

Title:

Underwater Landslide Morphometrics Database and Website for Global Outreach and Data Collection

Project lead and contact details: Zane Jobe, Colorado School of Mines zanejobe@mines.edu

Suggested team size: 2-4 (ideally, a good pairing would be someone with website building skills and someone with backend python and data science skills)

Logistics: Can work from anywhere, but an office on Mines campus will be available for use. Some hourly pay may be available, if grant application is successful.

Project description: Underwater landslides are common deposits occurring in environments ranging from lakes and coasts to deepwater ocean basins. Their occurrence can trigger destructive tsunamigenic waves affecting coastal populations, damaging and disrupting communication and other industrial infrastructure (e.g. oil and gas, offshore wind farms, etc), and upsetting biotic communities. In addition, ancient underwater landslides play an important role in the development and distribution of non-renewable natural resources (i.e., oil and gas), and impact the safety of exploring for deep subsurface resources. Despite recognizing the broad scientific importance of underwater landslides, most of the research has concentrated on the qualitative description of these events/deposits. Most recently, the underwater landslide community has come to a consensus to standardize the collection of quantitative data associated with the morphometry (e.g., length, area, volume, runout distance, etc.), setting and physical nature of these deposits. *This proposal aims to develop an online, interactive, user-friendly, and robust web platform to host this burgeoning community database as well as promote collection of standardized, quantitative data for underwater landslide deposits using criteria defined by the community consensus.* We will also provide a set of Python-based tools for underwater landslide analysis, allowing users to query, filter, plot, run statistics, visualize and export data. This will allow researchers and political decision-makers to access the necessary data to assess hazards and model impact scenarios for underwater landslide occurrence. The resulting database will be open access via a publicly accessible website and related GitHub repository. We see this database and analysis toolset as a bridge to better data collection practices, modeling efforts, and collaborations not only within the underwater landslide community, but also with the terrestrial landslide community.

No intellectual property issues (everything that is generated will be open-source, open-access).