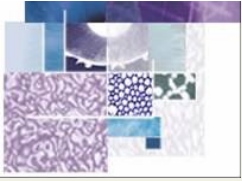


Jamming of Ice Melange: Using Particle Rafts to Model Ice Melange Dynamics

Michael Dennin, Chin-Chang Kuo, Jason Amundson, Wendy Zhang

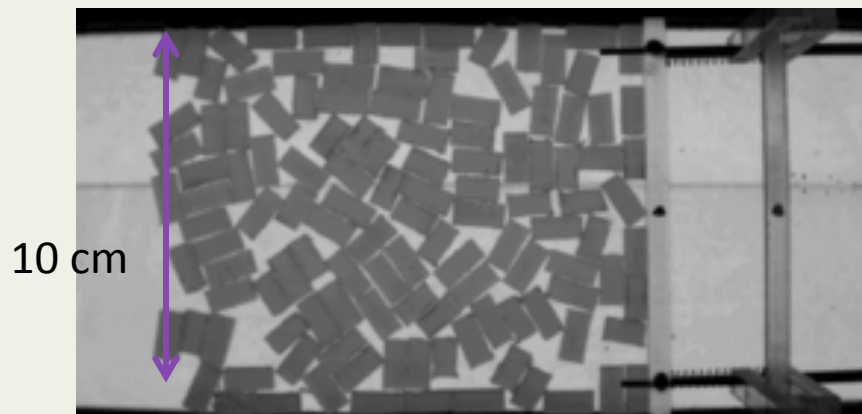
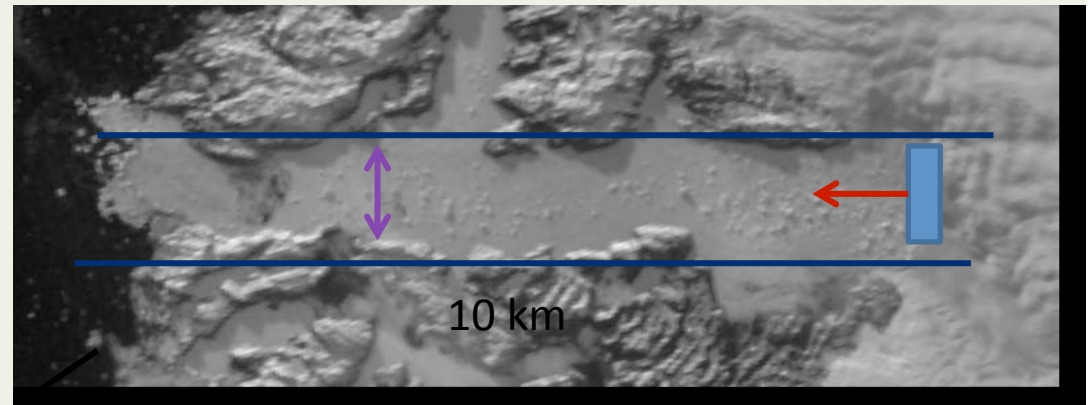


Motivation



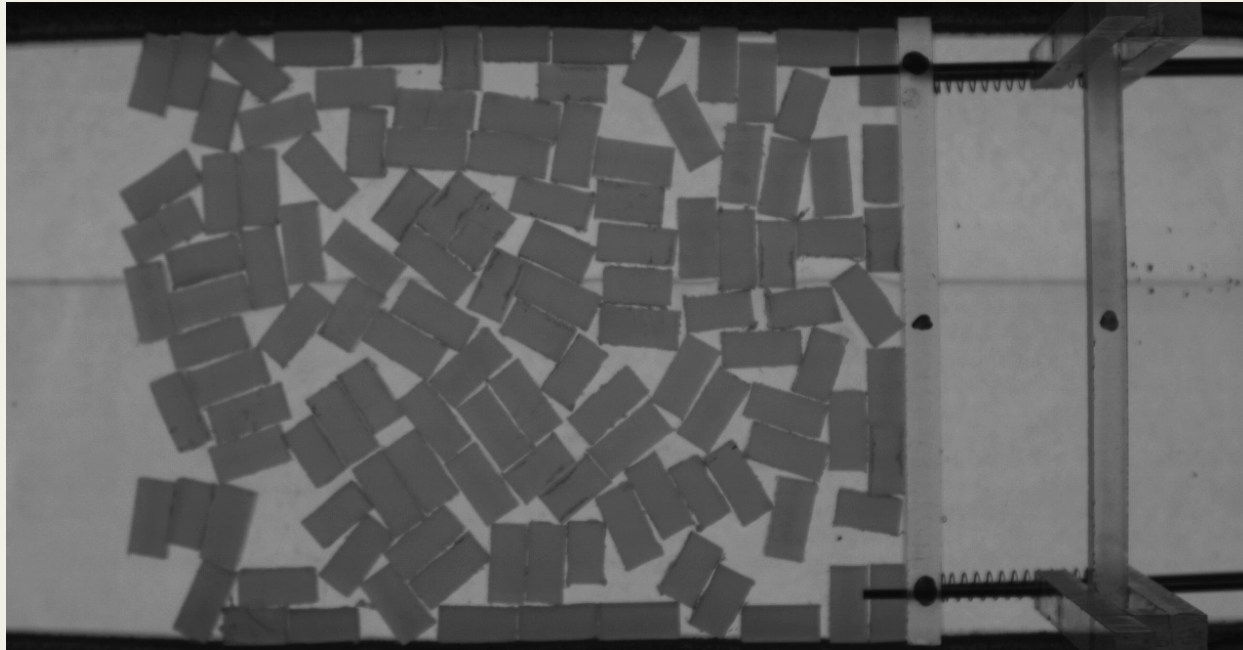
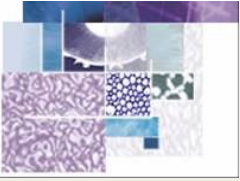
Jakobshavn Isbrae, Greenland

Image from J. Geophys. Research
Amundson, et. al 2010



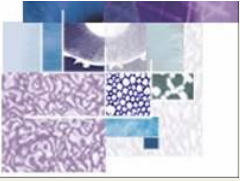
Science Question: What are the dynamics of a floating granular material driven in a channel at constant speed?

Relevance: Can we model a glacier pushing the ice mélange in a fjord with a laboratory scale experiment?



System: cm scale plastic particles
floating on water in a 10 cm channel
with sandpaper on the walls driven at
constant speed.

Main result: bucking induced jamming



Other interesting Questions

- Can a plastic bead raft describe the kinematics of the ice mélange?
- Can we use a plastic bead raft to model forces from the ice mélange on the glacier? Impact of glacier and calving on structure of ice mélange?
- Is ***jamming*** an important physics process in glacier/ ice mélange interactions?
- Even if jamming is not important in this system, does modeling it this way reveal new physics?