

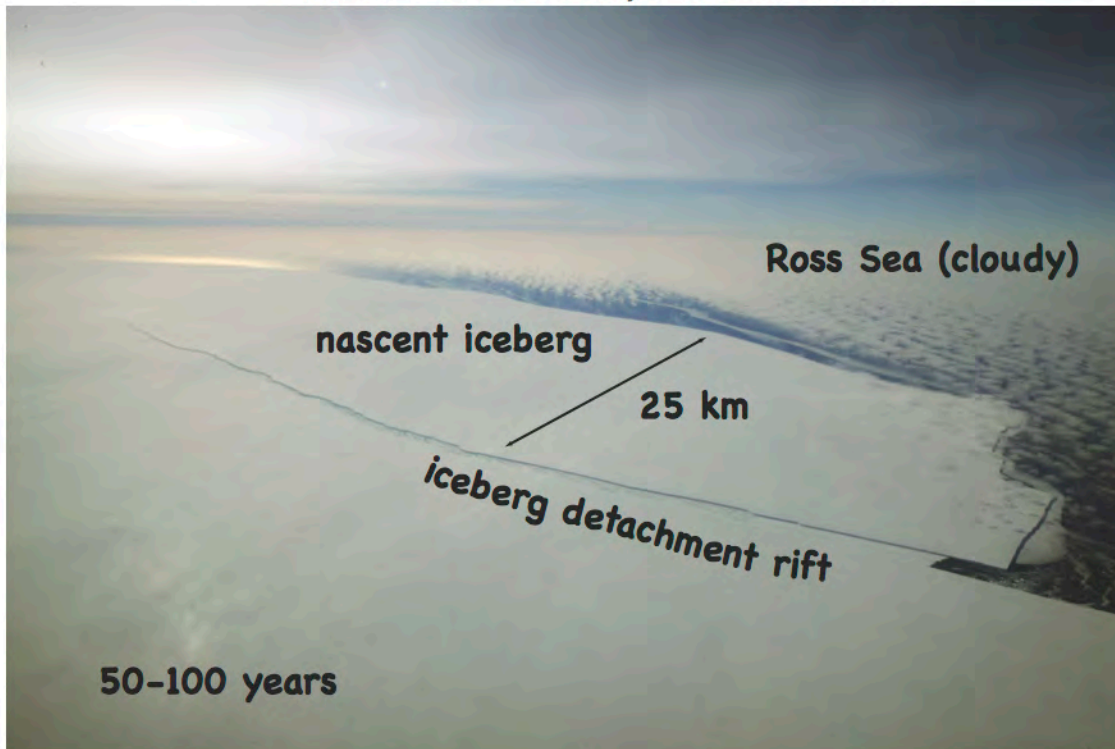
# **Outlet glaciers' calving: observations and modeling**

