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Study of Harmful Algae Blooms Using UAS Imagery ILEANA DUMITRIU, Hobart & William Smith Colleges, PETER SPACHER, Rochester Institute of Technology, JOHN HALFMAN, Hobart & William Smith Colleges — Harmful Algal Blooms (HABs) occurrence has increased in recent decades. The transient nature of HABs in both space and time result in monitoring challenges, which add to the difficulty in understanding the criteria that trigger HABs. Traditional monitoring programs are expensive and time consuming. The use of UAS (Unmanned Aerial Systems) assures high-resolution space and time monitoring for HABs, and is economical for small bodies of water. By using UAS (Matrice100 and Phantom3) we obtained aerial photographs of eight Finger Lakes which span the oligotrophic to eutrophic spectrum of algal productivity. Water samples were collected and analyzed simultaneously. The Green/Blue (G/B) ratio extracted from the aerial photos was proportional to chlorophyll-a abundance. The algal pigments are also characterized by unique light absorbance and reflectance features, and spectral images obtained from two up-down visible spectrometers revealed a prominent feature ~ 790 nm which correlates to the concentration of algae in the water.

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