

Edward Biegert  
Graduate Student  
Mechanical Engineering  
University of California Santa Barbara

## **Direct numerical simulation of particle erosion**

Sediment-laden flows play an important role in geophysical phenomena. Turbidity currents, which can be described as underwater avalanches, represent one class of these phenomena. These flows can transport cubic kilometers of sediment and are responsible for deep ocean deposits. As such, understanding the deposits they produce is of great use for oil exploration. While laboratory experiments and numerical simulations have shed much light on the behavior of turbidity currents, the underlying mechanisms behind erosion and sedimentation near the sediment bed are still an active area of research. We are building a code to resolve the fluid-particle interactions at high volume fractions via direct numerical simulation. The methods we employ will allow us to simulate thousands of particles, so that we can accurately observe near-bed fluid-particle interactions.

**Coauthors:** E. Meiburg<sup>1</sup>, S. Radhakrishnan<sup>1</sup>, Y. Kanarska<sup>2</sup>

<sup>1</sup>University of California Santa Barbara, Santa Barbara, CA

<sup>2</sup>Lawrence Livermore National Laboratory, Livermore, CA