



Department of Civil Engineering

**FALL 2021 SEMINAR SERIES**

**Dr. Alec Torres-Freyermuth**

Associate Professor  
National Autonomous University of Mexico

**Monday, November 29, 1:00 – 1:55 PM (Virtual)**

**ZOOM LINK:** Meeting ID: 950 8981 9867; Passcode: 860265

<https://stonybrook.zoom.us/j/95089819867?pwd=NzdKQUJXU3J3NFN4VlpBUlp4bDFhUT09>

## **Sea-breezes and Coastal Processes on Micro-Tidal Beaches**

**Abstract:** Sea-breezes are ubiquitous of coasts around the world. The associated winds generate local sea waves that drive alongshore currents and sediment transport along/across the coasts. Moreover, aeolian sediment transport is important for foredune initiation and growth. At some locations around the world, like the northern Yucatan peninsula, sea-breeze waves control coastal dynamics and play an important role on beach erosion. The latter is mainly ascribed to the presence of coastal infrastructure that interrupts the alongshore sediment transport.

Field observations, satellite imagery, and numerical models are employed to investigate nearshore hydrodynamics and beach morphodynamics on a micro-tidal sea-breeze dominated coast. We explore the effects of sea breezes on coastal morphology at different spatial and temporal scales. Furthermore, numerical models are also employed to evaluate beach erosion mitigation strategies for coastal areas subject to these dynamics.



*Aerial picture of the Carbonera Lagoon located on the Yucatan coast. Photo: aerezoom.mx.*



**About the Speaker:** Dr. Alec Torres-Freyermuth is an Associate Professor at the National Autonomous University of Mexico where, over the past 12 years, he has focused his research in the study of nearshore wave transformation, wave-structure interaction, sediment transport, and beach morphodynamics. He obtained his BSc in Oceanography from the Autonomous University of Baja California, his MSc in Ocean Engineering from the Florida Institute of Technology, and his Ph.D. in Marine Sciences and Technology from the University of Cantabria, working on surf zone hydrodynamics. He was a postdoctoral researcher at the University of Florida, and at the University of Delaware working on wave-mud interaction.