

Insight into sticky-spots from passive seismic observations

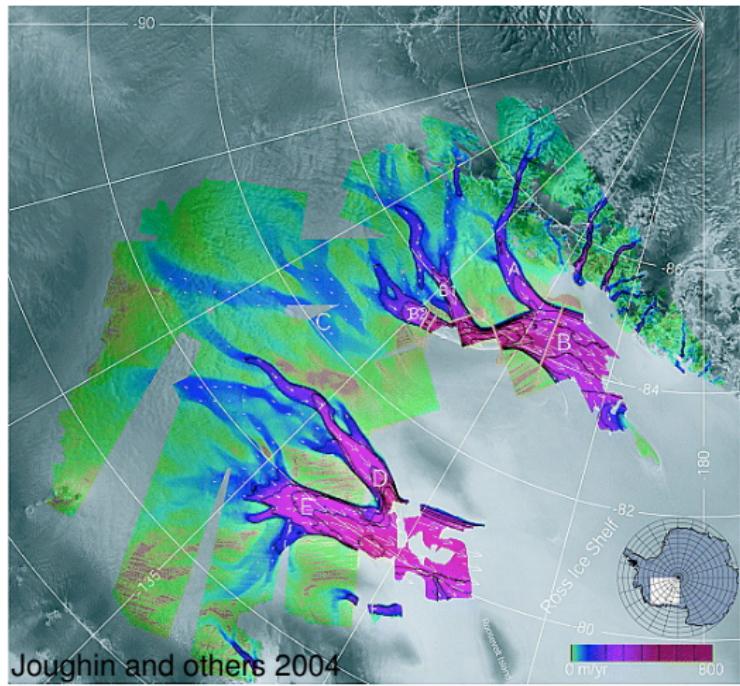
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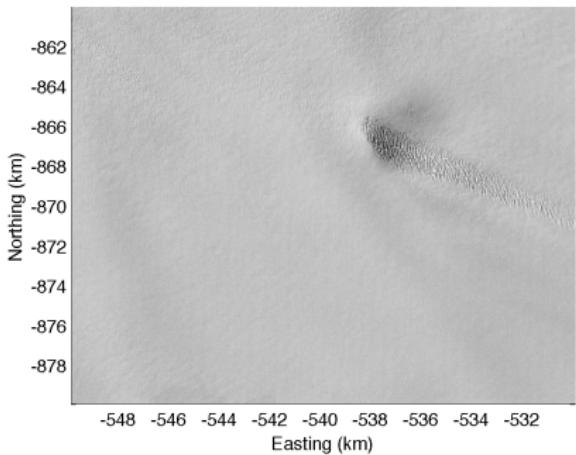
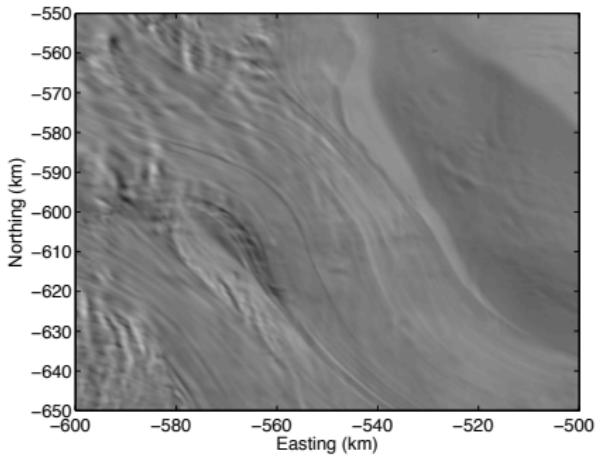
Acknowledgments

- Funding Provided by US NSF
- Lots of people helped in the field: Don Voigt, Robert Bindschadler, Leo Peters, Huw Horgan, Audrey Huerta, Luke Zoet, Sarah Das, Ian Joughin.
- Raytheon Polar Services, Ken Borek Air, and NY Air National Guard

