

## Featured Student: Joe Jurisa

I am originally from Merrillville, Indiana but after high school decided that I wanted to do something different and learn about the ocean. I received a B.S. in Marine Science from the University of South Carolina where I worked on projects examining flows in tidal creeks and fiddler crab larvae transport in a tidal river. My current research interests at IMCS are focused on buoyant river plumes. More specifically, the effect of cross-shore winds on plume structure and freshwater transport pathways on the continental shelf. Understanding this is vital because fresh buoyant water discharged into the coastal ocean from rivers carries nutrients and pollutants. If you want to know the fate of these materials in the coastal ocean, you need to understand the physical processes governing the transport and mixing of freshwater in the coastal ocean. In an unforced system, buoyant river discharge makes a right-hand turn and forms a buoyant current that flows along the coast. However, buoyant plumes are easily influenced by forcings such as wind, river discharge, and shelf currents, all of which can significantly alter the structure and direction of the plume. Upwelling winds typically push the plume offshore, while downwelling winds push the buoyant water closer to the coast, strengthening the coastal current. The plume's response to cross-shore winds is not as well understood. To better understand the responses to changes in the forcings I am running idealized ROMS simulations buoyant plume systems and comparing the results to data collected from the Hudson River plume.

Outside of school I enjoy many activities. Ever since my high school days I have enjoyed running and for some reason I was able to convince myself it would be fun to complete the Chicago Marathon . I am still recovering more than a year later. I also play a lot of ultimate (Frisbee) and have played for the team here at Rutgers.