Olga Sergienko  
CICS/GFDL

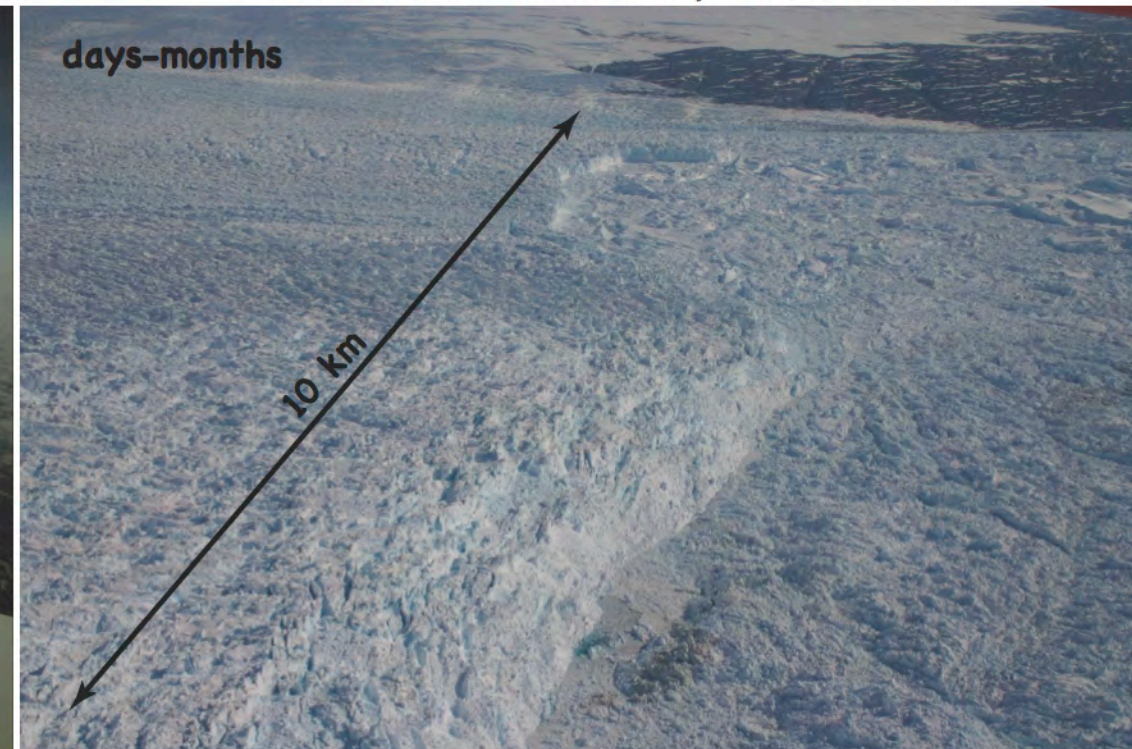


# Calving and icebergs

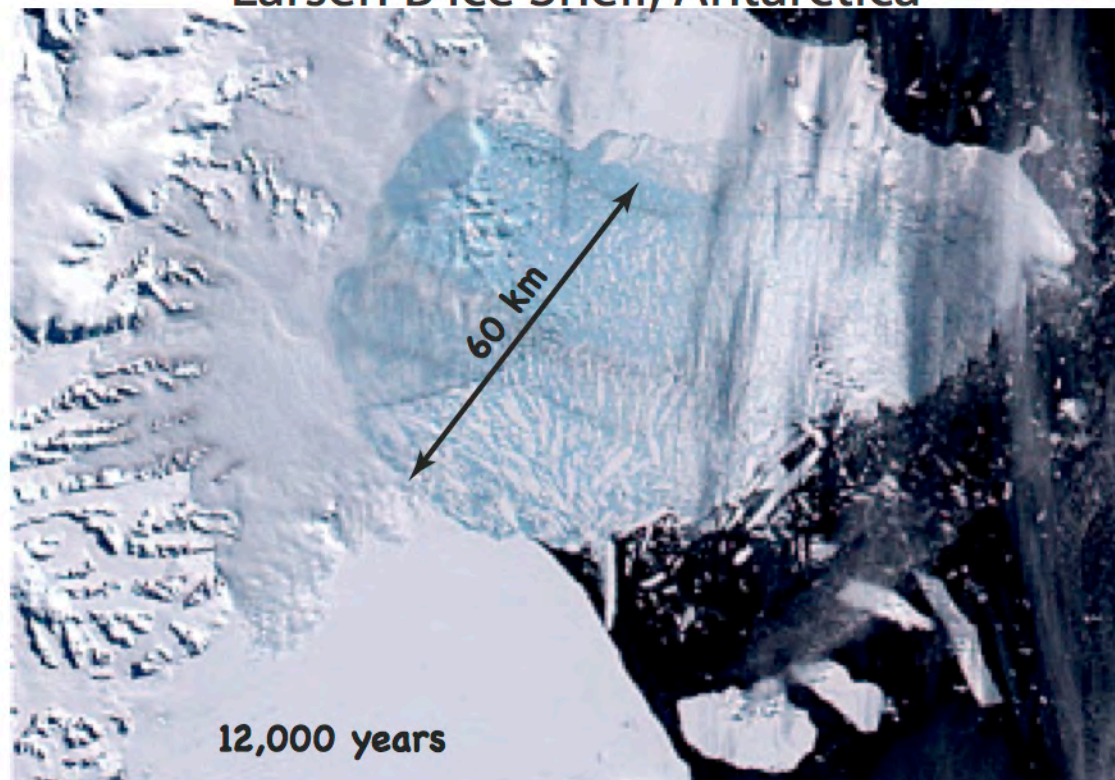
