

The United States:

A Natural Geologic Laboratory

The United States is perhaps the best place on Earth to study active and ancient continental evolution. No place else offers such a rich set of geological processes and tectonic regions so accessible for study.

Within the United States we find the full spectrum of plate boundary processes, ranging from plate convergence in the subduction zones of Cascadia and the Aleutians, to transform faulting along the San Andreas Fault, and to intraplate extension of the Basin and Range. Ancient structures across the country, such as the Appalachian Mountains, provide a link for relating continental deformation to past mountain building. EarthScope is collecting multi-disciplinary data sets that will allow us to study the transition from plate-scale tectonic interactions to small-scale system level processes such as individual faults and volcanoes, and how the processes interact.

Plate Boundary Processes

- convergence (*Cascadia – Aleutians*)
- transform faulting (*San Andreas*)
- extension (*Basin and Range*)

Diversity of tectonic elements

- hotspot
- intraplate seismicity
- Precambrian basement
- batholiths
- core complexes
- overthrust belts
- arc volcanism
- sedimentary basins

3.5 billion year record of plate evolution

- accretion
- sedimentary basins
- rifting
- volcanic arcs
- transition zones

