



Stanford Radio Glaciology

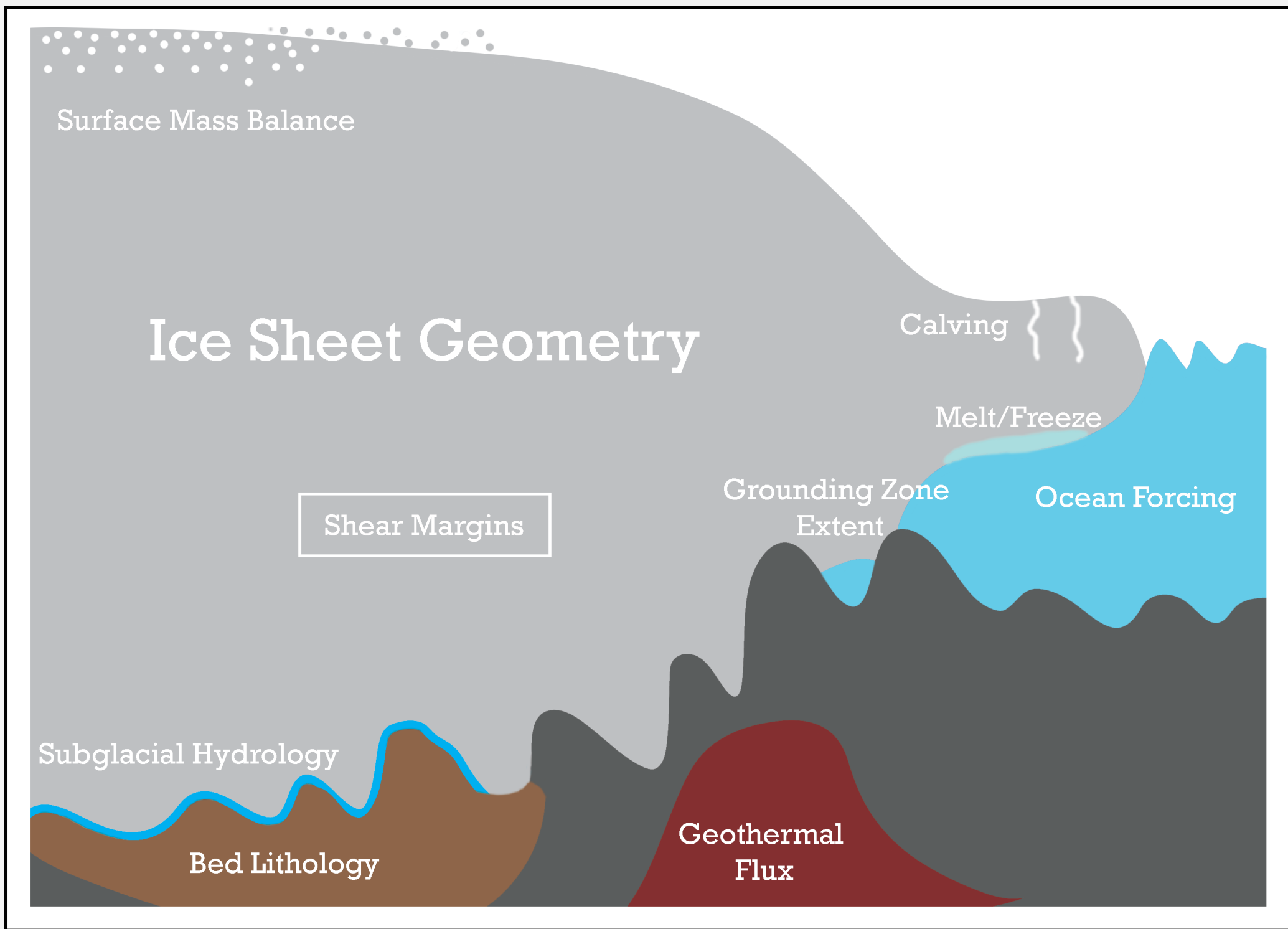
Science and Engineering in Radio Glaciology

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Marine Ice Sheet Boundary Conditions