Ross Ice Shelf, Antarctica



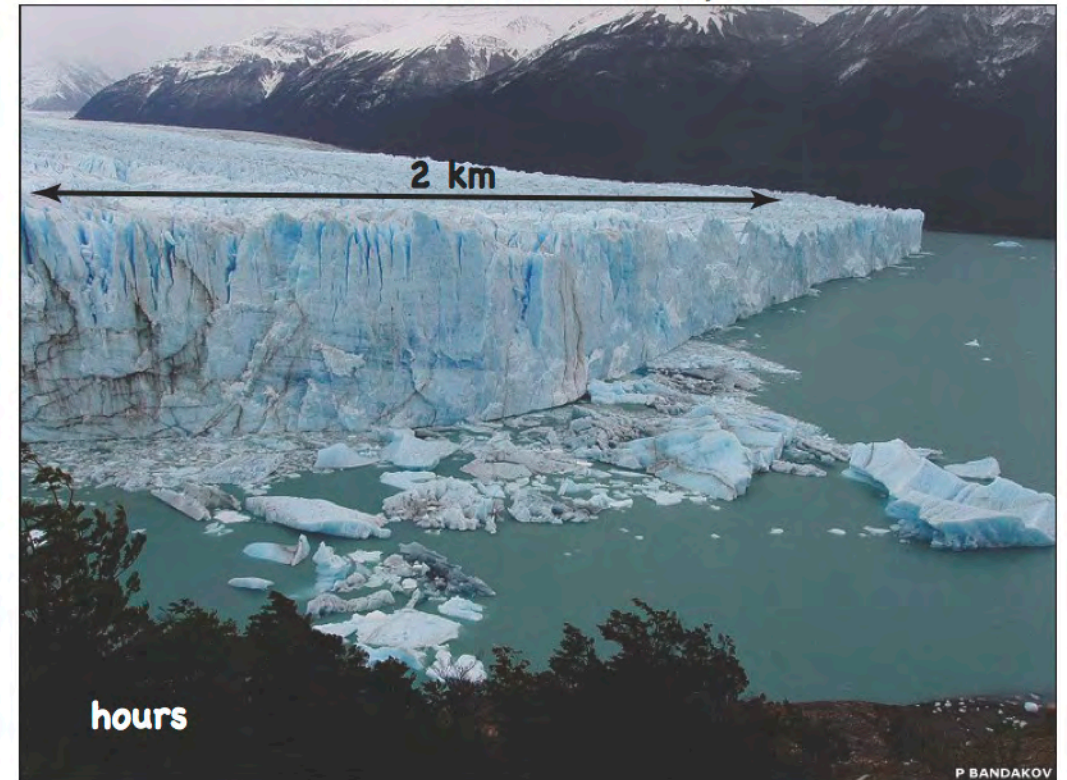
Jakovshavn Isbræ, Greenland



Larsen B Ice Shelf, Antarctica



