

LiDAR used to determine Sediment Loading from Streambank Erosion

Hanna Anderson (Advisors: Drs. Mandar Dewoolkar and Donna M. Rizzo)

In 2011, Tropical Storm Irene put the state of Vermont into disaster mode causing widespread damage and destruction. Flood levels approached the historic 1927 Vermont flood. Floodwaters and sediment poured through rivers and communities affecting ~225 municipalities; recovery in Vermont alone is estimated between \$700 million and \$1 billion. Streambanks hit by these floodwaters tend to fail and erode causing debris and sediment to be suspended in the water. Pollutants bond to the sediment make their way down the rivers draining into Lake Champlain. Identifying the exact source of the suspended sediment is complex, but streambank erosion is thought to be a large factor and is the focus of this study. Aerial photography, a USDA streambank channel model (BSTEM) and a handheld terrestrial LiDAR sensor capable of obtaining high-resolution 3D scans of the streambanks with less than a cm accuracy will be combined to predict the sediment loading from streambank erosion. The goal is to give communities tools they can use to identify potential problem areas along VT streams and make more informed planning decisions.