Expressions of and Controls on Ice Sheet Behavior and Evolution

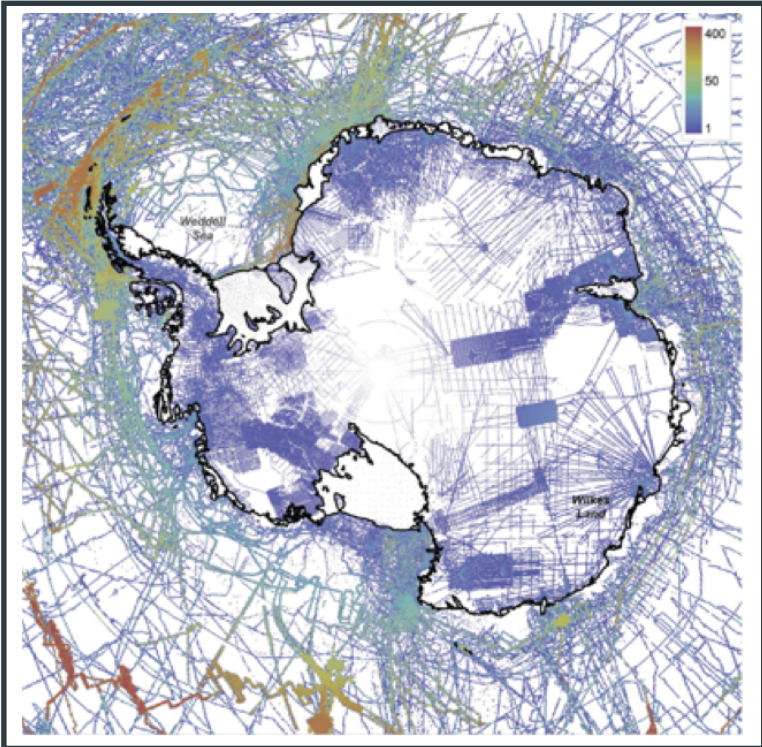


Airborne Radar Sounding

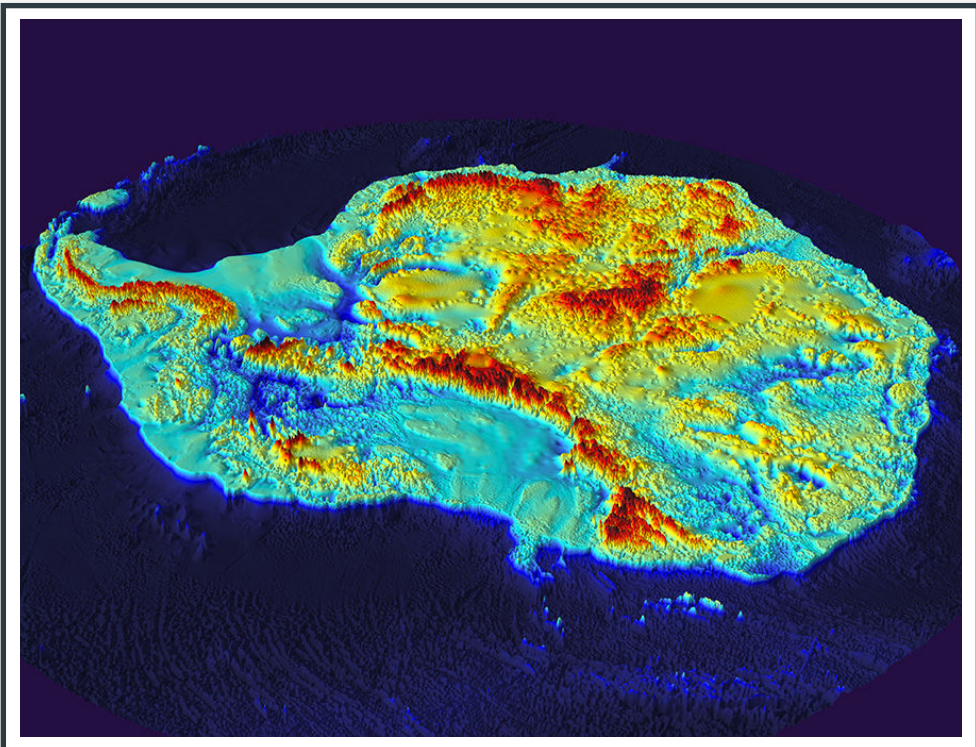
Process-Scale to Continent-Scale Geophysical Glaciology