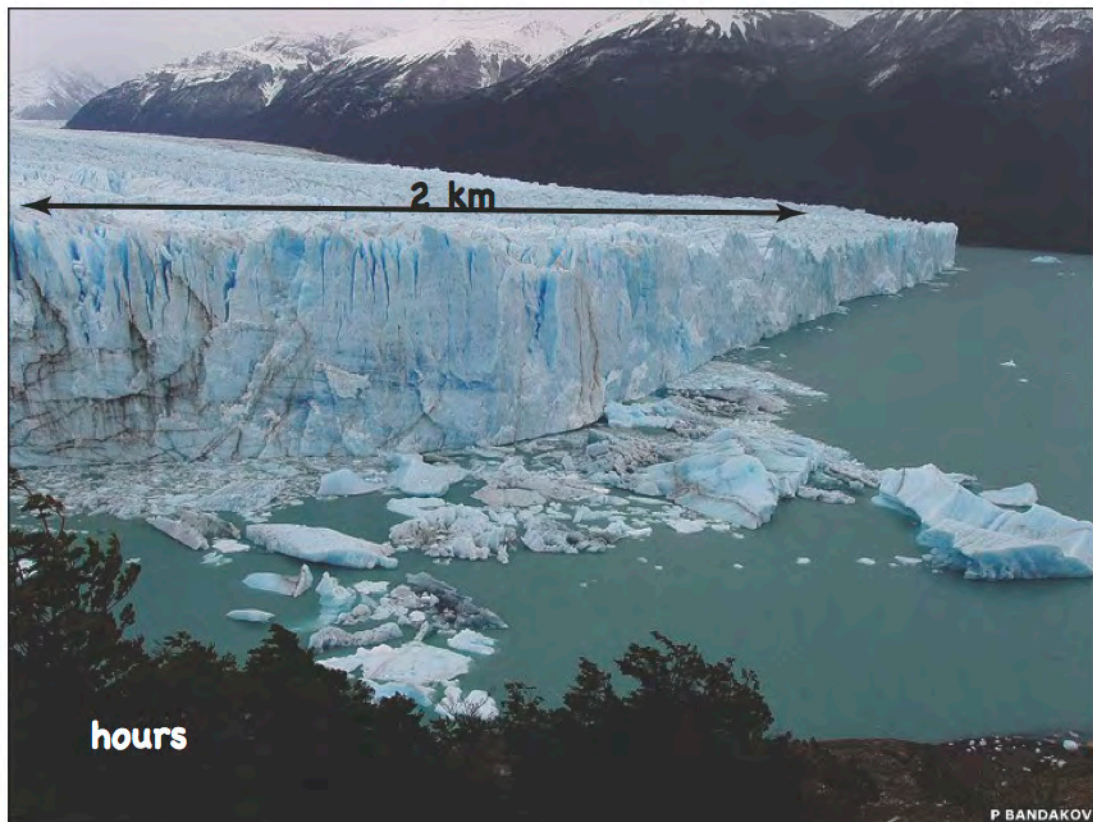
Columbia Glacier, Alaska



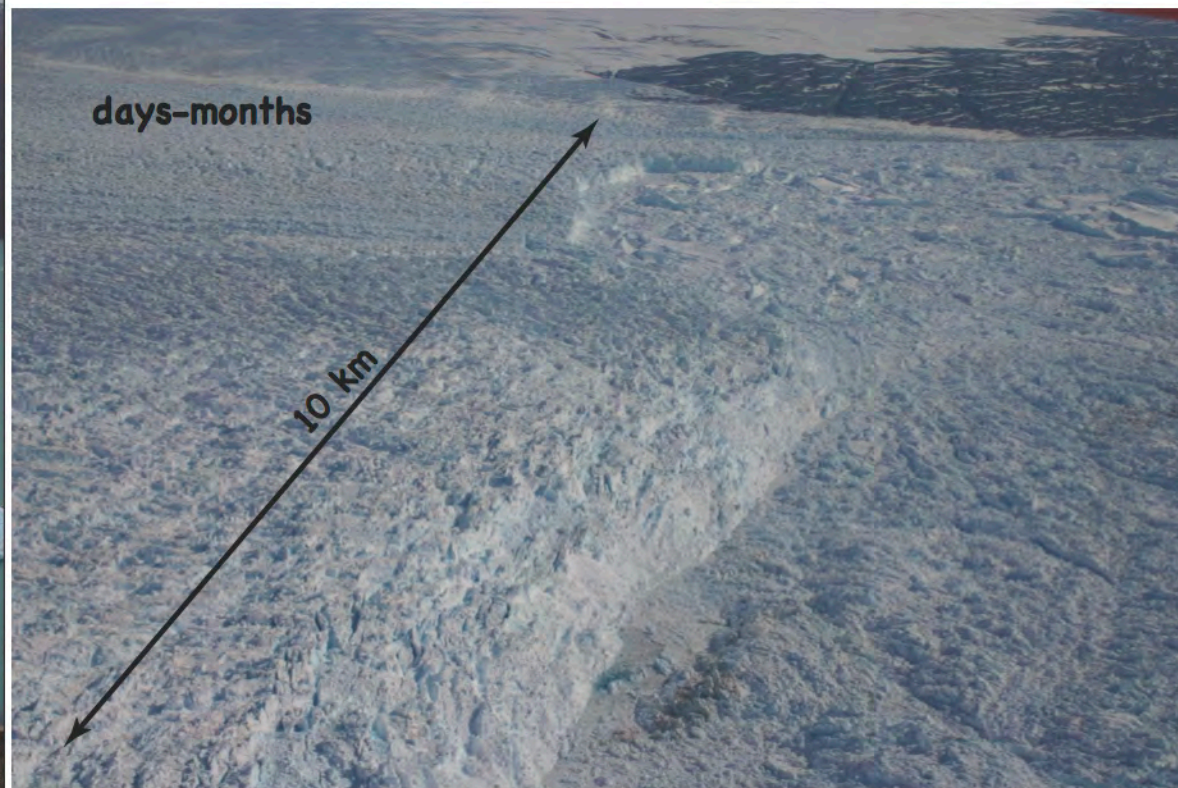


# Calving from outlet glaciers

