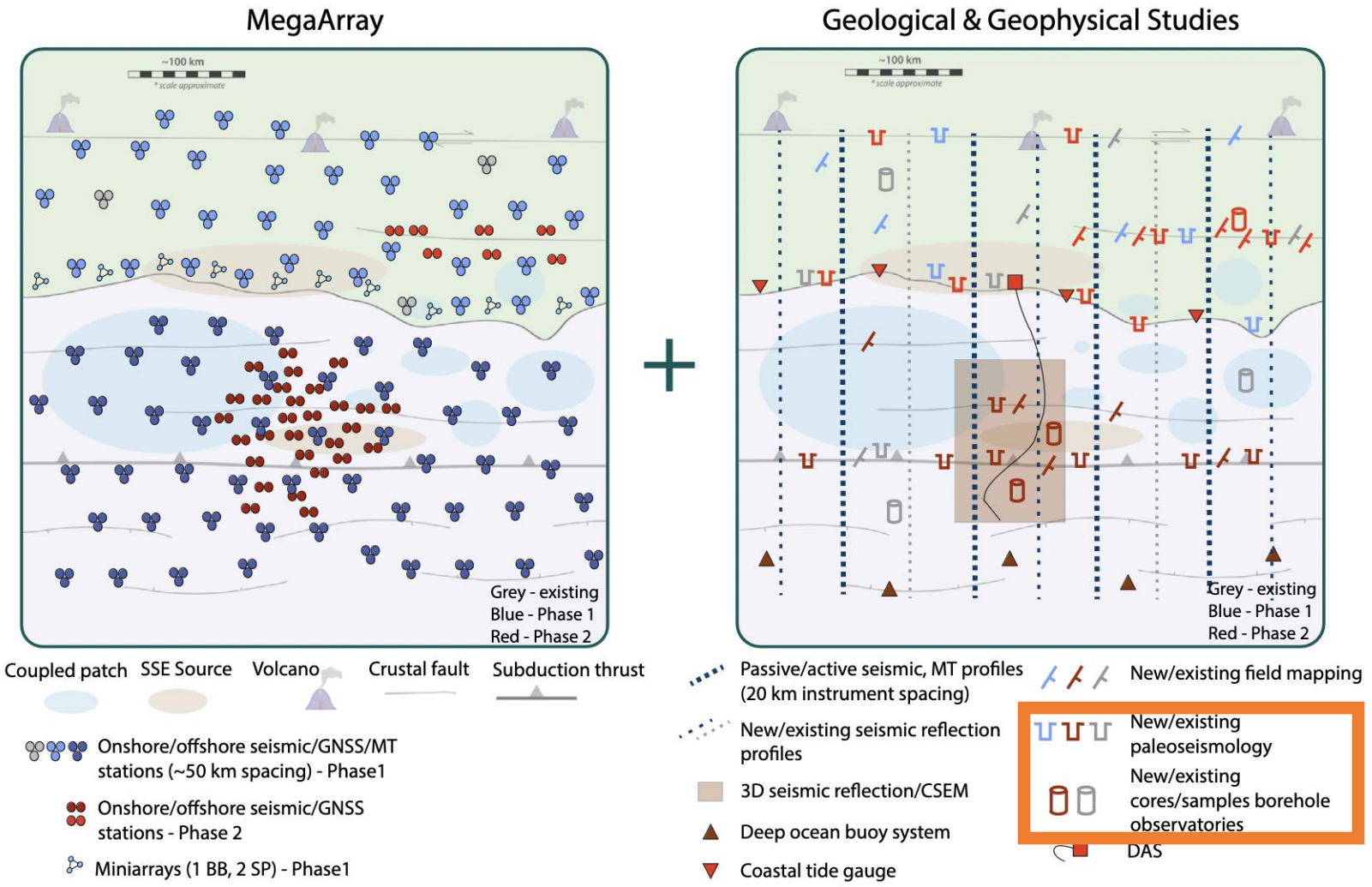
Now more than ever

**How can risk be better characterized
and the ability to forecast geohazards
like mega-earthquakes, tsunamis,
undersea landslides, and volcanic eruptions be improved?**

1 of 8 priority science questions
Sea Change: 2015-2025 Decadal Ocean Sciences Survey