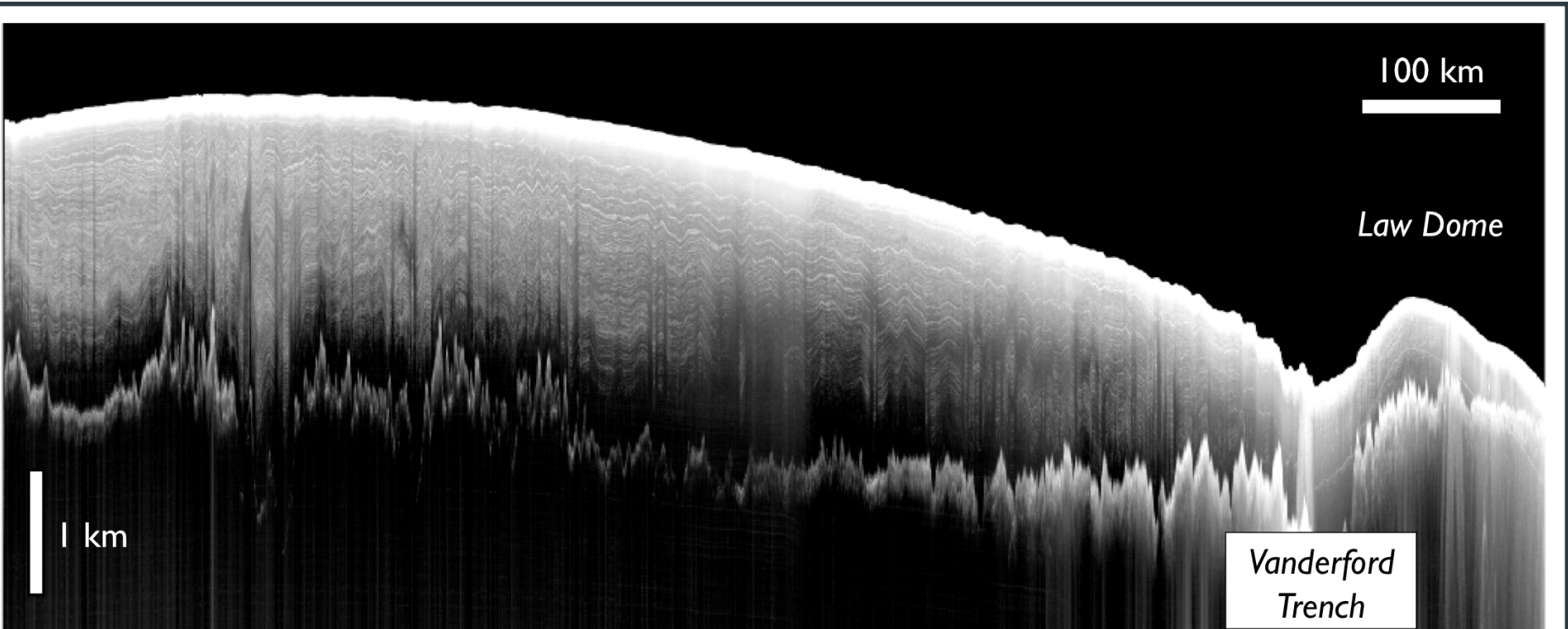
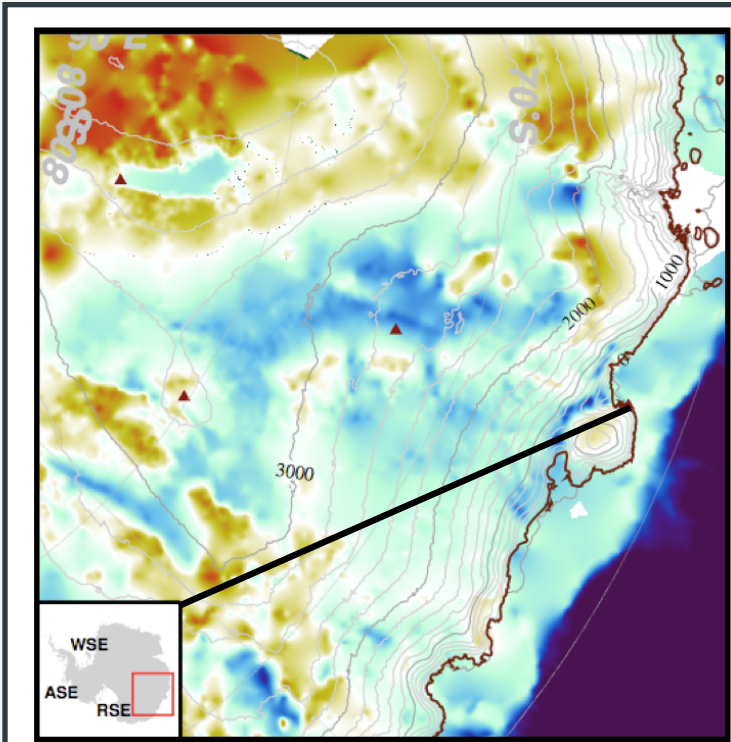
Photo Credit: BBC