Columbia Glacier, Alaska



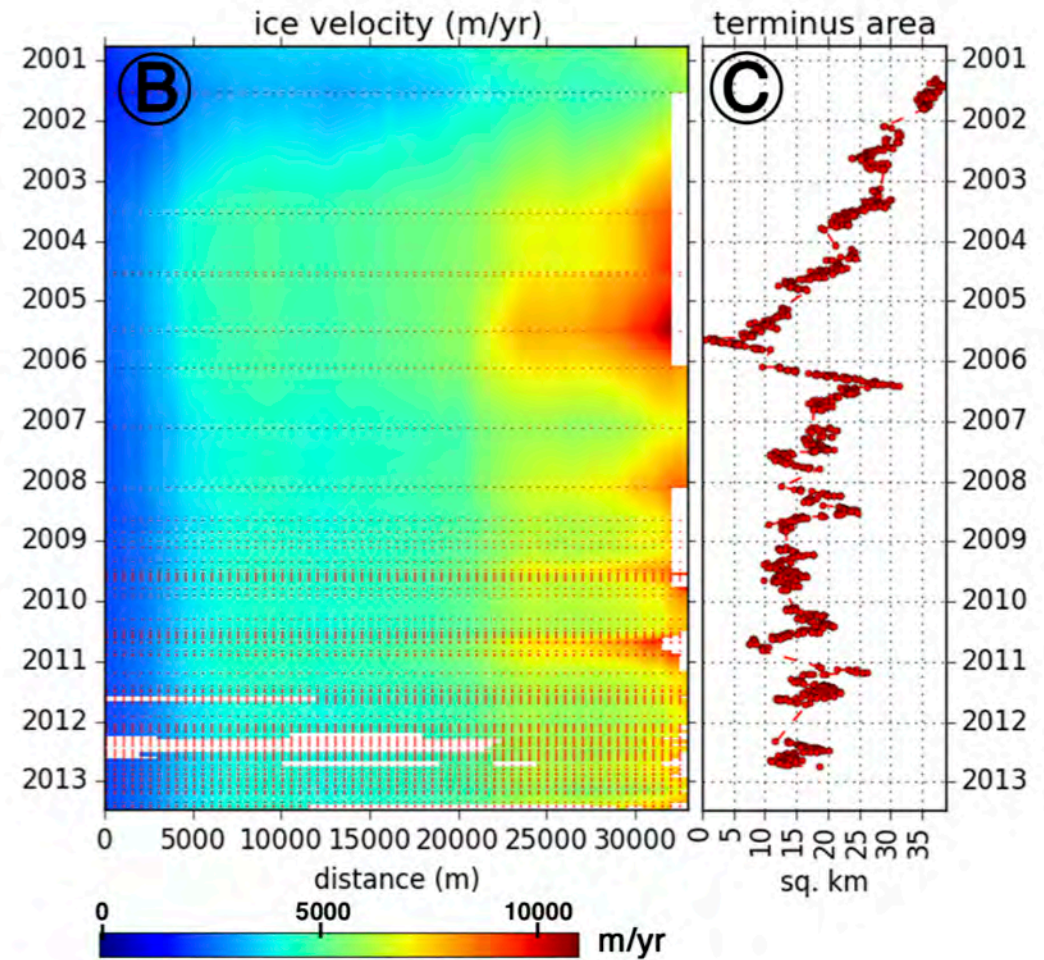
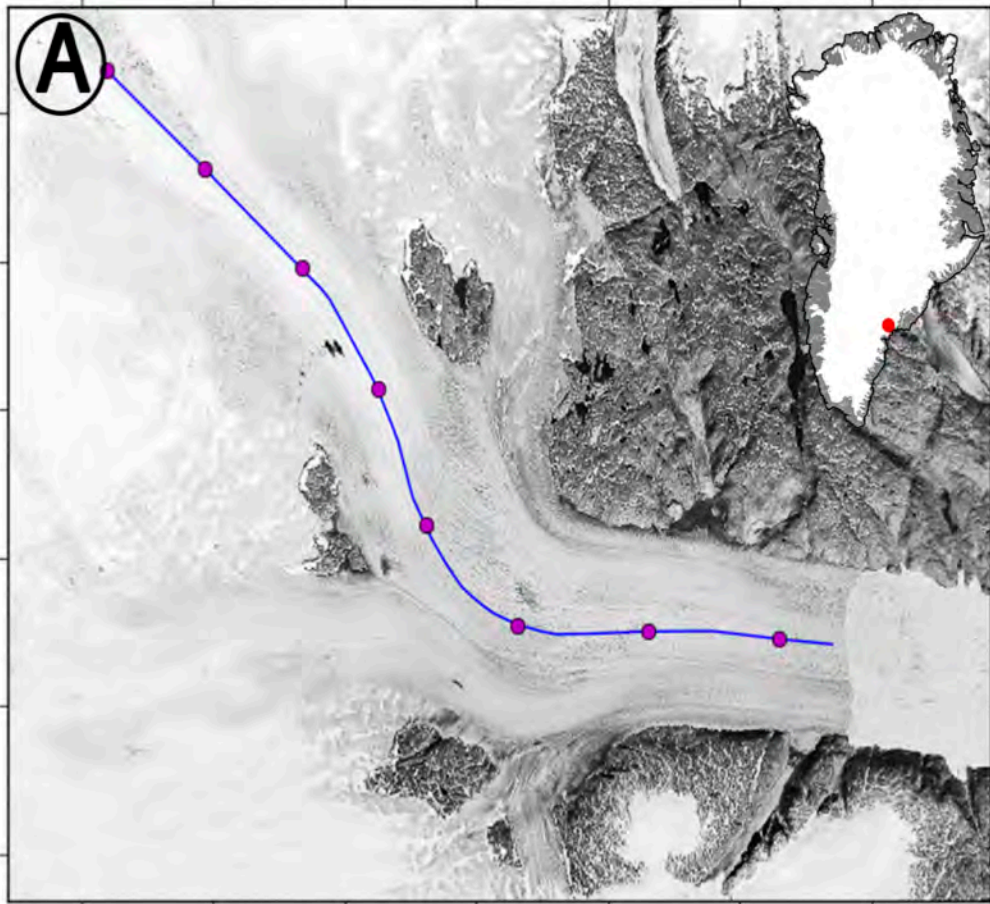
Jakovshavn Isbræ, Greenland