**Technology advances – experience – and societal need
position SciOD to make big advances**

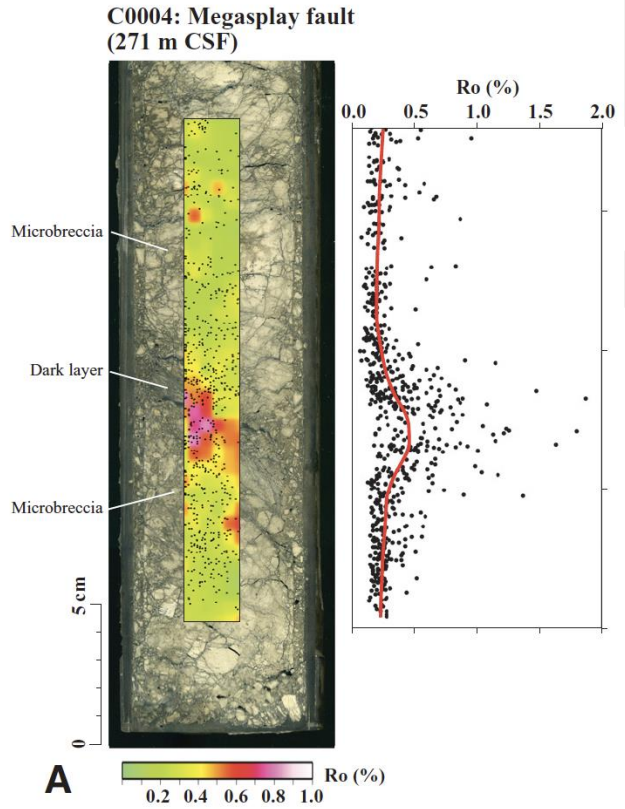
SciOD is aligned with broader ocean science community objectives



"…to understand the limits and possibilities of predicting subduction zone geohazards"

SZ4D Implementation Plan, 2022

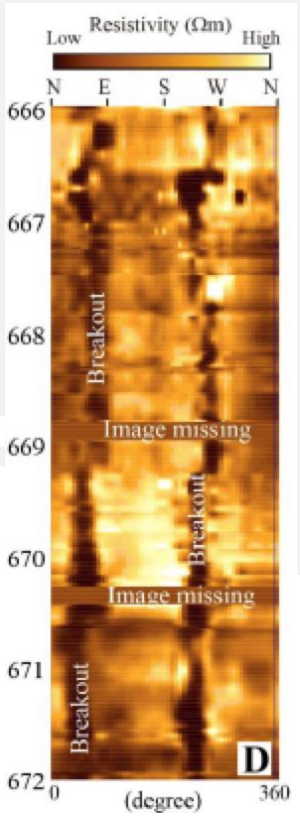
Which faults have experienced large shallow tsunamigenic slip?



Sakaguchi et al., *Geology 2011*

Cores

What is the present-day stress state?

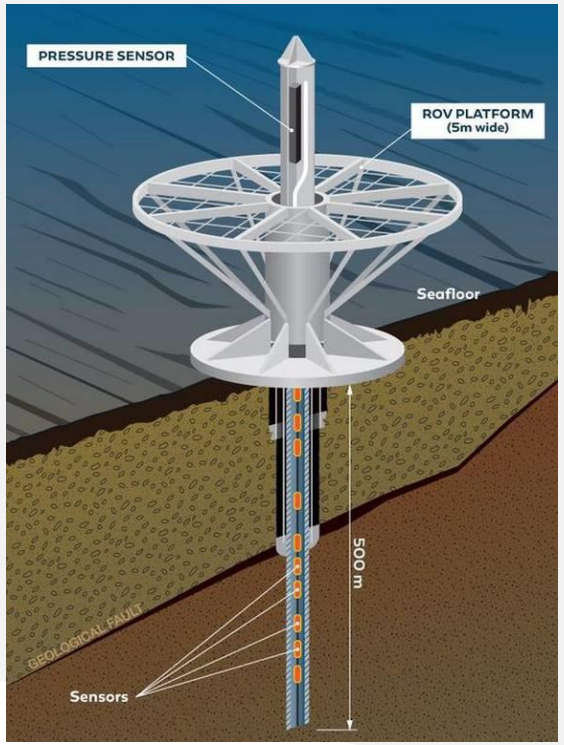


Lin et al., *Science 2013*

Logs

How is the fault zone changing?

Is it starting to slip?

