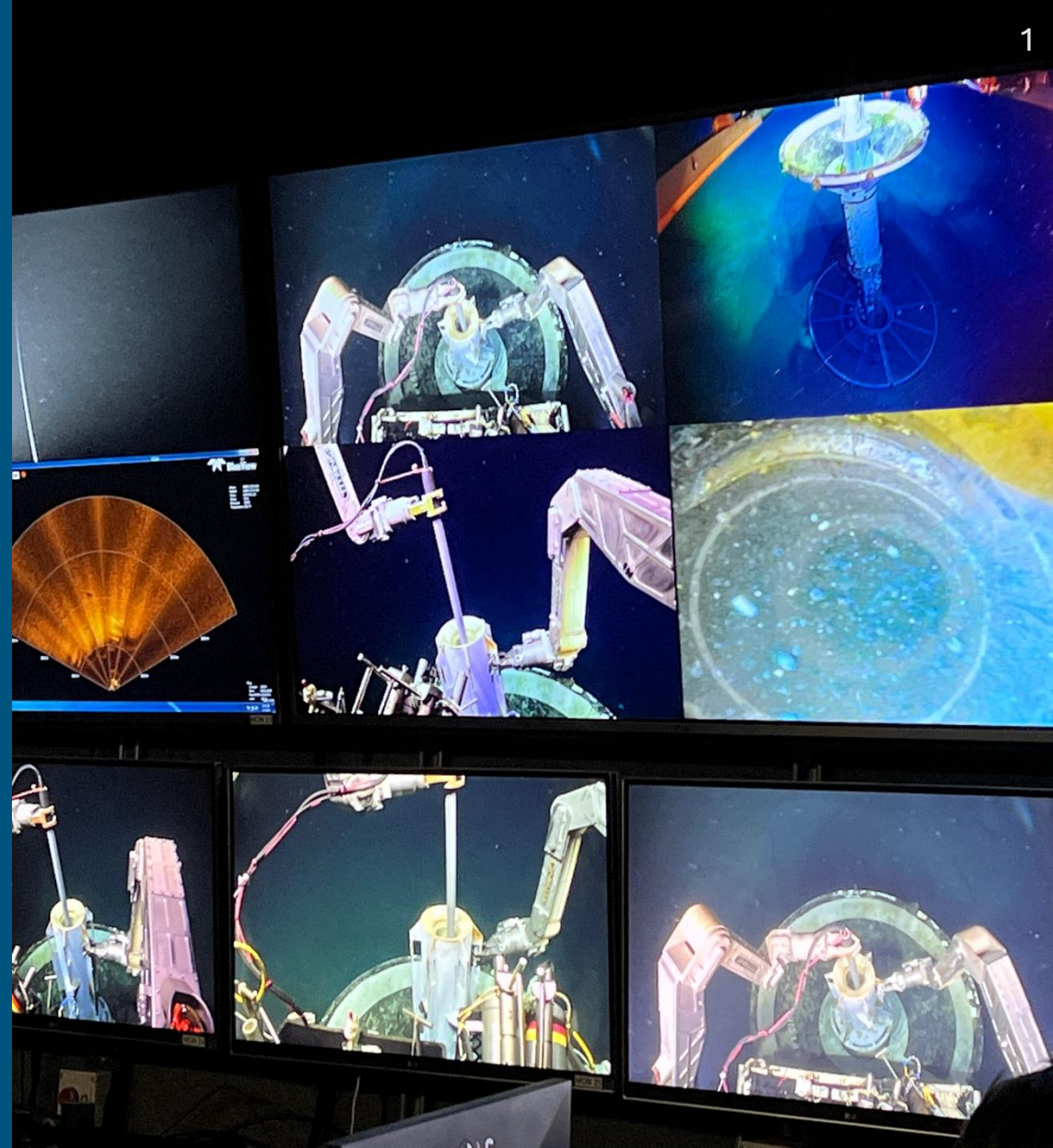


Shallow slow slip events at the Hikurangi Subduction Zone documented in IODP borehole observatories