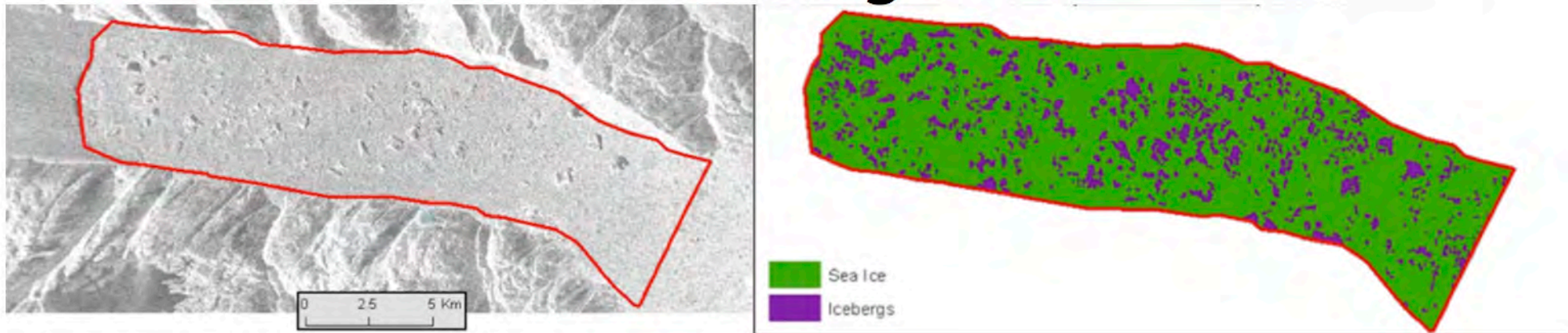
# Helheim Glacier

## Ice flow

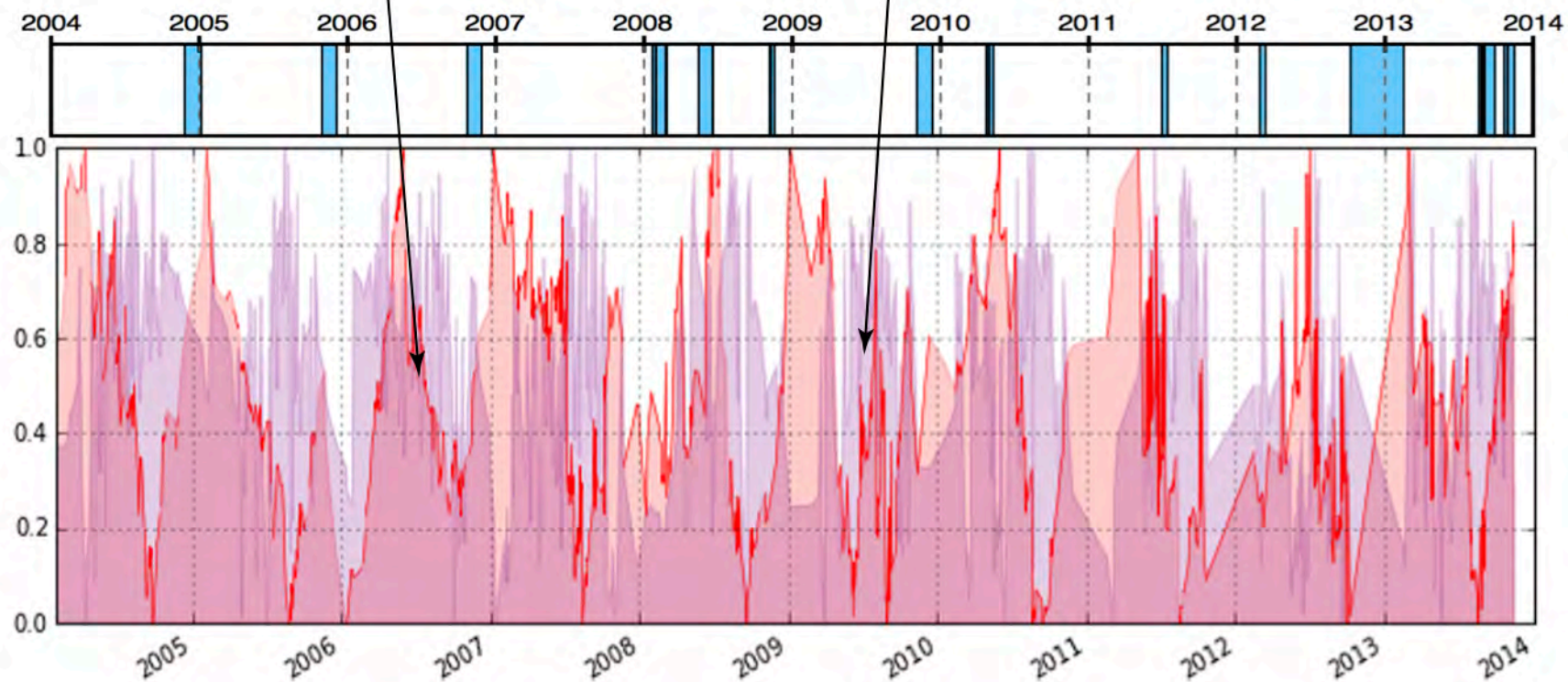




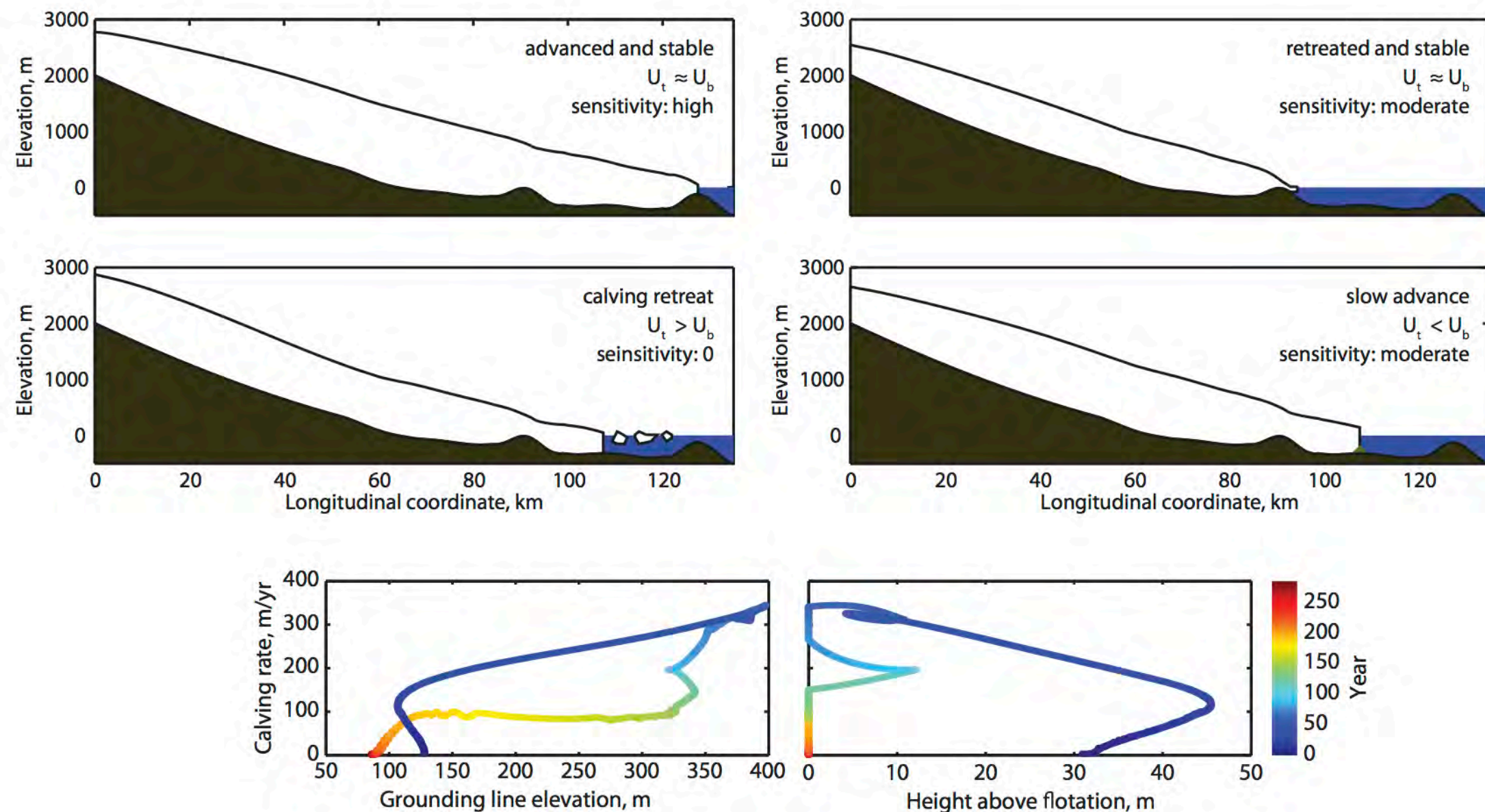
# Helheim Glacier Mélange



## Terminus and mélange area



# Tide-water