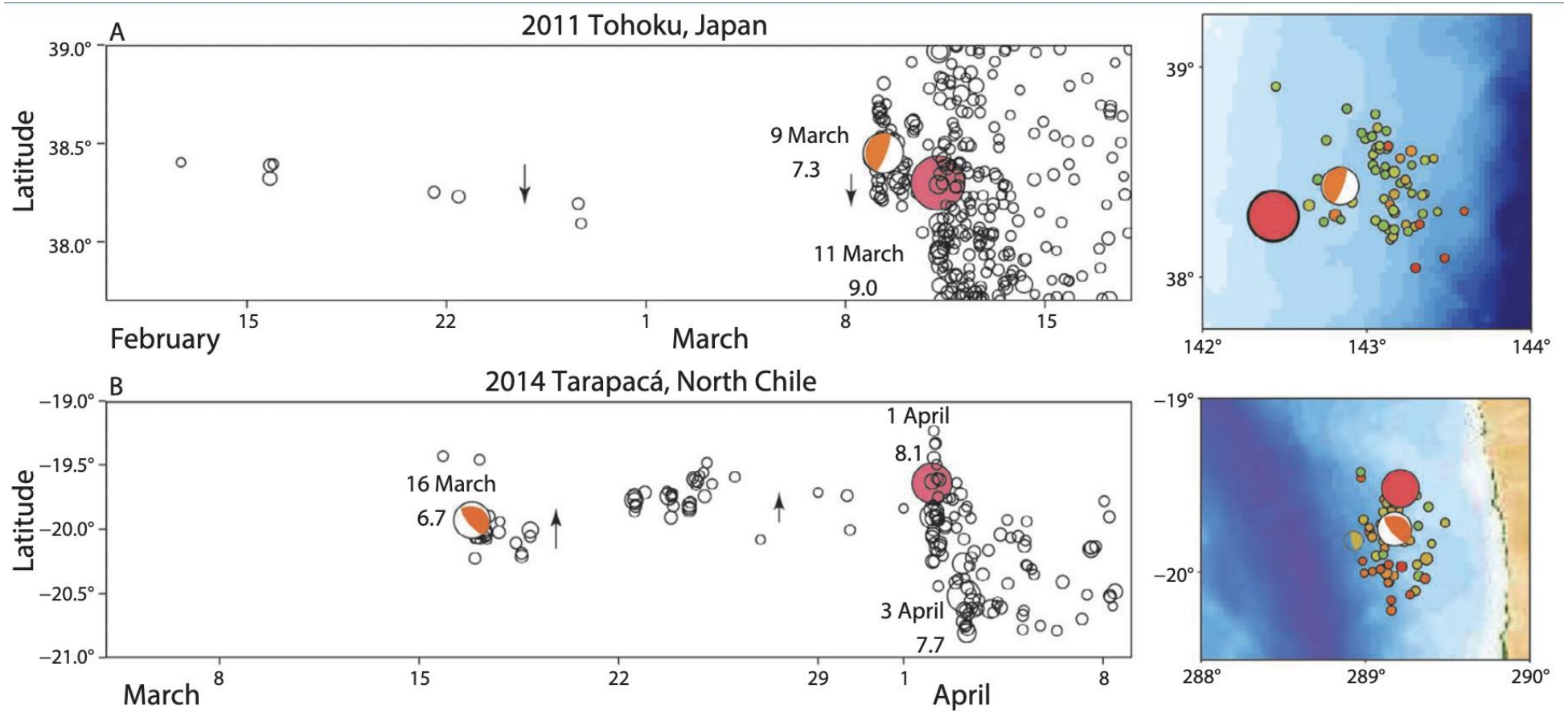


e.g., Araki et al., Science 2017;