Pritchard et al, *Antarctic Science*, 2014



BAS



Young et al, *Nature*, 2014

Surface Melt Water and Englacial Hydrology

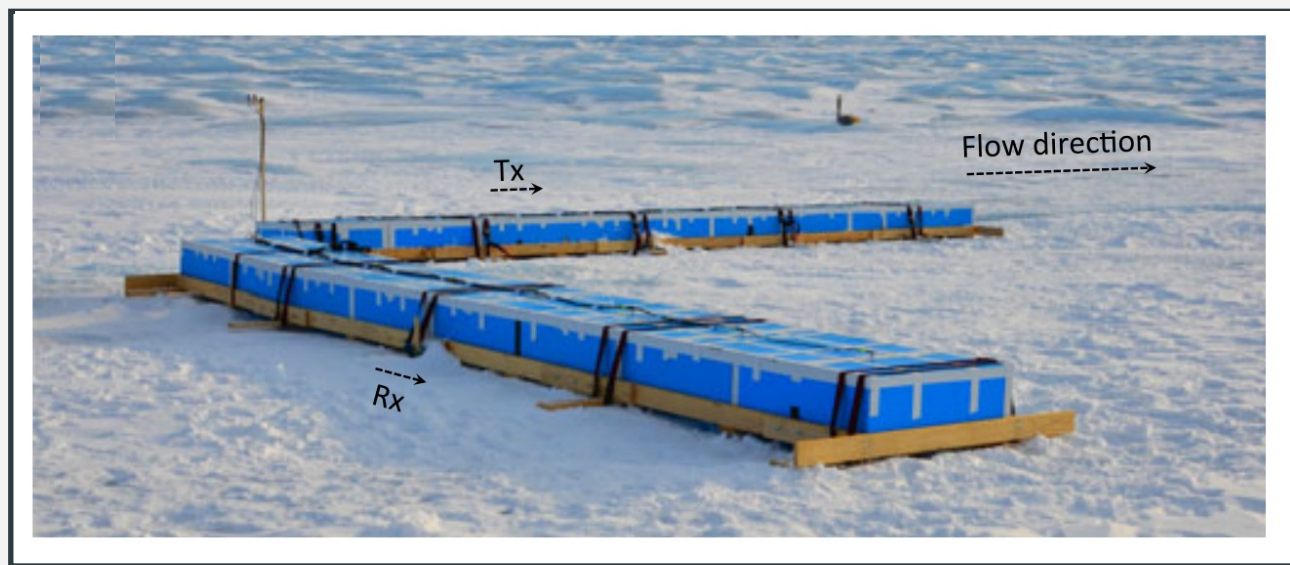