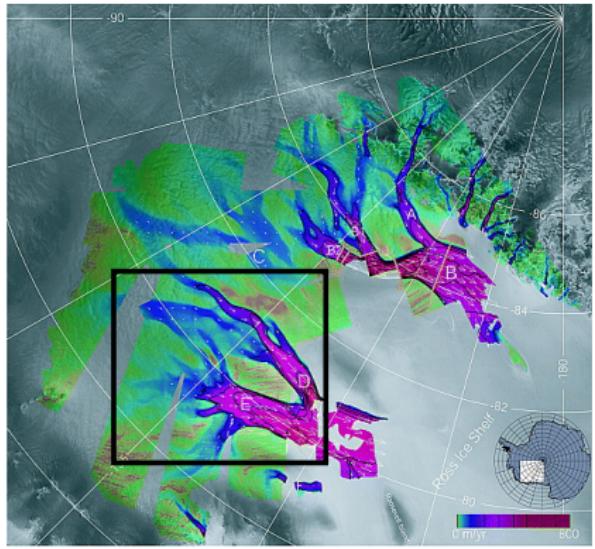
Siple Coast Ice Stream



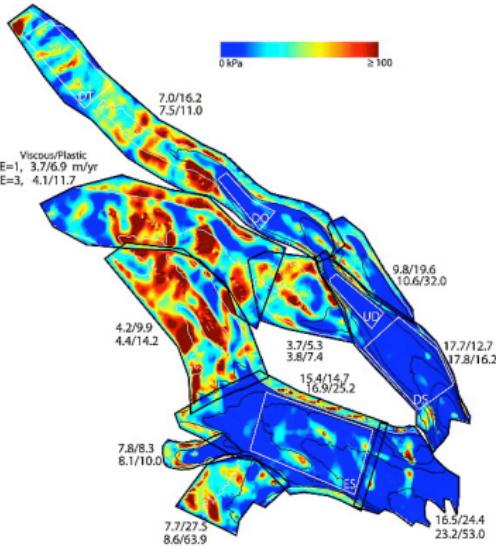
Sticky spots from space



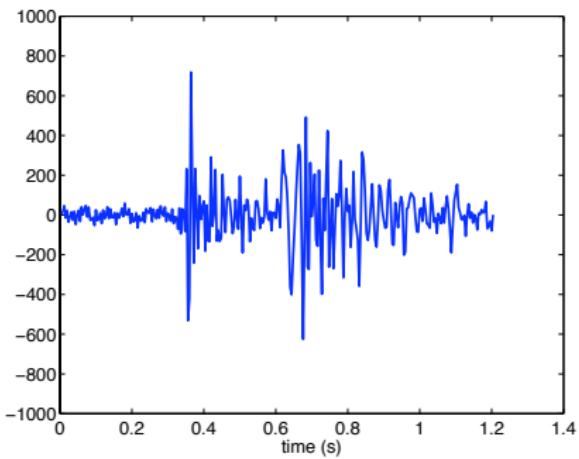
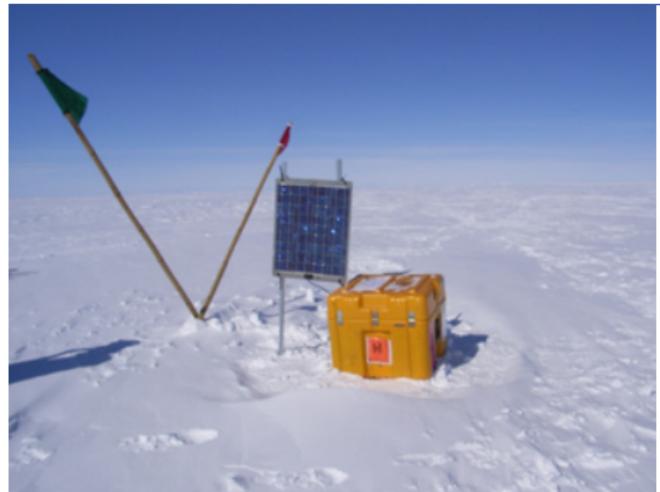
Why don't they go faster?



