



The University of Texas at San Antonio™

DATE:
Friday,
April 29, 2022

TIME:
12:00pm-1:30pm CST

LOCATION:
BSE 2.102
Zoom: 921 8560 9255



RESEARCH SEMINAR SERIES



CAMEE

NASA MIRO CAMEE

FOR ADVANCED MEASUREMENTS IN EXTREME ENVIRONMENTS

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PRESENTS:

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Title: *Mixing, Morphology, and Melting in Homogenous Isotropic Turbulence*

Abstract:

High levels of turbulence can increase instantaneous localized shear and in turn transport across interfaces. For example, the uprush in the nearshore can be characterized as bore-advected offshore wave-generated turbulence; resulting sediment suspension in the swash is observed to be greater than would be predicted by traditional mean shear models. To isolate the role of turbulence in transport processes, we conduct laboratory experiments in facilities with mean shear free homogeneous isotropic turbulence generated via randomly actuated synthetic jet arrays. We use particle image velocimetry and laser induced fluorescence to characterize turbulence and mass transport. We explore the boundary layer that develops when homogeneous isotropic turbulence interacts with a sediment bed, a sharp density stratification, and ice. For sediment experiments, we explore requisite turbulence levels for suspension and development of morphological features, including within-bed sediment dynamics. At a density interface, we explore conditions of flow and density that encourage mixing and generation of internal waves. For ice experiments, we evaluate how turbulence can increase melt rates at low temperatures through rapid stirring of meltwater plumes.



The material contained in this document is based upon work supported by a National Aeronautics and Space Administration (NASA) grant or cooperative agreement. Any opinions, findings, conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of NASA.