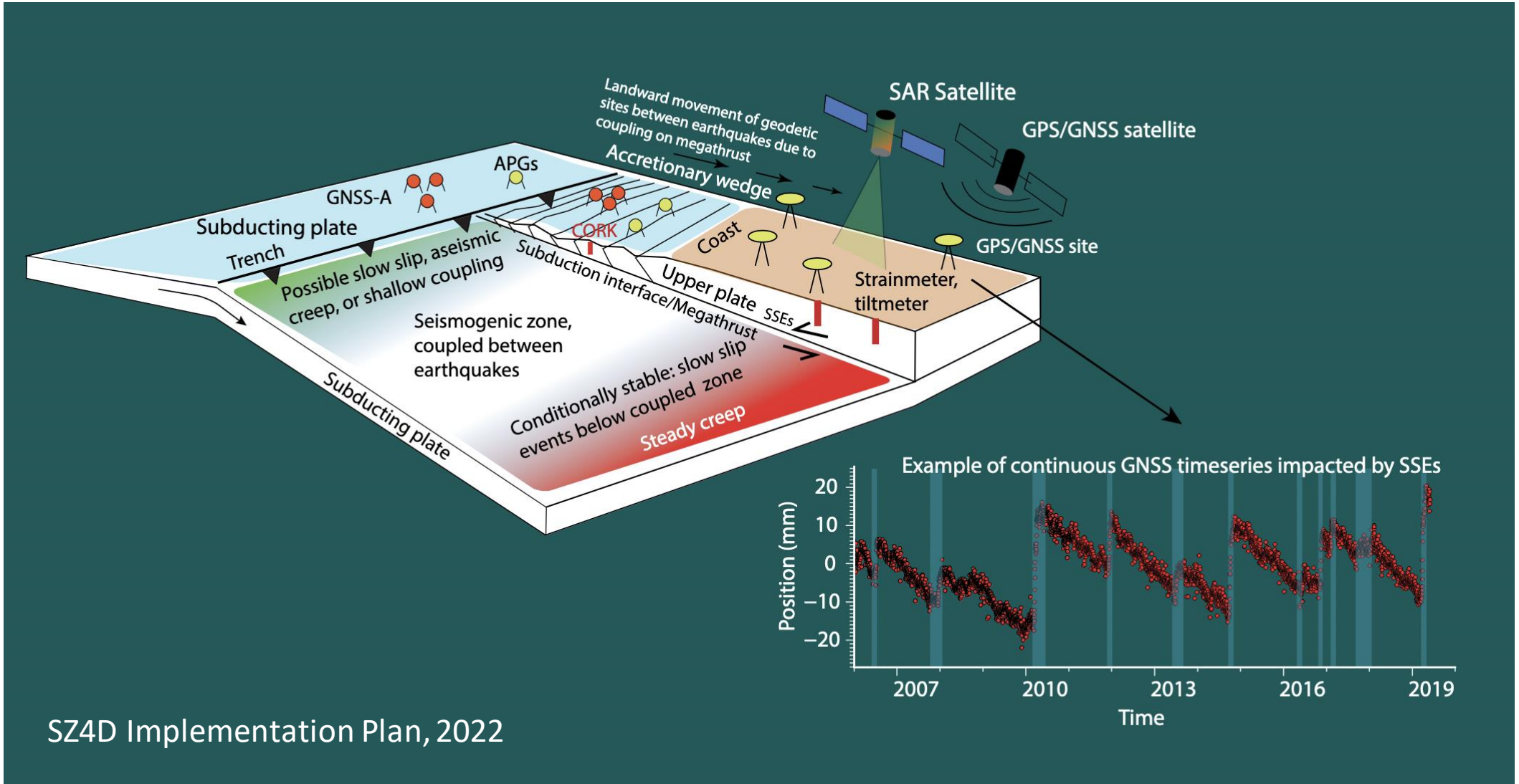
Fulton et al., Science 2013

Observatories

Seafloor geodesy – slow precursory signals before many large megathrust earthquakes

