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EarthScope Publications

- At least 688 publications and still growing
 - https://scholar.google.com/citations? user=ZKI-0gUAAAAJ&hl=en&authuser=3
 - 75 (over 10%) have been cited at least 100 times
 - 449 (over 65%) have been cited at least 10 times
 - More than 2000 unique authors
 - EarthScope works have been cited >25,000 times; almost 2/3 of those citations have occurred in the last 5 years
- If EarthScope were a single author, it would have an hindex of 83 (Google Scholar)



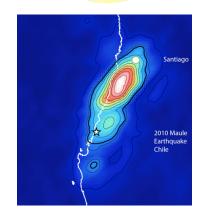
Gone but not Forgotten

The impact of EarthScope will continue long after the end of the program

- New scientific insights
- Archive of high-quality, open data
- New techniques developed or refined
- Changed how we approach science



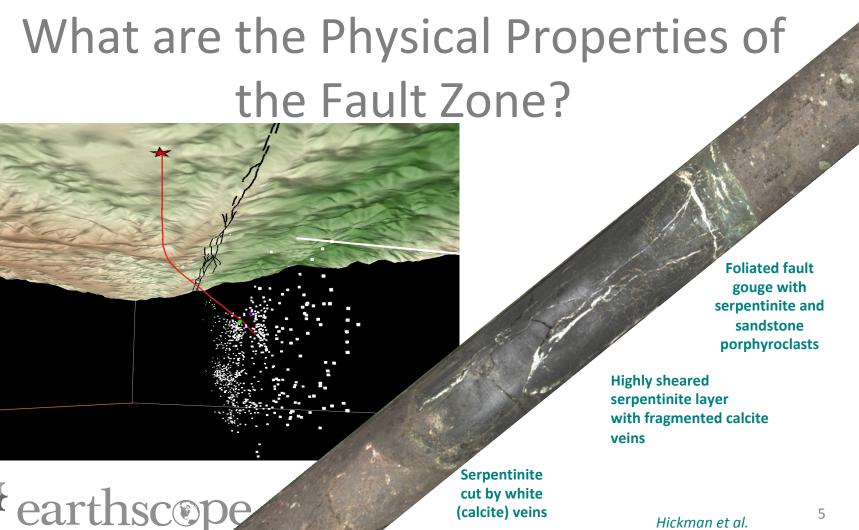




Summing up EarthScope

- A few key results that did not fit into previous talks
- Integrating Structure and Active Deformation
- Instrumental Legacy
- Lessons Learned
- Where do we go from here?

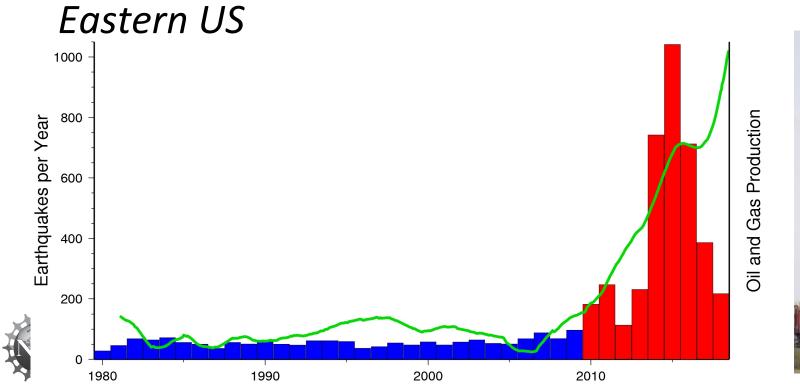




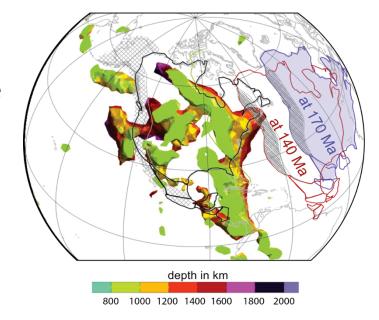
EarthScope and Induced Seismicity

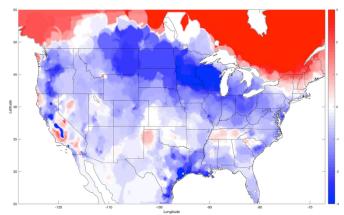
Human-induced earthquakes in the Central and

M. Brudzinski



Tracking North America's Hidden Past
 Imaged new slabs of the ancient Farallon plate
 and its predecessors, following the trail in the
 mantle of the plate breaking up under North
 America, showing it extends from the Pacific
 Coast subduction zone to the eastern part of
 the continent.



