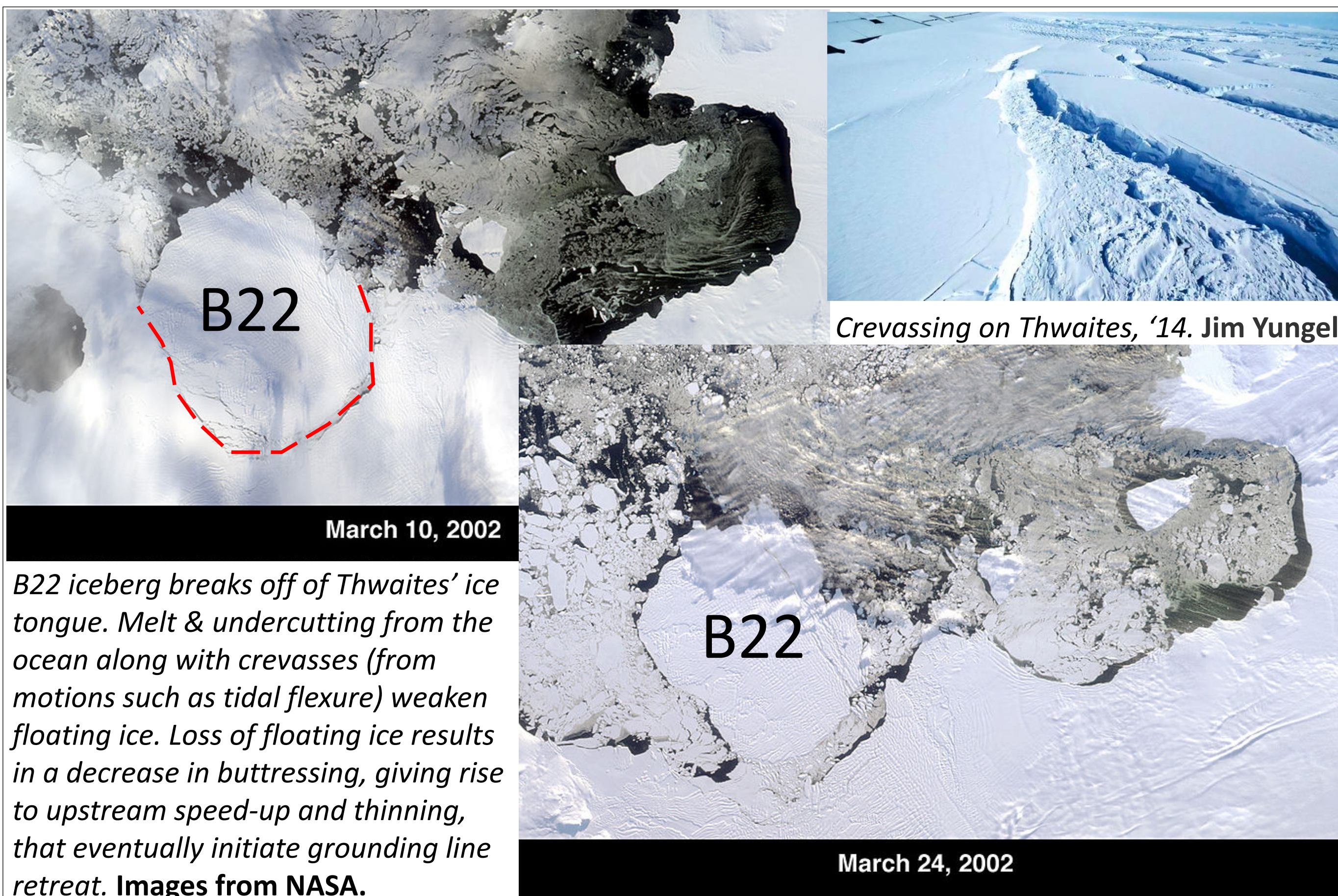


Ice/ocean interface wants YOU!



Many underrepresented processes that occur at or near the ice/ocean interface propagate far upstream, affecting glacier dynamics:

Buttressing capacity of floating ice tongues is weakened by sub-shelf melt & calving....

Calving is modulated by undercutting & distribution of crevasses arising from tidal flexure & grounding-line dynamics...

Grounding-line dynamics are largely a function of basal sliding...

Basal sliding in the grounding zone is altered by lubrication beneath the ice...

...the list goes on!