Joughin and others 2004

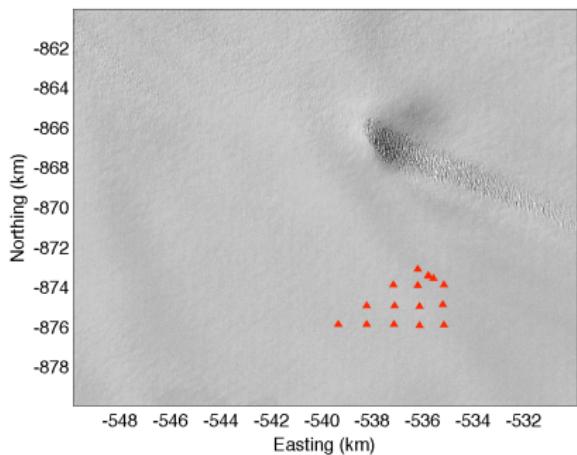
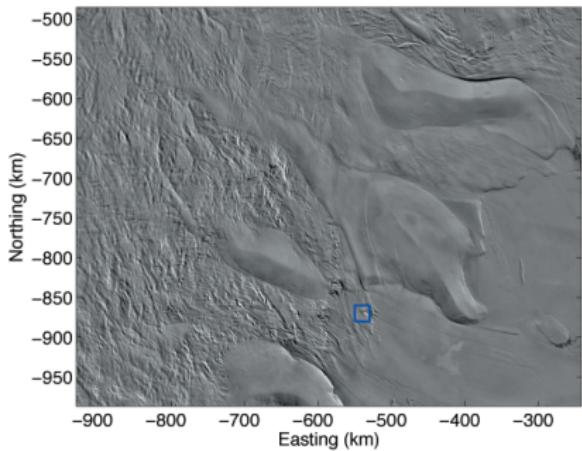


Listen to little Sticky Spots



Small sticky spots, about 10 meters, can inferred from passive seismic observations

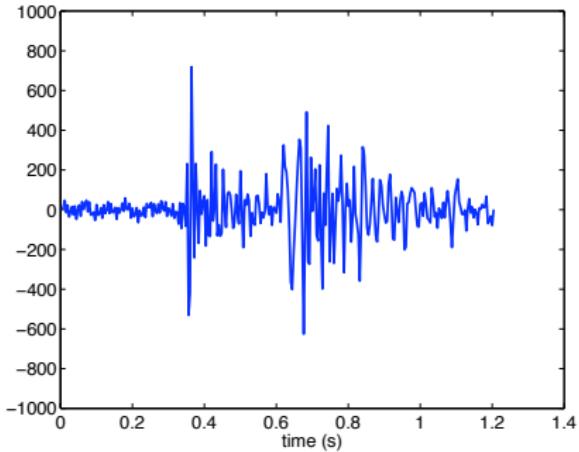
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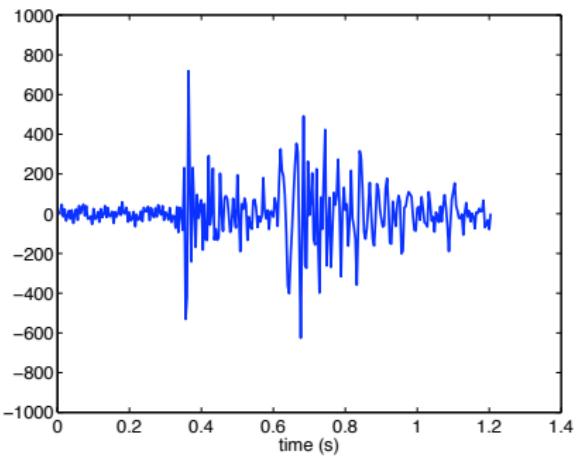
Listening to sticky spots

Typical small icequake

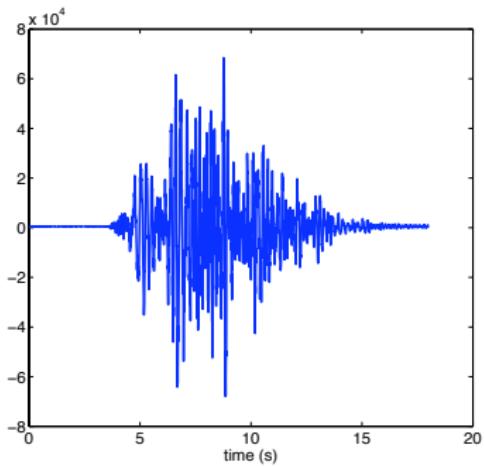


Listening to sticky spots

Typical small icequake

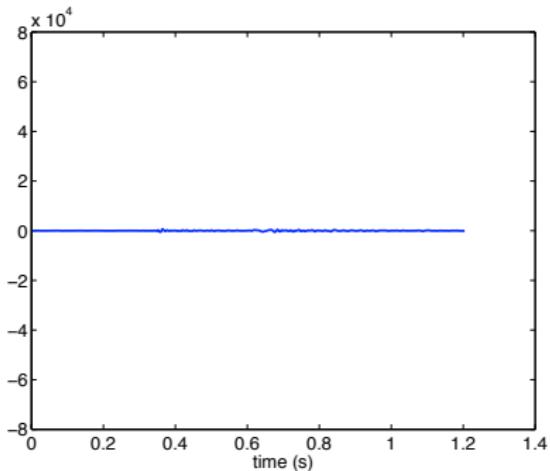


Magnitude 2 icequake!