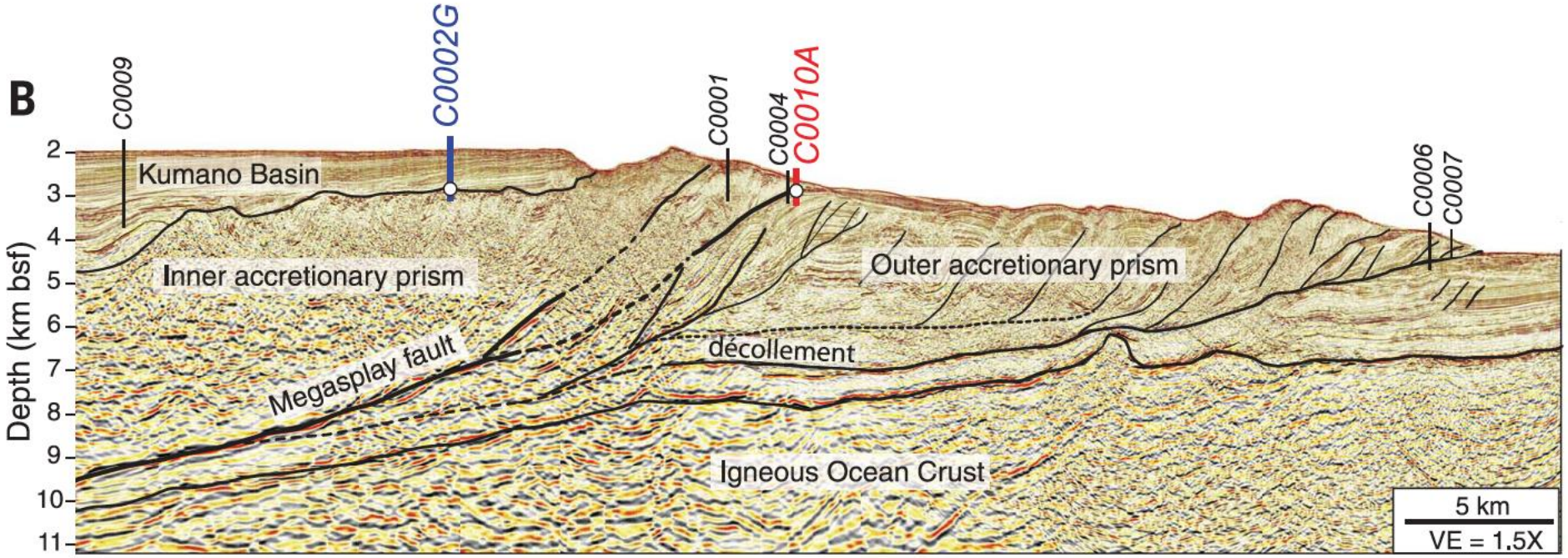


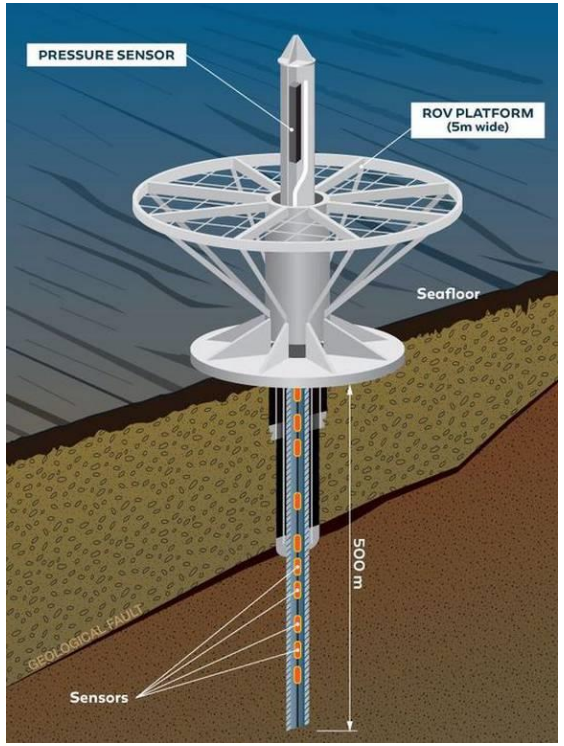
Seafloor geodesy – where is the plate locked?
Where and when is transient slow slip occurring?



