Riverbank Erosion Assessment with Airborne Laser Alitmetry. (S06-thoma151558-Oral)

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Abstract:

Non-point source pollution caused by sediment from agricultural runoff and bank erosion is one of the greatest threats to U.S. surface water quality. Detailed topographic data collected with an airborne laser scanner can help determine the extent of bank erosion and identify banks that are more vulnerable to bank collapse and thus require stabilization. A 56-km length of Minnesota's Blue Earth River was scanned for changes in bank elevations in April 2001 and April 2002 with an helicopter mounted Topeye laser system. The database includes millions of X, Y, Z coordinates of laser returns from the river valley plus return intensity. Reflections from vegetation were stripped to construct two bare-earth digital elevation models. The absolute accuracy (15cm) and relative accuracy of the scanning laser data was determined by comparing measured elevations to known elevations of bridges crossing the river. The change in bank volume due to bank erosion was determined via layer subtraction. A mass wasting estimate as a proportion of total sediment load was calculated using bulk density of bank materials.

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