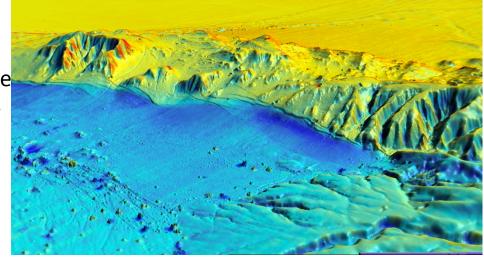


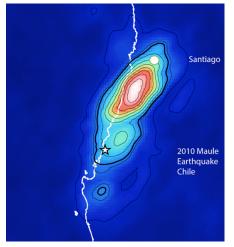
earthscope

Demonstrated that the entire North American continent is deforming due to a combination of tectonics and changes in surface loads (water and ice).

Laser Vision to See Earthquake Damage

Pioneered before-and-after lidar techniques to measure earthquake displacements from the El Mayor-Cucapah earthquake.





Backtracking to Global Breakups

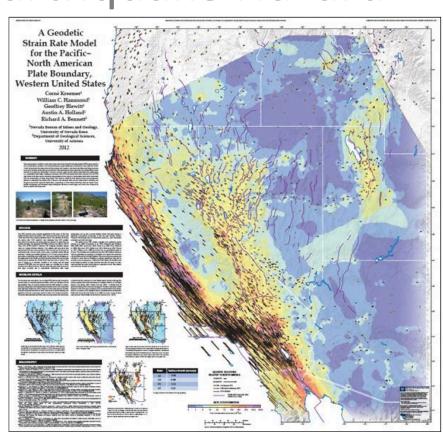
Developed and applied high-resolution seismic source back-projection for imaging the rupture dynamics of large global earthquakes.



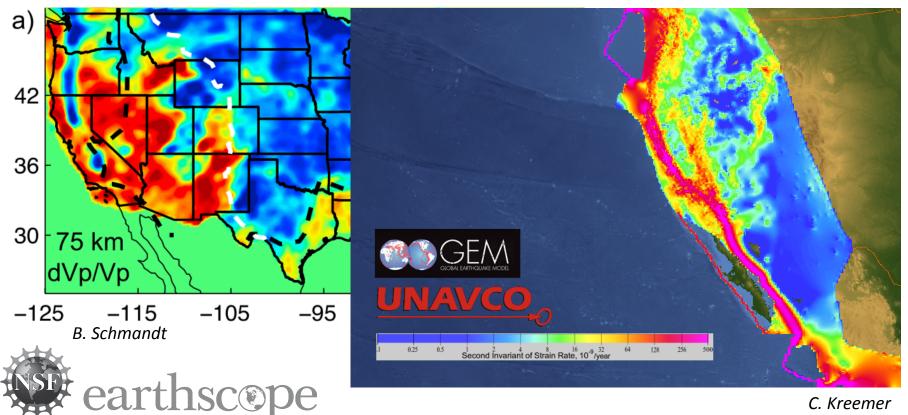
Strain Rate and Earthquake Hazard

- Rate of earthquakes is related to rate of deformation
- Incorporated into earthquake hazard maps for California and soon for Alaska