Without detailed time-evolving ocean forcing in models, we miss critical feedbacks that could alter stability tipping points of key outlet glaciers.

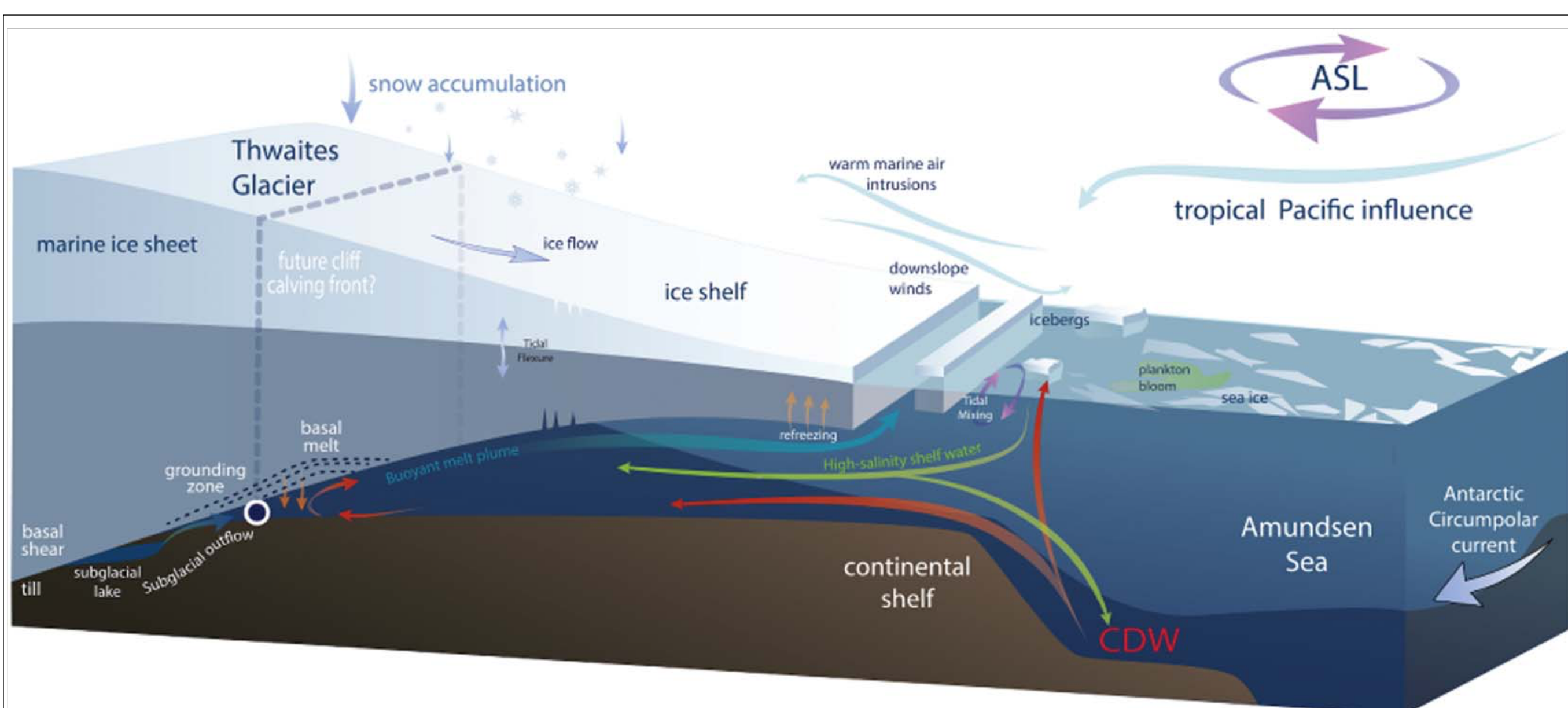


Fig. 2. Schematic of key drivers and some of their effects for the Thwaites Glacier – Amundsen Sea region.

From Scambos et. al., 2017.

The ocean is a critical modulator of dynamics on Thwaites glacier, as well as many other outlet glaciers. Many of these ice-ocean interactions are not captured in models of this key outlet glacier. These ocean forcings evolve with time, affecting dynamics upglacier.

Emily Schwans
 Graduate Student
 Penn State Ice &
 Climate Exploration
 (PSICE) Group,
 College of Earth &
 Mineral Sciences,
 The Pennsylvania
 State University



PennState
 College of Earth
 and Mineral Sciences