

**MODEL-BASED TECHNIQUES FOR EXTRACTING BATHYMETRY FROM AIRBORNE HYPER-SPECTRAL REMOTE SENSING IMAGERY.** *G. Brown and R. Raqueno\**, Department of Imaging Science, [gsb1823@cis.rit.edu](mailto:gsb1823@cis.rit.edu), [rolando@cis.rit.edu](mailto:rolando@cis.rit.edu)

This research investigates two model-based techniques to extract bathymetry information from hyper-spectral remote sensing imagery of the littoral zone. Both approaches will use the Hydrolight radiative transfer model to predict a range of water surface reflectances. This spectral library will be used to analyze AVIRIS imagery of the Lake Ontario shoreline. Inherent optical properties of the major water constituents along with bottom reflectance spectral measurements will be used as inputs into Hydrolight. The first approach uses a spectral matching technique using lookup tables that varies constituent concentration and bottom depth in the Hydrolight simulation. The second technique merges a multivariate transform of the hyper-spectral image to the Hydrolight simulation to calibrate the statistical result to physical units. Results of both techniques would be compared against bathymetry maps of the region. Recommendations regarding acquisition of the image data and factors related to model inputs will be discussed.