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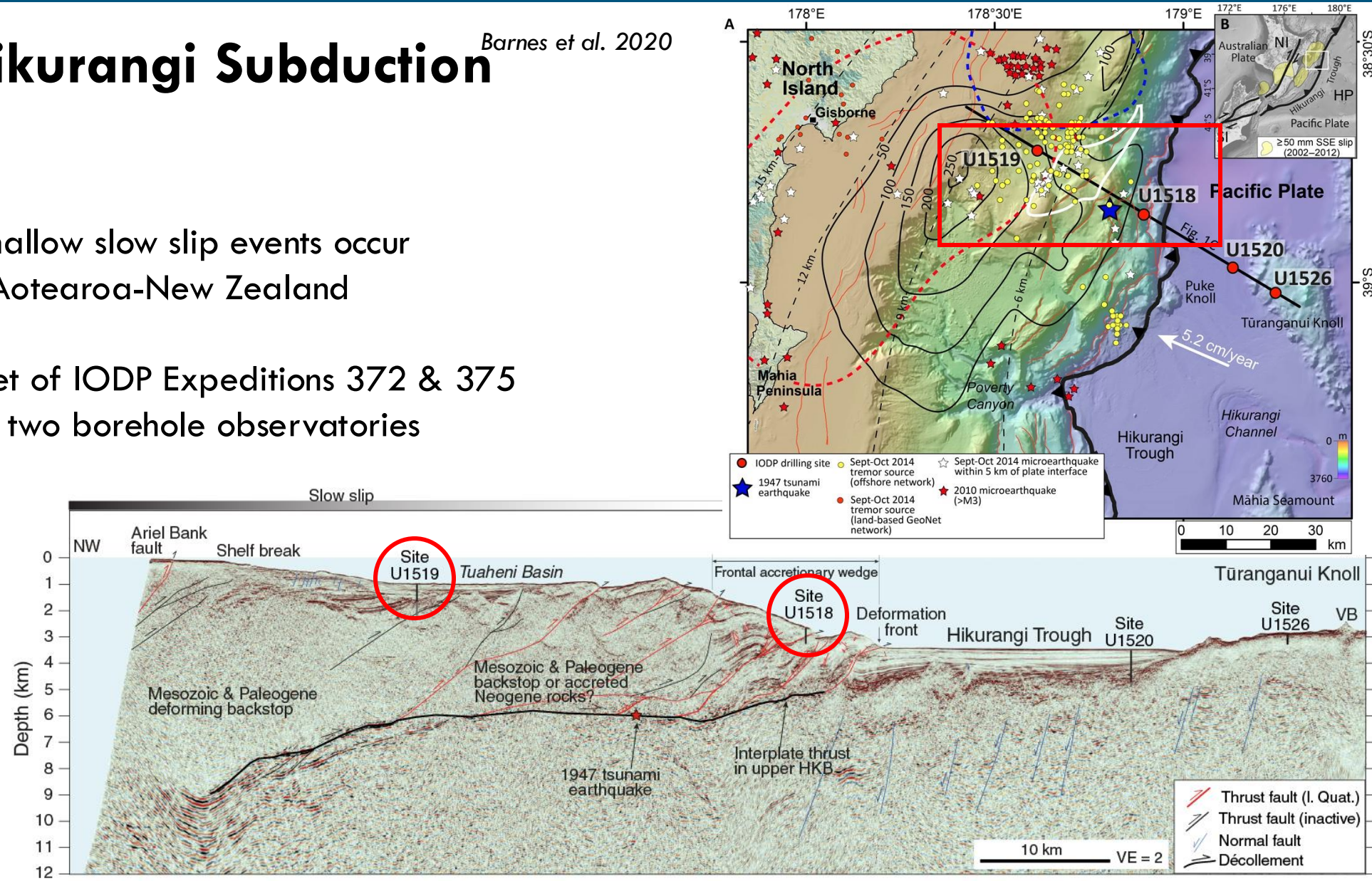