SZ4D Implementation Plan, 2022

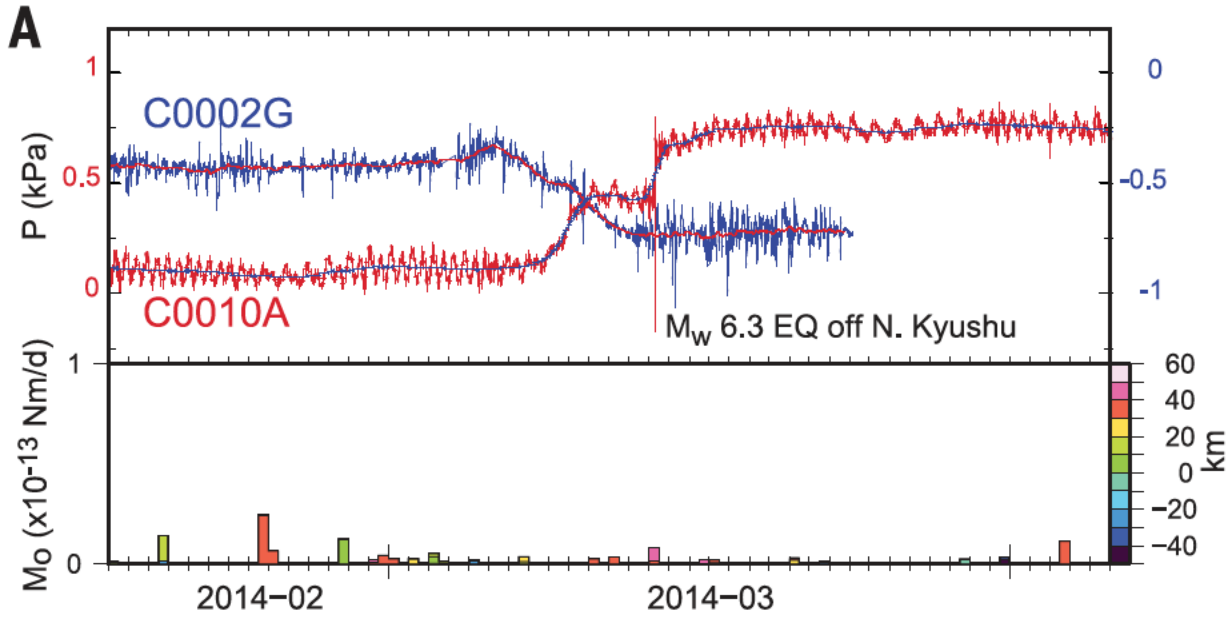
Example from Nankai Trough, SW Japan

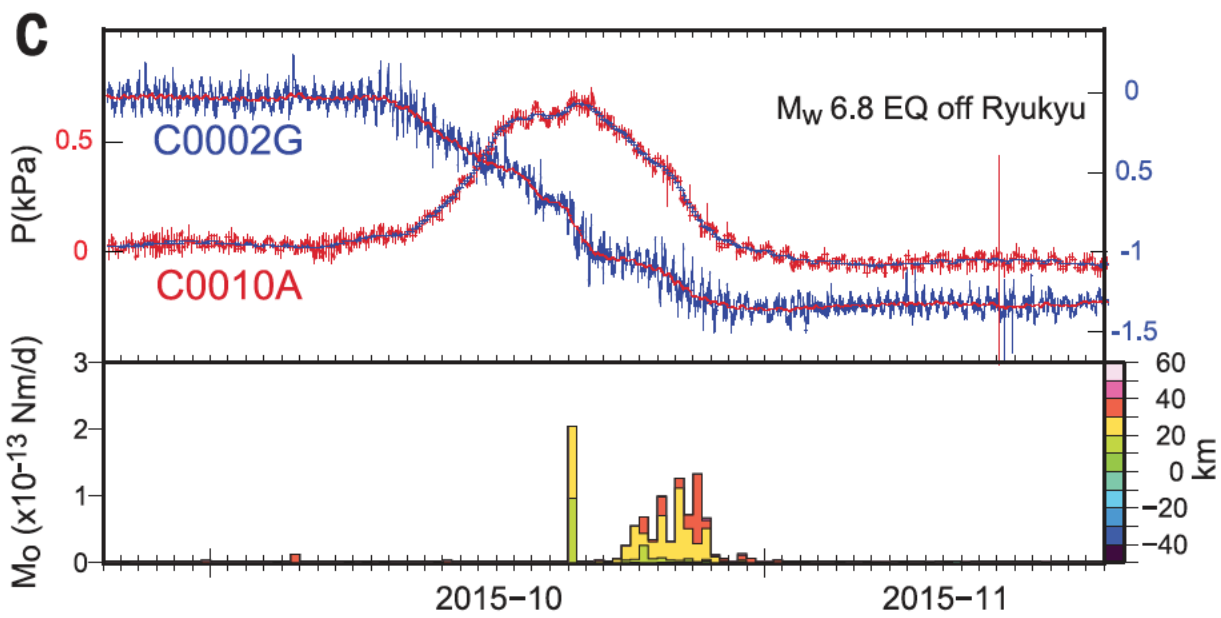




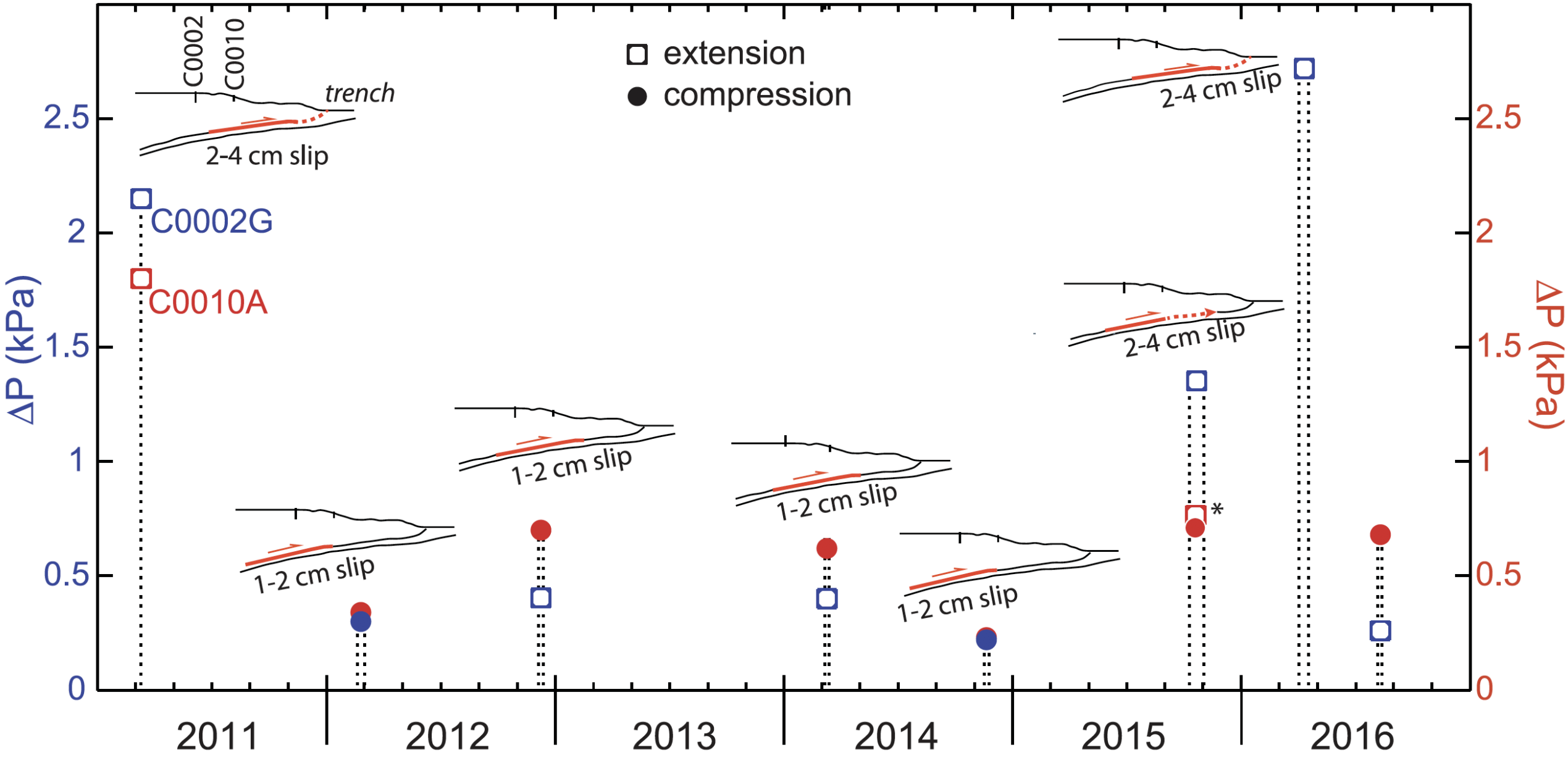
Araki et al., *Science*, 2017

Example from Nankai Trough, SW Japan





Araki et al., *Science*, 2017



Araki et al., *Science*, 2017

How do we maintain strength?

- **Deep academic and public interest in this science – to retain and train next generation they need to see a commitment towards future SciOD**

- **Start the process of acquiring a new drill ship ASAP**
  - **Involve the community**
    - **scientists, engineers, and students and can inform the process based on experience, expertise, and science need**
    - **And knowledge transfer and excitement can be facilitated**

- Commitment to support US scientists in non-US led drilling programs

- Support an engineering office to facilitate MSP-style US led operations (although exceedingly difficult and extremely limited in capabilities)