Driver of Ice Flow in Greenland and a Warming Antarctic



Greenland Ice Sheet

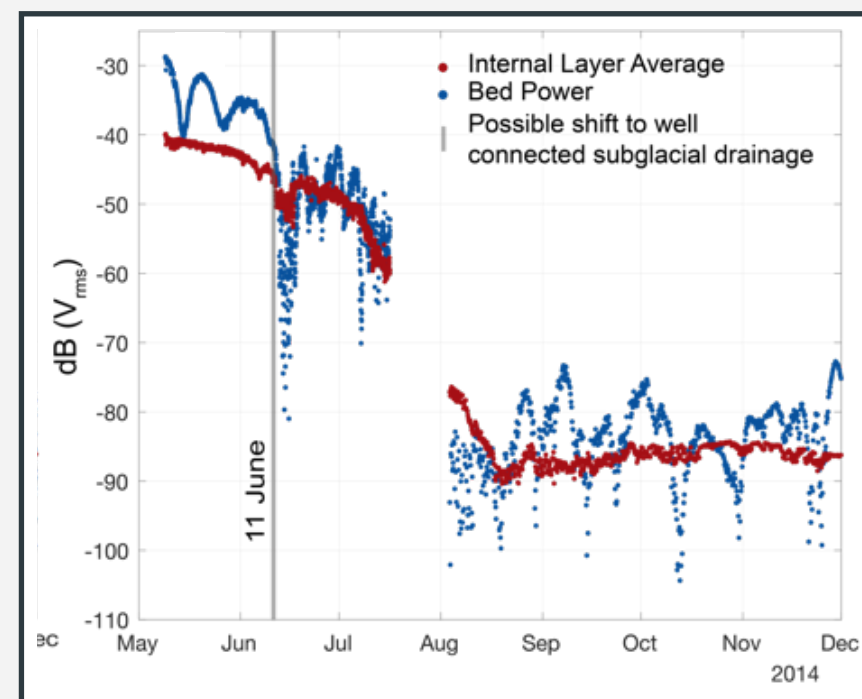
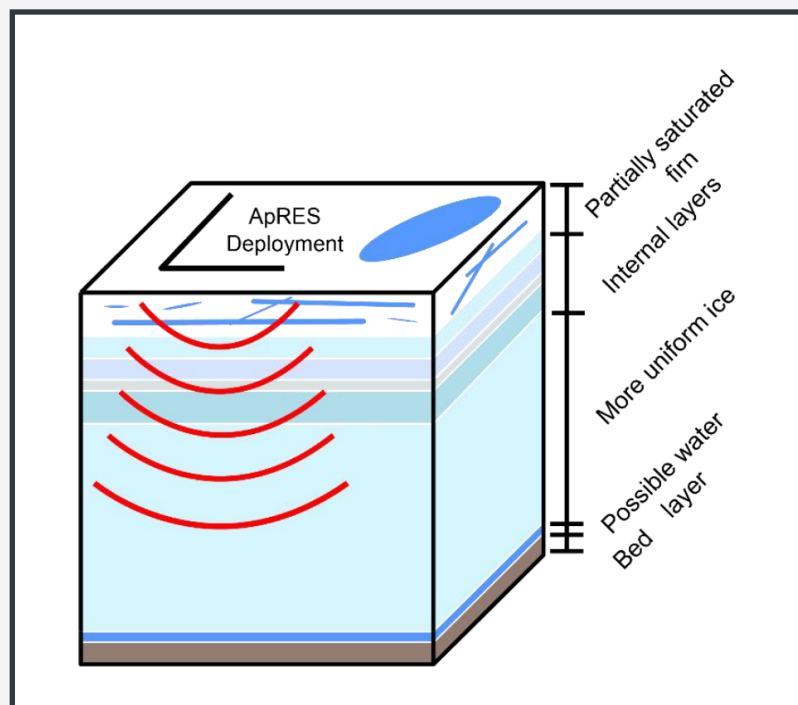
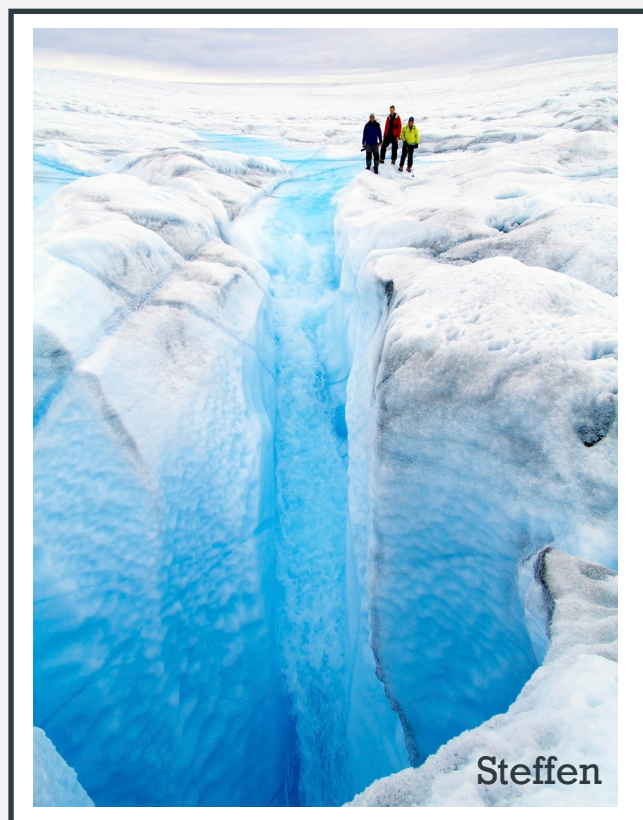


