“Chasing the shifting sands of beaches”

This talk focusses on the physics of water and sand movement in the nearshore ocean, the so-called “dirty rim around the bathtub,” where water waves are important to just about anything that happens, contributing to the beauty of the nearshore ocean, enabling recreational activities, and fueling dreams of renewable energy extraction. Waves are a major driver of long-term change to coastlines and of acute damage to communities and ecosystems during storms. Waves also generate currents that are the leading cause for lifeguard rescues (and, unfortunately, also fatalities). So as much as the nearshore ocean is beautiful and fun, it is also mysterious and dangerous.

The behavior of the waves and currents in the nearshore ocean is strongly affected by the underwater topography, termed bathymetry. In turn, the water motions associated with waves and currents move sediment around and cause changes to the bathymetry. This bathymetric change can, at times, be rapid and is difficult to observe with the temporal and spatial resolution that is required to test hypotheses and validate predictions. In this talk, the discussion will be focused around novel methods for detecting changes in the bathymetry using a combination of numerical models and in situ or remote sensing observations of the signatures of water motions in the nearshore ocean. Also briefly discussed will be the major hazards to human life that the nearshore ocean poses, and strategies to predict and avoid them.

Dr. Özkan-Haller’s visit to UHM is sponsored by a SEED-IDEAS grant to K. C. Ruttenberg and support from the SOEST Dean’s office.

Thursday May 9th, 2019  3:00p.m.   MSB 100