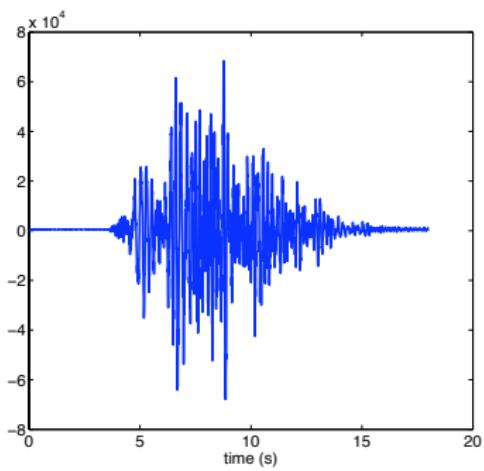


Listening to sticky spots

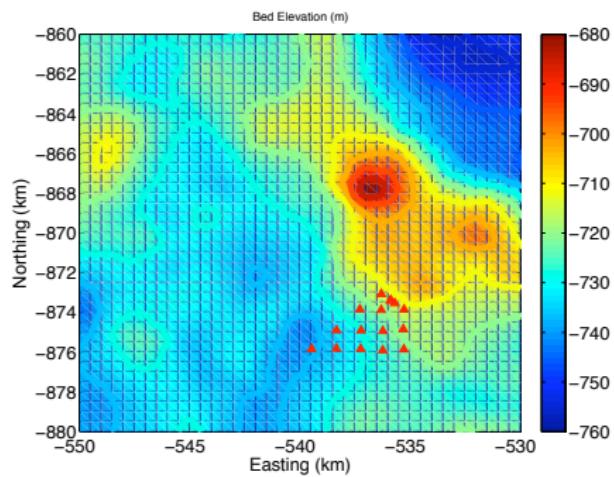
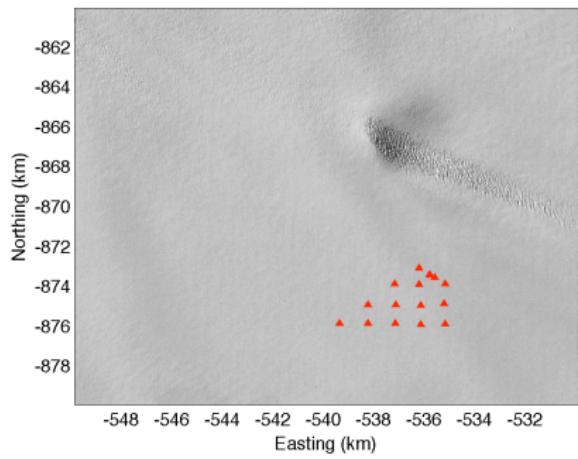
Typical small icequake



Magnitude 2 icequake!

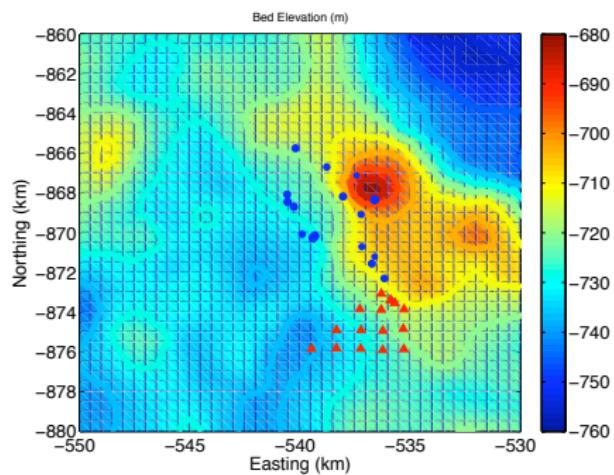
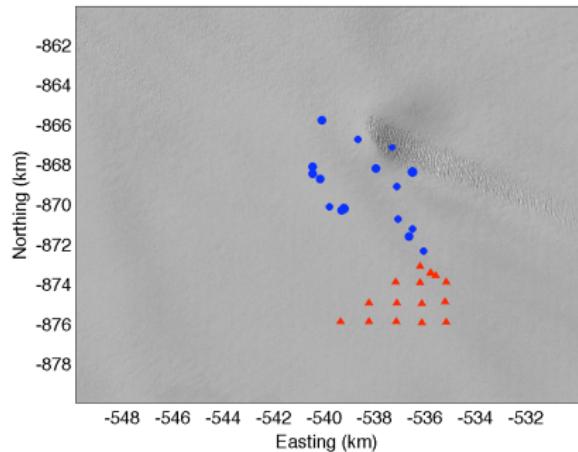


