

Safeguarding our Shorelines

Dr. Danika van Proosdij has a special fondness for tidal waters, so it makes sense that she works as a coastal geomorphologist in a province that boasts the highest tides in the world.

“Much of Nova Scotia’s population lives on or near the coast, so it’s especially important that policy makers in this province understand coastal dynamics,” says the Saint Mary’s University geography professor. “With climate change and rising sea levels, there’s a real danger of storm surges, extreme tides, shifting sediments, and coastal erosion.”

A pioneer in pairing aerial and field-based measurements of sediment dynamics at varying stages, Dr. van Proosdij uses drones and GIS (geographic information system) technology to create computer based models that illustrate the impacts on coastal habitats of tidal barriers such as dykes, causeways, shore protection and tidal power production.

“Computer simulations can be extremely valuable in helping managers and planners understand coastal dynamics and respond to hazards in a way that’s appropriate to local conditions,” says Dr. van Proosdij. “In some cases, protective measures, such as building seawalls, can actually make a community more vulnerable.”

Dr. van Proosdij is the coordinator of the Maritime Spatial Analysis Research Centre and the Director of the Intertidal Coastal Sediment Transport Research Unit at Saint Mary’s University. She works closely with the Nova Scotia Department of Agriculture, the Department of Fisheries and Oceans, and the Nova Scotia Department of Transportation and Infrastructure Renewal to guide decision-making related to protecting shorelines and restoring wetlands, particularly in areas of risk. She also consults with CB Wetlands and Environmental Specialists, a local company responsible for the majority of coastal ecosystem restoration projects in Nova Scotia.

As a professor at Saint Mary’s, Dr. van Proosdij plays a key role in training undergraduate and graduate students to assess the risks to coastal communities and gather the data required for timely and appropriate responses to dangers posed by climate change. Over the last five years, she has been the principle investigator or co-PI on close to a dozen major research grants or contracts valued at over \$1M.

Our research projects will help to develop an understanding of the mechanisms controlling the stability and resilience of coastal ecosystems,” says van Proosdij. “By advocating the use of environmentally sustainable coastal engineering protection works, we hope to adapt to the effects of climate change, particularly rising sea levels.”