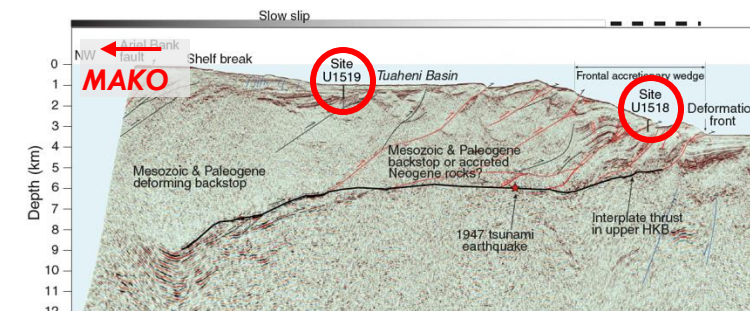
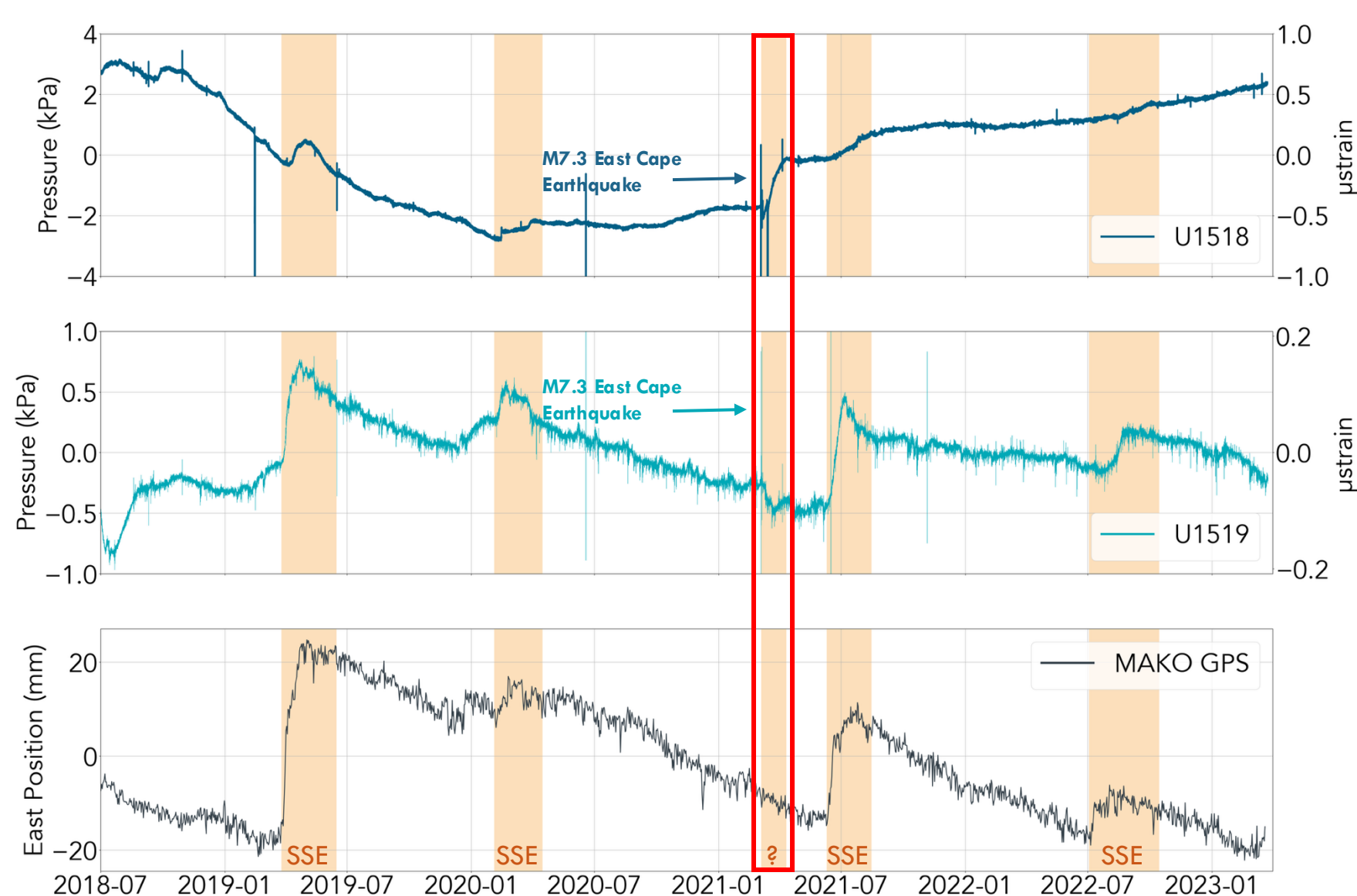
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The Northern Hikurangi Subduction Zone