Locating large icequakes

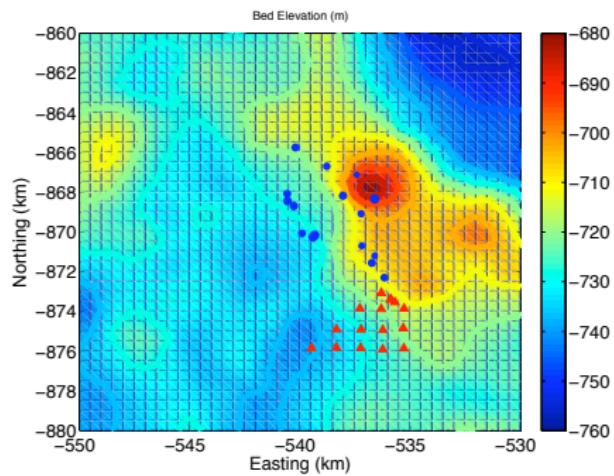
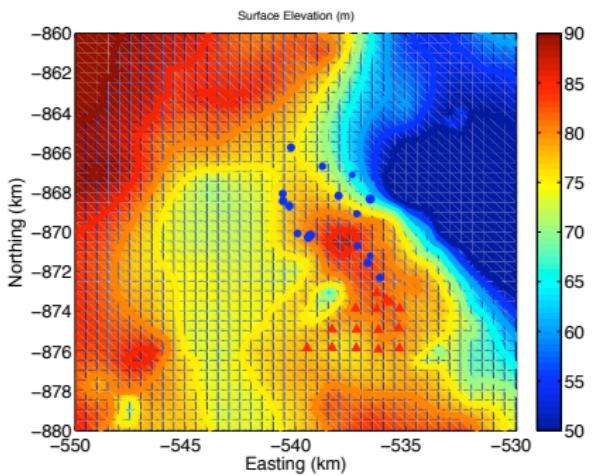


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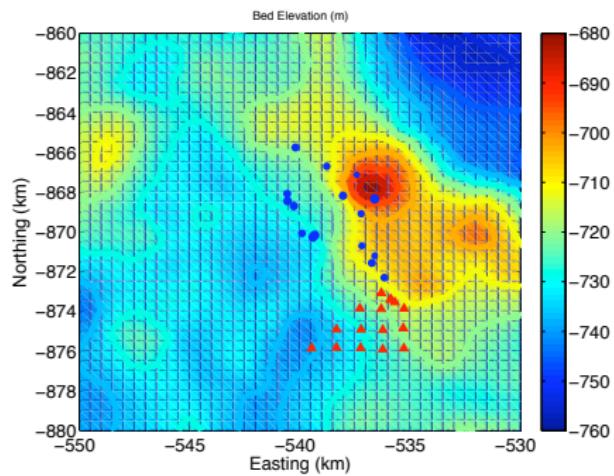
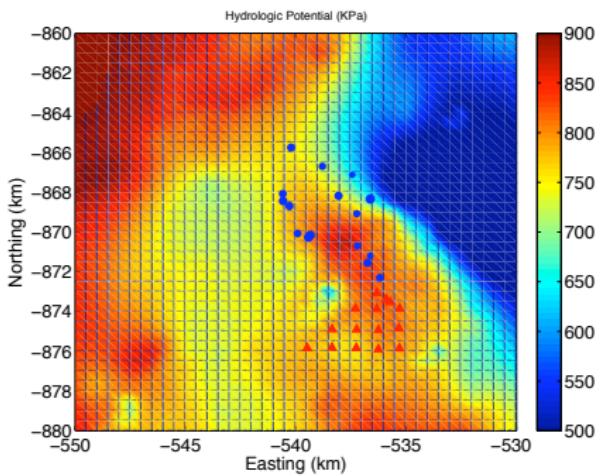
XY position well constrained, depth is shallow (not tectonic)



Locating large icequakes



Locating large icequakes



Summary

- Single icequakes can result in relatively large stress drops
- Sticky spots resulting from surface bumps can be as sticky as bedrock highs