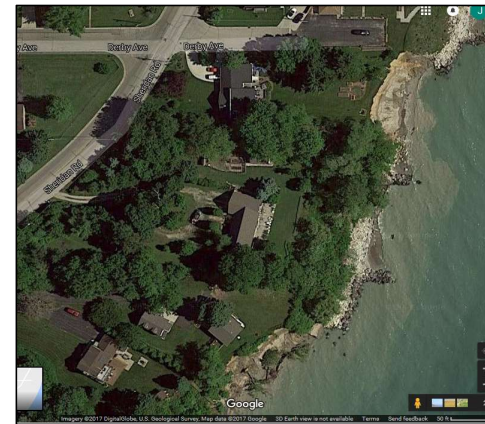
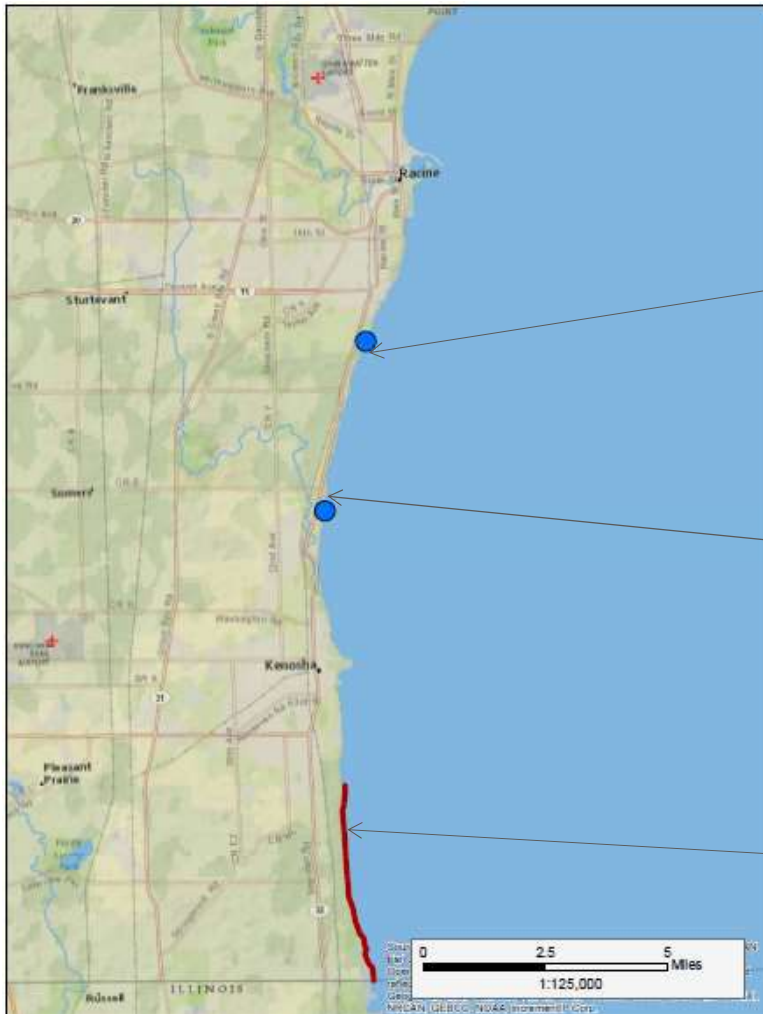


Wisconsin Coastal Change Monitoring

Jim Killian, Wisconsin DNR Office of Great Waters
Member, Coastal Hazards Workgroup

- Coastal Natural Hazards Workgroup: Membership consists of staff from multiple state agencies, universities, and NGO's. DOA-Coastal Zone Management, DNR-Water Resources, Wisconsin Emergency Management, University of Wisconsin-Sea Grant Institute, Natural Resources Foundation, UW academic staff
- Charge: Relying on various expertise, focus on the challenges and issues surrounding coastal processes. Help provide sound education and outreach to coastal communities facing issues related to coastal flooding and erosion.

Areas of Study



Current Monitoring Efforts

- Coastal Assessment of Southeastern Wisconsin's Lake Michigan Shoreline

- Professor Chin Wu, UW Madison Civil & Environmental Engineering, Coastal Sustainability Laboratory
- Funded through the Wisconsin Natural Resources Foundation (Fund for Lake Michigan)

Purpose: To identify the complex nearshore hydrodynamic and sediment transport processes that impact shoreline erosion and water quality. This includes evaluation of the effects of natural and artificial shoreline structures, pollution sources, and storm water runoff influence on shoreline bluff stability and erosion, sediment transport, and water quality.

Goal: Use information gained from study to develop a consensus plan and implementation strategy for shoreline restoration and water quality improvement.