Stationary MIMO Radar Sounding



Young et al, *J. Glaciol.*, 2018

Attenuation by Englacial Water



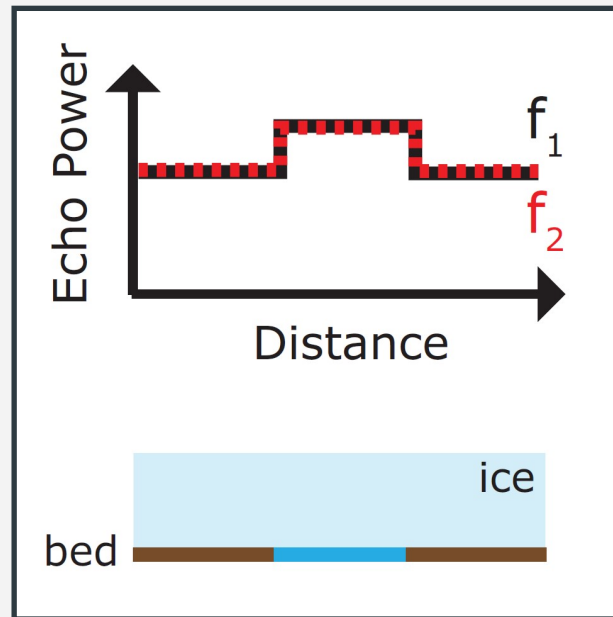
Kendrick et al, *GRL*, 2018

Radiometrically-Optimized Radar Sounders

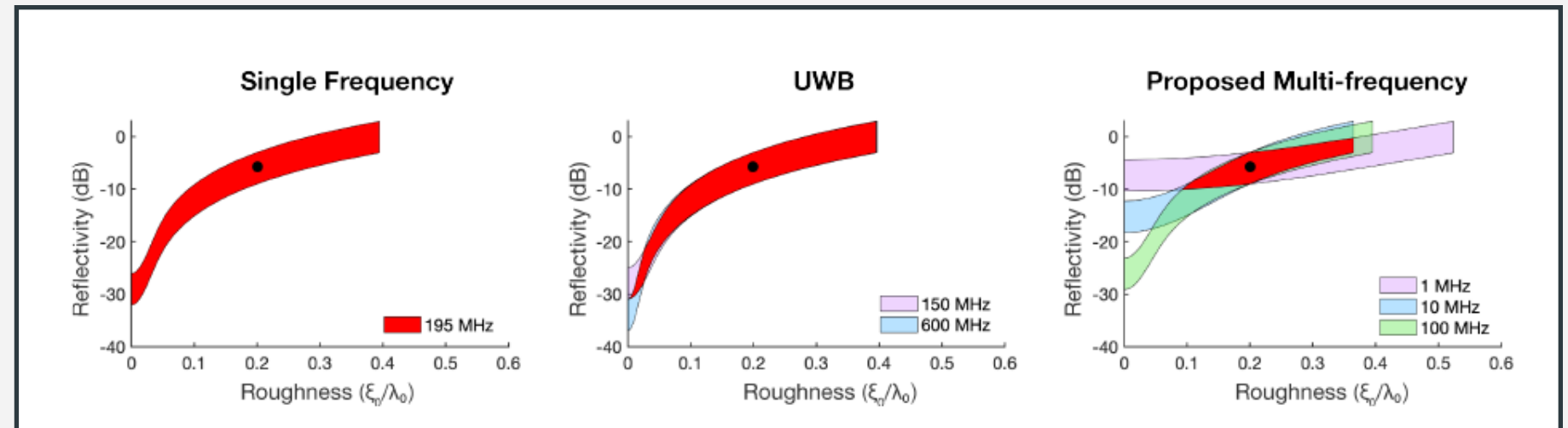


Back-Compatible Conditions You Can “Take to the Bank”

