Invasive plants in coastal wetlands of the Great Lakes are degrading wetland habitat, decreasing biodiversity and reducing ecosystem services. Our objective is to refine and integrate process-based hydrological and ecological models with remote sensing products to investigate how changes in upland land use and climate alter risk of plant invasions and ecosystem services in coastal wetlands.

**Coupling Ecological and Hydrological Models**

Simulate changes in upland land use and climate in order to understand the impacts of changing water and nutrient loads on coastal ecosystems.

**Monitoring Spread of Invasives and Hydrology in the Field**

Whiskey Harbor

Mesocosms of Invasive Wetland Plant Species

The mesocosm experiment is designed to test the ability of four taxa to invade wetlands along nitrogen gradients. Mesocosms were set up in northern and southern Michigan sites treated with a range of nitrogen concentrations crossed with the presence/absence of native vegetation.

**Remote Sensing to Parameterize and Improve Linked Models**

Refine and integrate linked hydrological/ecological models with remote sensing products of leaf area index, wetland maps, and seasonal flooding.

Areas experiencing seasonal flooding are wet in the spring and dry in the summer. Using a combination of SAR data from spring and summer, as well as Digital Elevation Models, these vernal pools are detected and mapped.

Field crews collect LAI measurements using a LI-COR LAI-2200 Plant Canopy Analyzer and with destructive sampling techniques to support development of empirical LAI algorithms for wetlands.