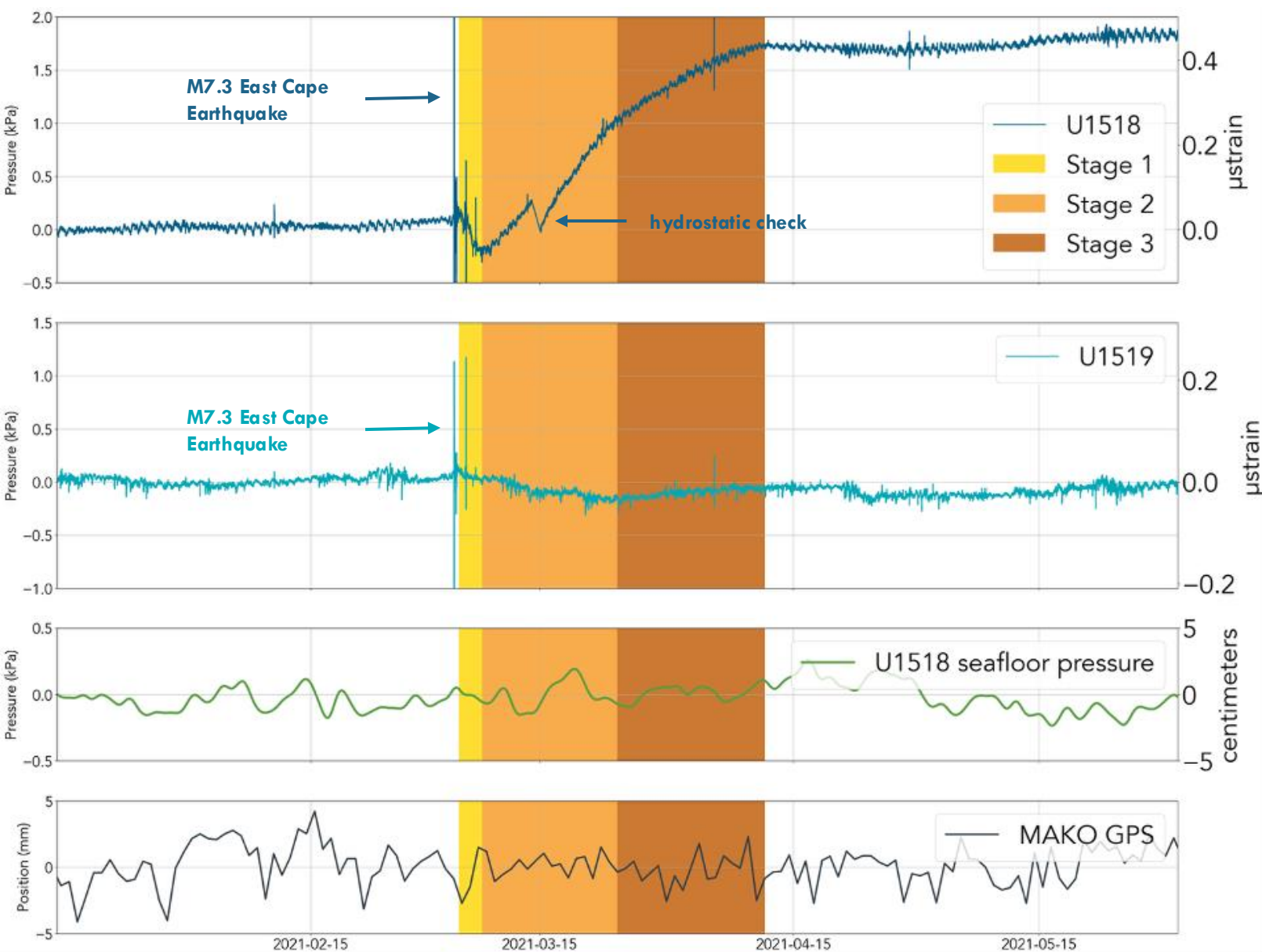
Barnes et al. 2020

- Large, frequent, and shallow slow slip events occur offshore of Gisborne, Aotearoa-New Zealand
- This area was the target of IODP Expeditions 372 & 375 to core, log, and install two borehole observatories
- Observatories were installed in 2018. Data were downloaded in 2019, 2021, and 2023