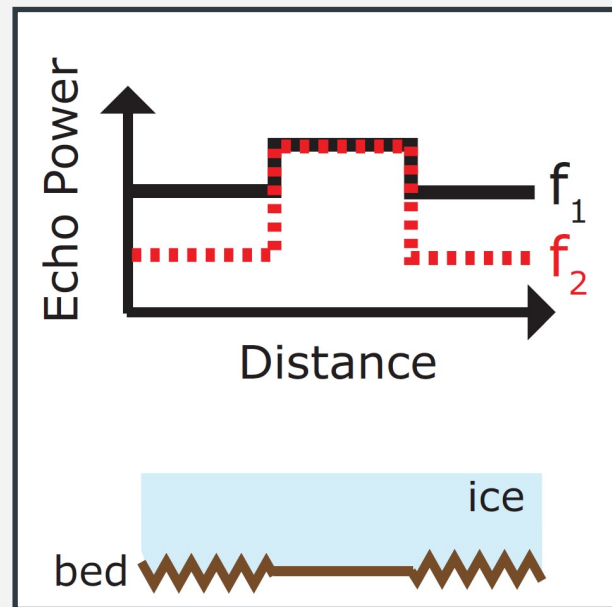
Material Signal



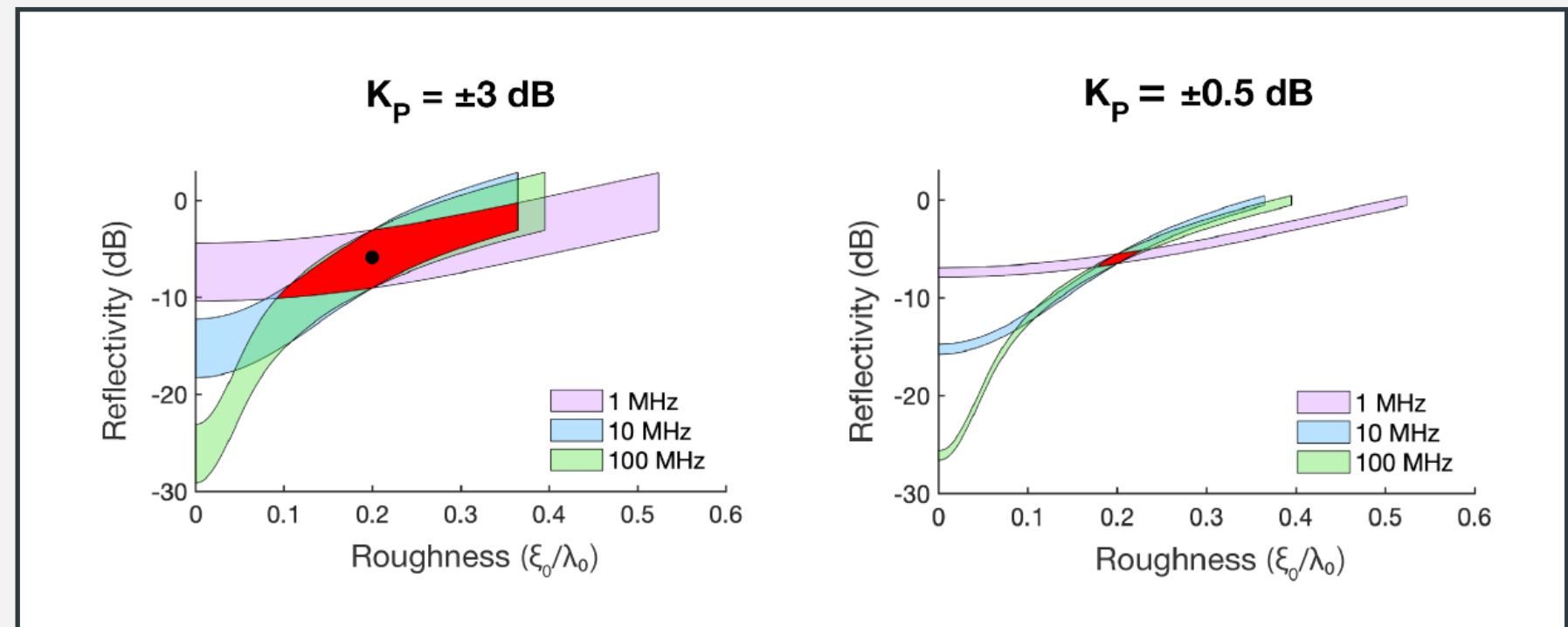
Multi-Frequency Narrow-Band Constraint



Roughness Signal



Radiometric Resolution



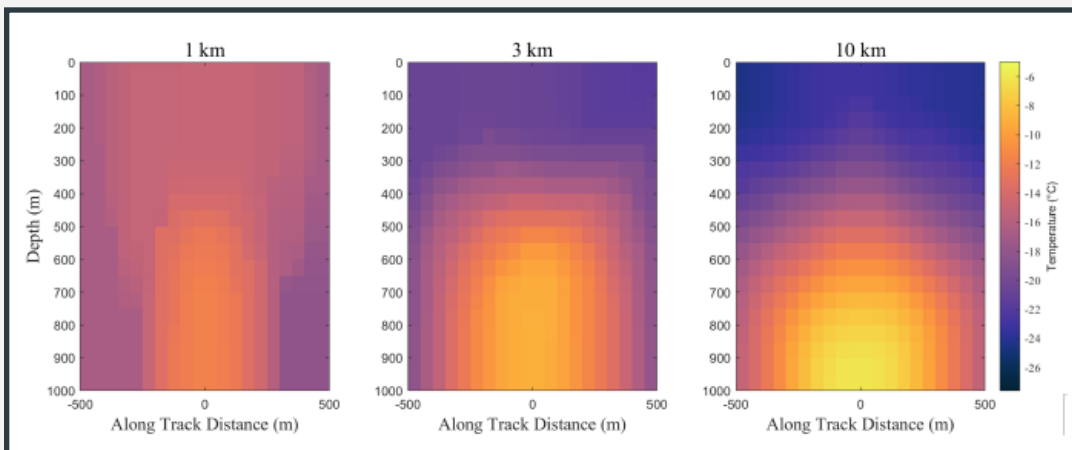
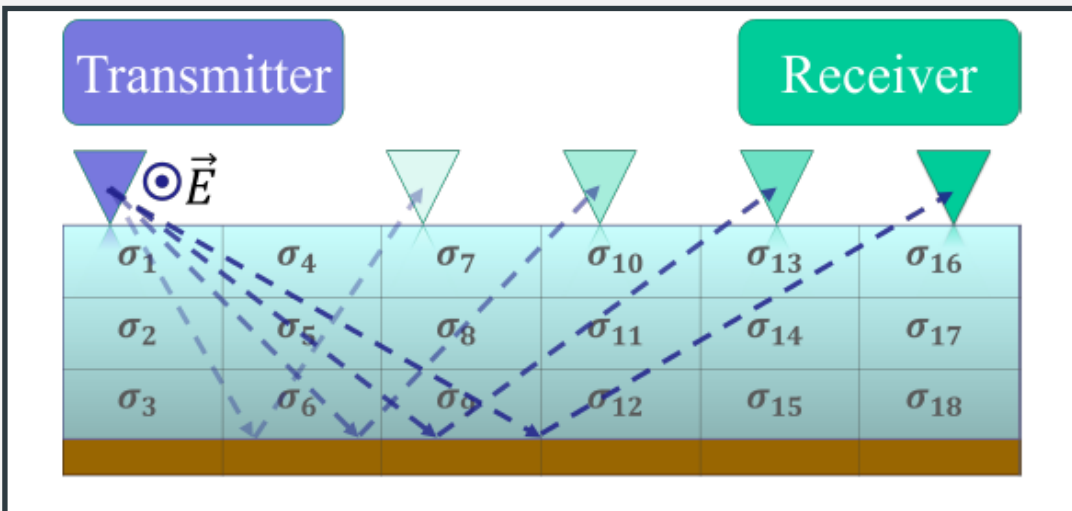
TIME: Thwaites Interdisciplinary Margin Evolution