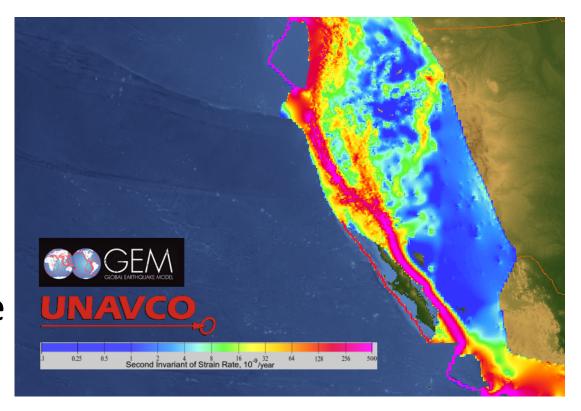
Structure and Active Deformation



C. Kreemer

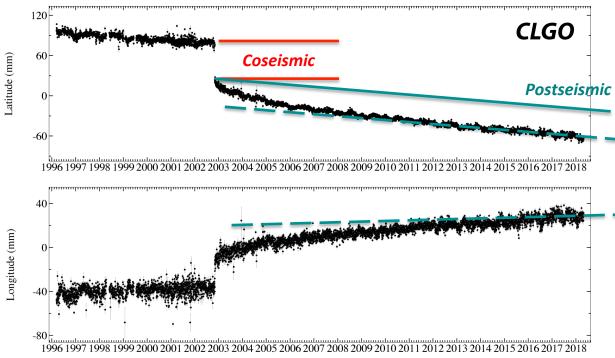
Structure and Active Deformation

 High strain confined to areas of thin lithosphere and weak asthenosphere



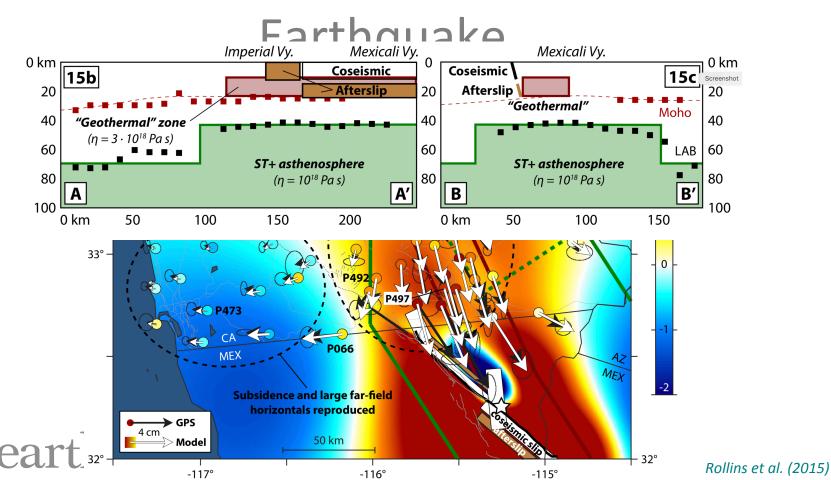


Coseismic and Postseismic Deformation





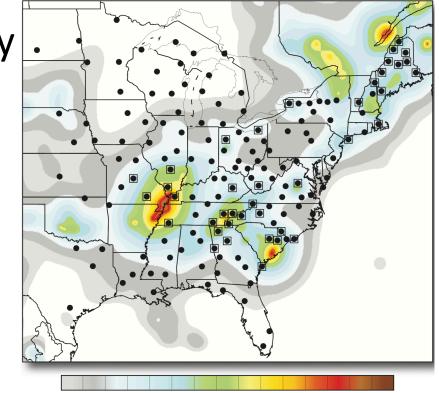
El Mayor-Cucapah



Instrumental Legacy: TA Adoptions

Hazard

- >200 EarthScope USArray stations adopted
 - CEUSN (right)
 - Cascadia PNSN
 - Alaska
 - Others



Highest

Hazard



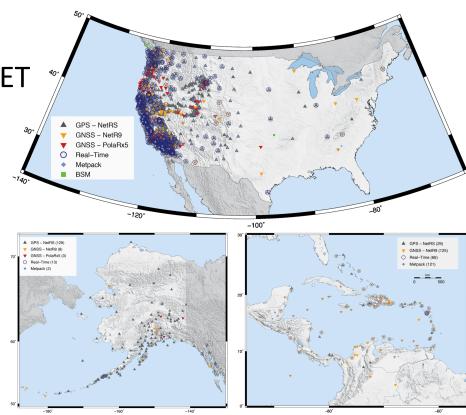
Instrumental Legacy: NOTA

Network of the Americas

– PBO + COCONET + TLALOCNET

- Long-term geodetic observations for science
 - Transient/dynamic fault slip
 - Plate boundary dynamics
 - Environmental sensing





Lessons Learned from EarthScope

- Geographically comprehensive coverage enabled discovery
 - We found important things we didn't even know we should be looking for.
- Synergy from the combination of seismic, MT, and geodetic data
 - Structure + kinematics -> dynamics
 - Building a multi-disciplinary research community
- EarthScope showed how to combine "big science" and "small group science" effectively
- Station "adoption" and long-term operation enhanced the legacy and impact of EarthScope



The Next Big Thing(s)

- The EarthScope science and facility models worked exceptionally well
 - Inspiring similar efforts worldwide
- Our community has built the intellectual tools to continue work on a big scale
- Let's build on the success of EarthScope!
 - Expand integration and synthesis across geosciences
 - Build bridges to other disciplines