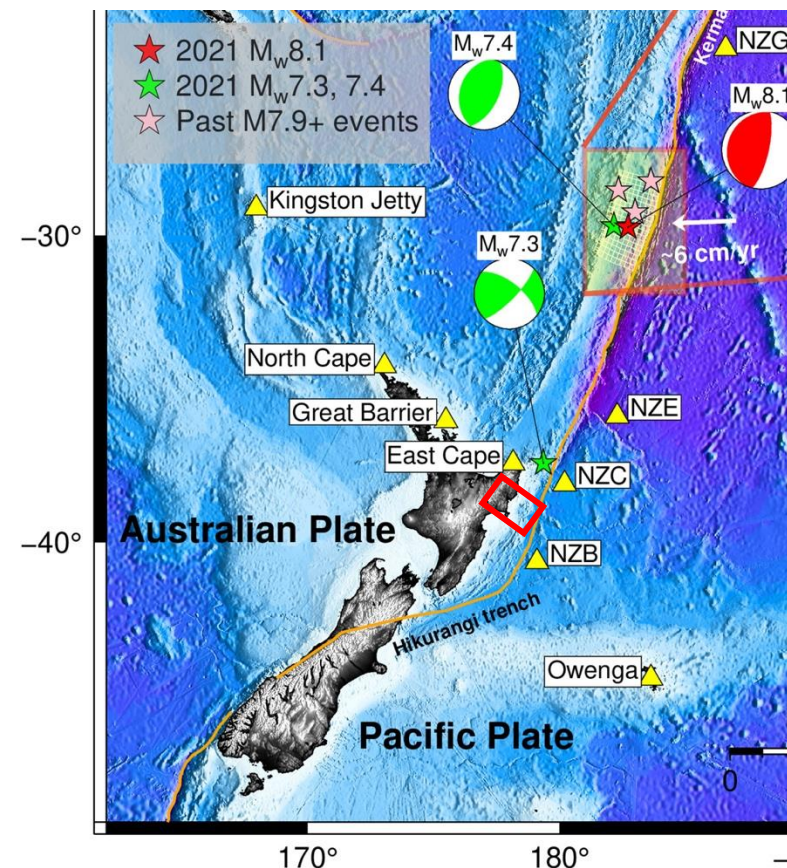




- Many SSEs appear in the time series of borehole pressure
- Most SSE signals at the boreholes correlate well with SSE signals in GPS data
- In March 2021, a significant transient is observed in the borehole pressure data but nowhere else