Ground-Based Radar Tomography and Polarimetry

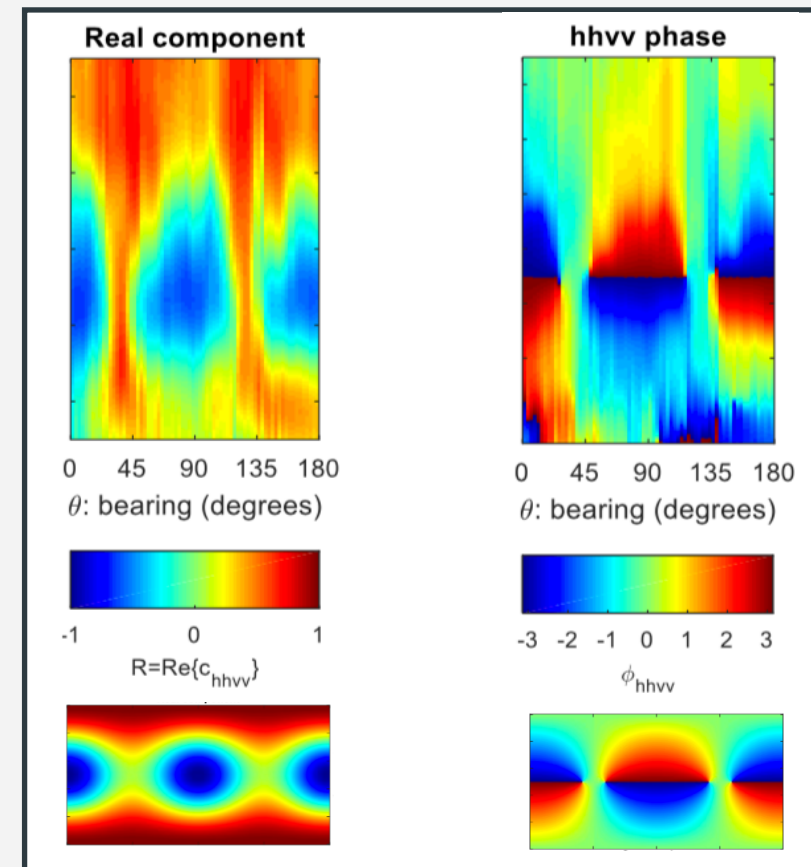


Cross-Margin Tomography with Software Defined Radios

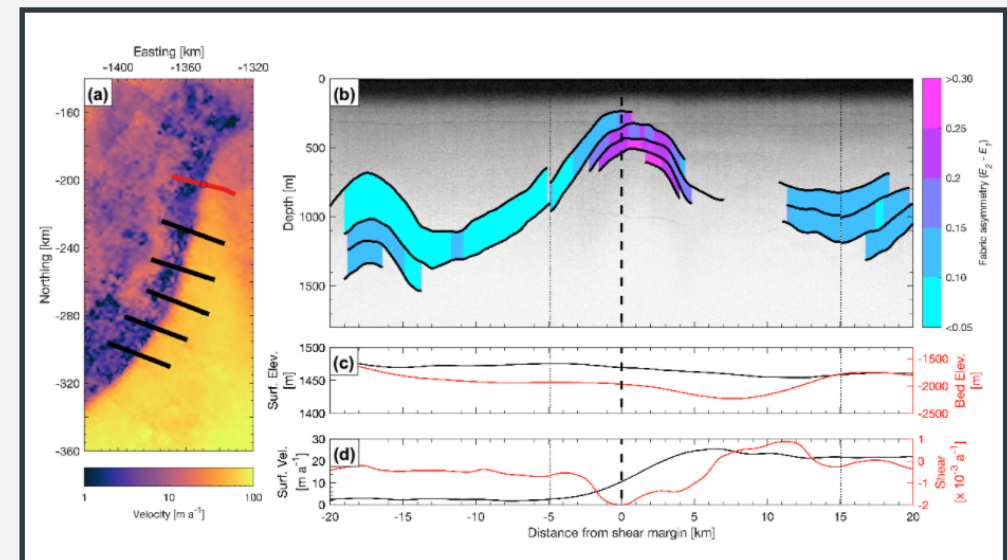
Cross-Margin Crystal Orientation Fabric from Polarimetric Sounding



Bienert et al. (in prep)



Jordan et al., *IEEE TGRS*, 2019



Young et al. (in prep)

[Thank You]