L.I.F.E = Locally Induced Flanking Effect

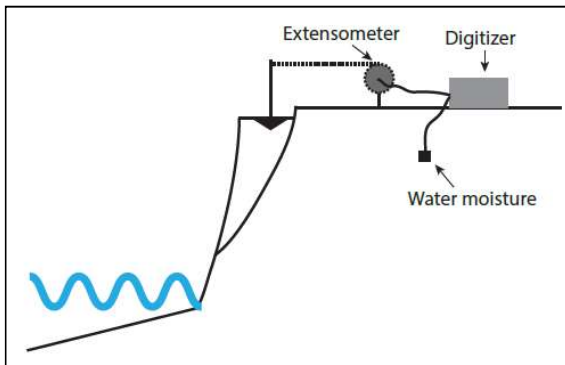


Locally Induced Flanking Effect

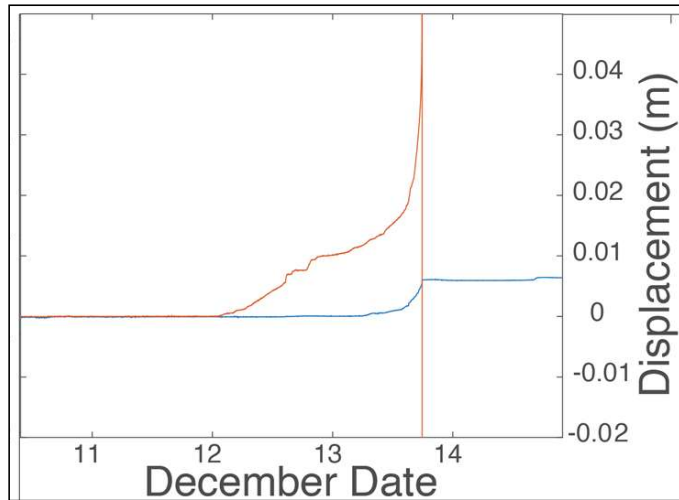


BADGER: Bluff Assessment Data Generating Experiment Recorders

- Development and Installation of data generating recorders
 - Lukas Zoet, PhD., UW Madison Dept. of Geology and Geophysics ; Elmo Rawling, PhD., Wisconsin Geologic and Natural History Survey
 - Partial funding through the Wisconsin Sea Grant



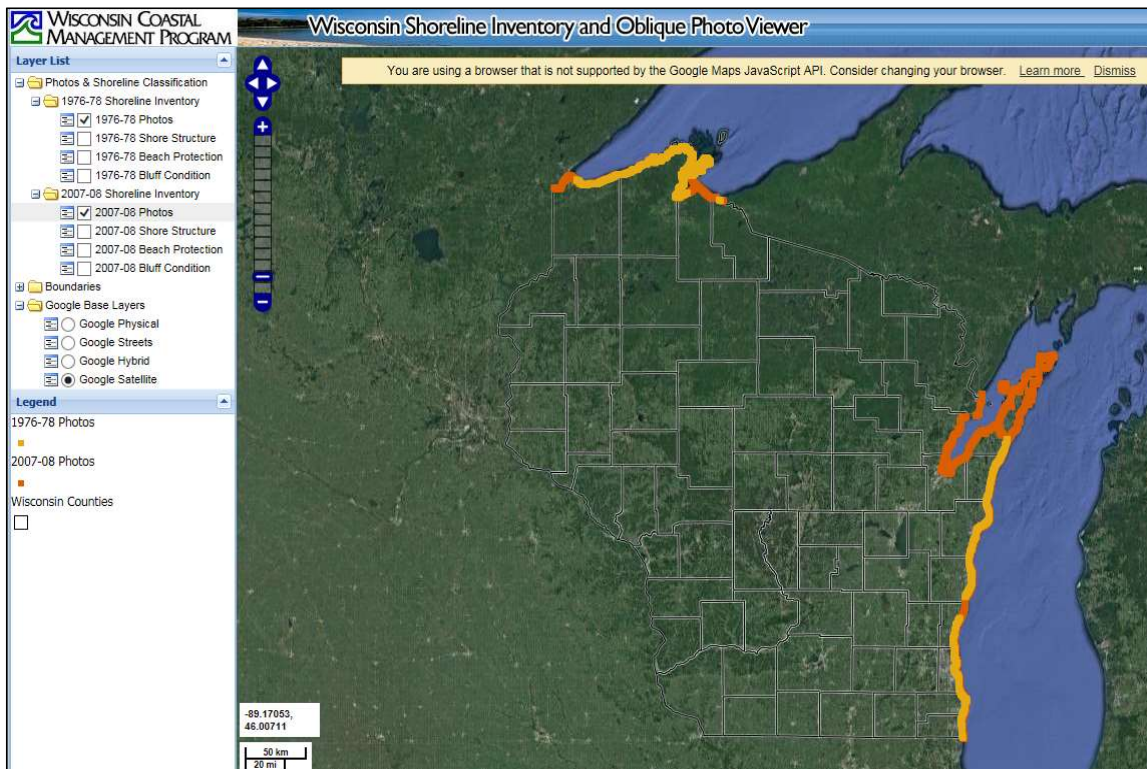
- ❖ Instruments deployed at three bluff locations from mid July to December 2016 at Mount Pleasant. Record precise position, soil moisture, and ground extension.
- ❖ Soil creep measured successfully at all 3 locations. Sudden bluff failure recorded at one location on Dec. 13th with accelerated creep recorded 2.5 hours prior to failure.
- ❖ Rapid decrease in air temperature suggest that ice formation occurred in saturated soil pore spaces. Soil yield strength was exceeded, leading to failure.
- ❖ The time-to-fail period of accelerated but non-catastrophic creep shown to be important in numeric simulations of bluff stability.



Wisconsin Shoreline Inventory and Oblique Photo Viewer

A desktop tool for visually comparing changes in shoreline and bluff conditions from the 1970's to the 2000's

- Dave Mickelson, Professor Emeritus, UW Madison Dept. of Geology and Geophysics
- Funded through Wisconsin Coastal Zone Management Program



<http://floodatlas.org/wcmp/obliqueviewer/>

Future Monitoring Desires

- Continue collaboration with State of Illinois for use of helicopter sand survey results and Wisconsin coastal assessment study results to model sediment budget for entire west coast of Lake Michigan. Potential assistance from Corps of Engineers.
- Continue data submittal and management for shoreline viewer
- Any data gaps necessary for completion of Risk Assessment and Management tool to be used to communicate risk-reduction practices to shoreline communities. (Coastal Resilience Grant).