glacier calving



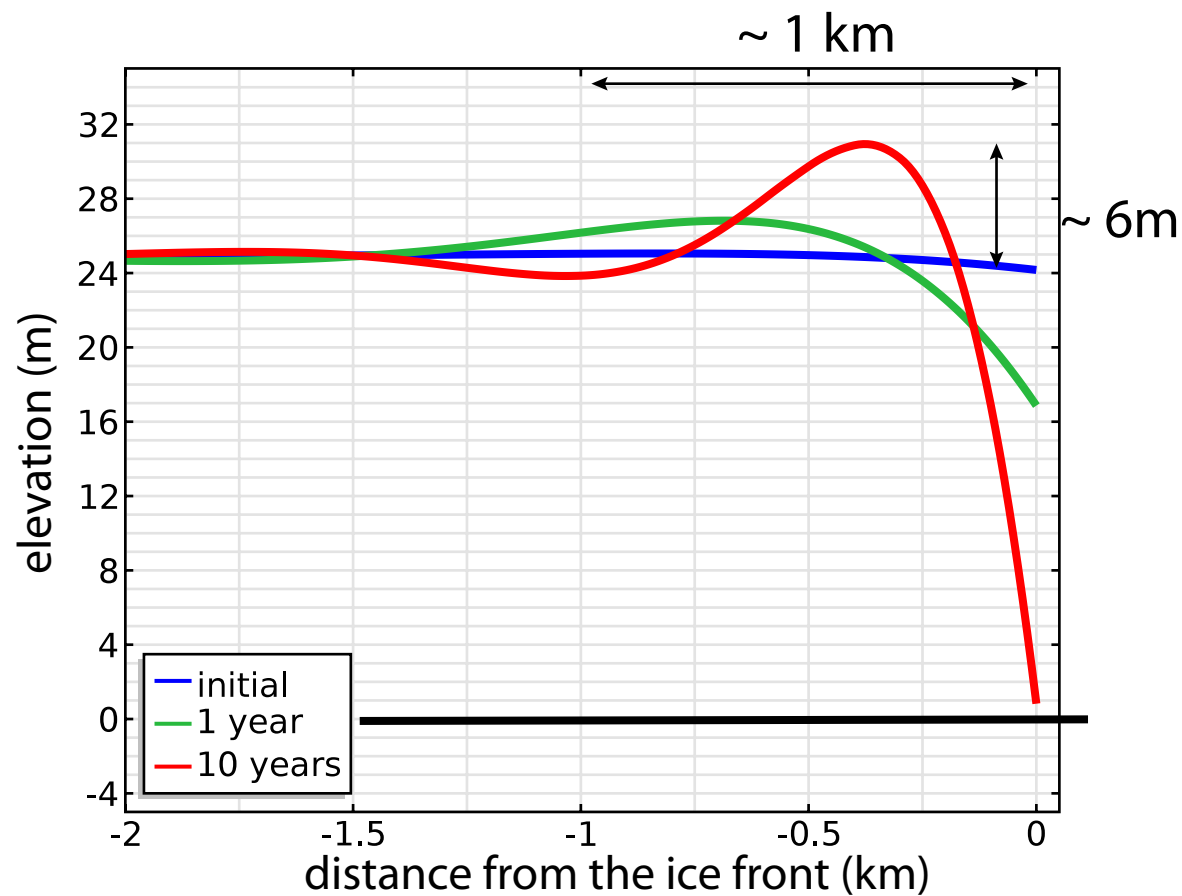


# Ice front fracturing

Larsen B ice front

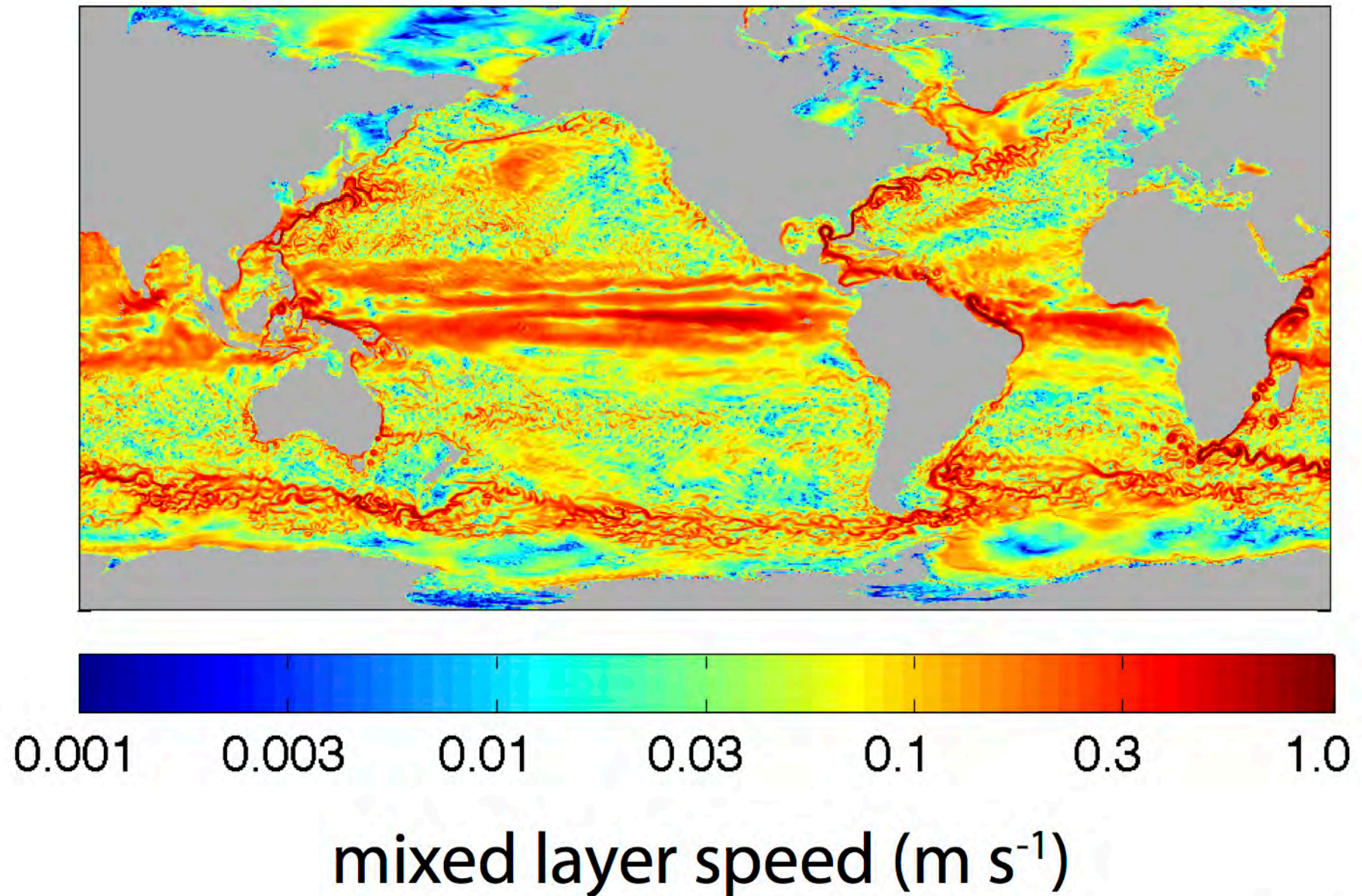


photo: S. Tojeiro, 13 March 2002, NSIDC



MacAyeal and Sergienko, 2015

# MOM6 $1/8$ deg Global Ocean Model





# Summary

Identified and compiled a set of observations from tidewater and outlet glaciers

Developed a calving parameterization for these glaciers

Developed a new treatment of ice-shelf-front fracturing