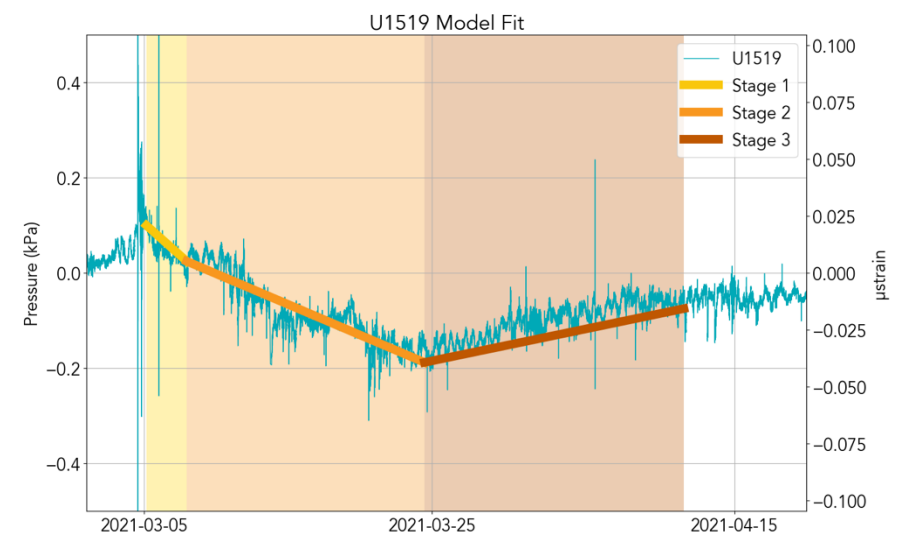
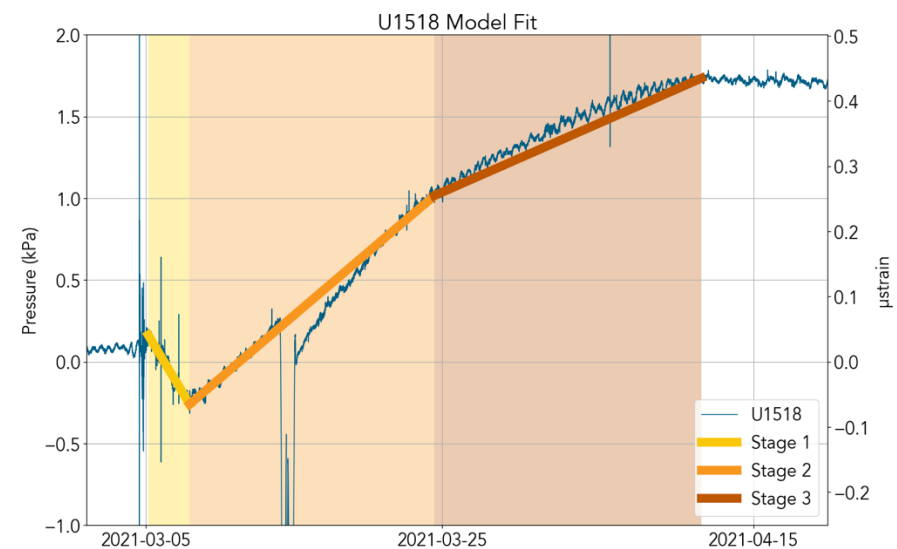
