniferous: using LiDAR imagery

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This project was designed with two objectives; (1) to define the stratal geometry and architecture of meanderbelt fluvial depositional systems, and (2) model Carboniferous vegetation density, using the excellent outcrop exposures found at Joggins, along Chignecto Bay, Nova Scotia. The primary methodology utilized for this project is that of LiDAR based reconstruction and interpretation. Operating in the ultraviolet, visible, and near infrared spectrum, LiDAR capture allows the creation of extremely accurate representations of these cliff sections. What makes this method superior to traditional digital photography captures is the spatial aspect of the LiDAR data; the captured returns of the laser pulses contain XYZ coordinates giving the image spatial representation, as well as signal return strength.

With proper georeferencing and proof of concept, this project can become the framework for future 3D model construction of Carboniferous vegetation density at Joggins. As the cliffs naturally erode, new fossil trees are exposed. Using differential GPS and LiDAR, successive erosional events can be digitally measured and captured, on an annual schedule; eventually a model of a standing forest can be created. The same data set will also be used to develop 3D models of the architecture and

Atlantic Geology, 2011, Volume 47, Number 1