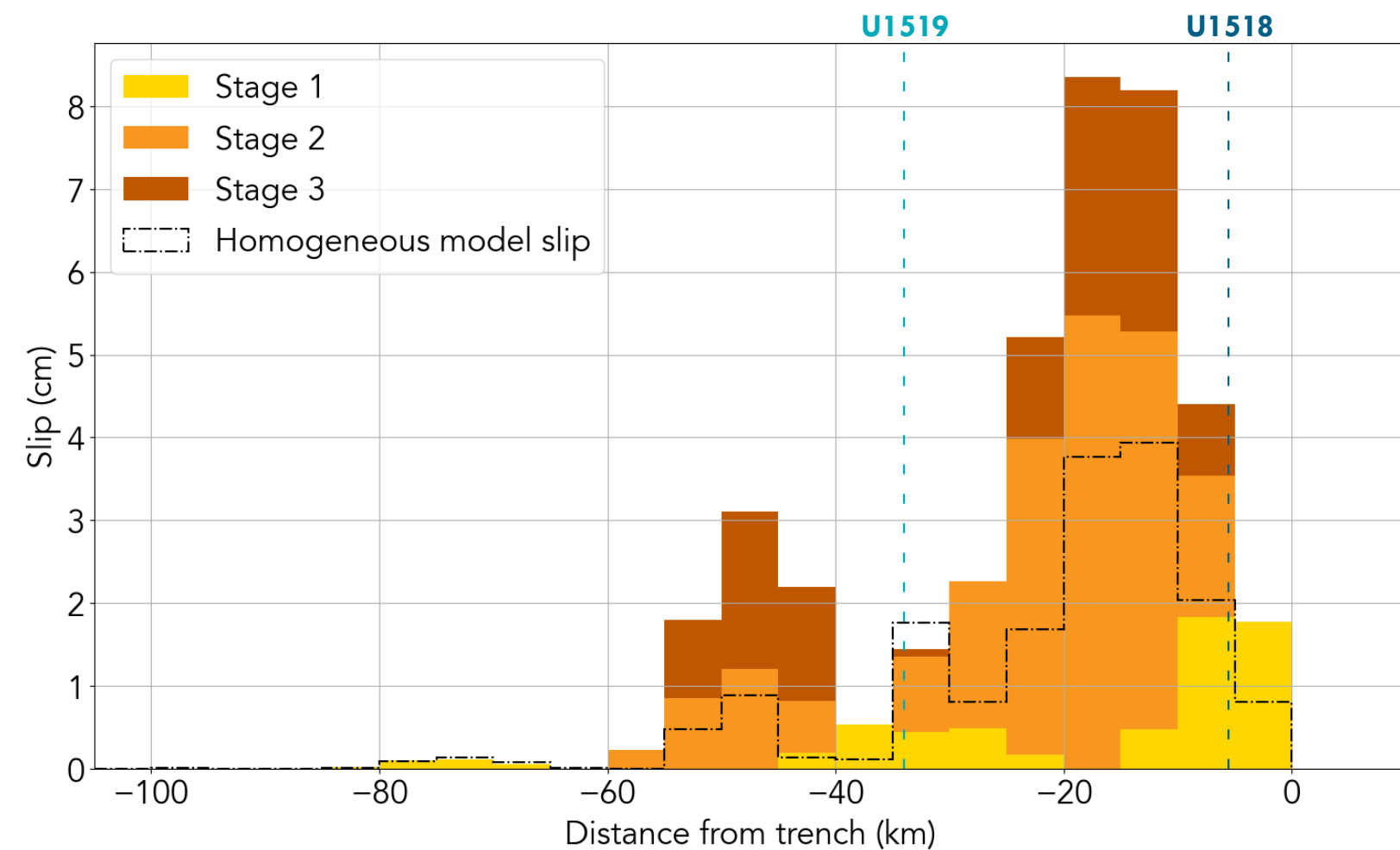


Dynamically Triggered SSE



Romano et al. 2021

Triggered Event Slip Model



Takeaways

- Borehole observatories are essential tools for monitoring crustal deformation - they can record SSEs that are invisible to both onshore and other offshore geodetic techniques
- During this triggered SSE, slip initiated at the trench
- Triggered SSEs may have different characteristics than those that arise spontaneously

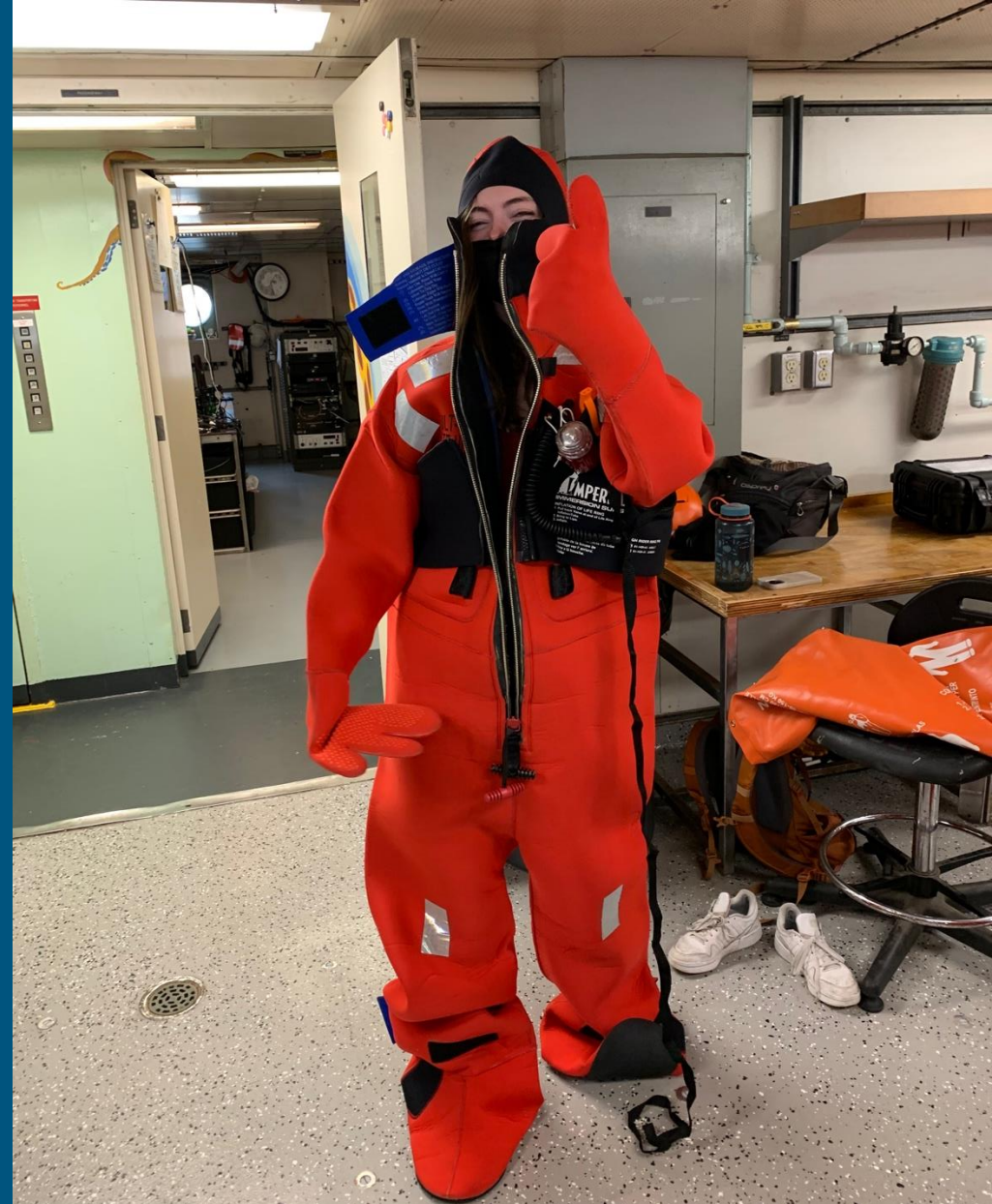
Thank you! Any questions?

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