Alaska is characterized by high seismicity due to the active subduction of the Pacific plate beneath the North American plate (~5-7 cm/year), and is the most seismically active region in the United States by a large margin. Nearly the entire state of Alaska is seismically active and thus offers an excellent natural laboratory for the study of earthquake occurrence and a variety of tectonic and volcanic processes.

The Alaska Earthquake Information Center (AEIC) operates a seismic network of more than 300 seismic stations distributed throughout the state (see figure to the left), receiving and archiving waveform data from all stations in near-real-time. Within the large regional network are subnetworks comprised of stations which serve several purposes. One subnetwork, operated jointly with the Alaska Volcano Observatory (AVO), includes more than 100 stations that monitor 17 active volcanoes. Another evaluates tsunami hazard potential with more than 20 stations located in coastal communities, which is operated in cooperation with the Alaska Tsunami Warning Center.

As part of NOAA’s National Tsunami Hazard Mitigation Program, the AEIC is participating in a project that will augment the tsunami subnetwork with 21 new modern seismic stations (see figure to the right). The goal of the project, named the Consolidated Reporting of Earthquakes and Tsunamis (CREST), is to record high dynamic range, broadband waveforms in near-real-time to facilitate the production of rapidly computed parameters, such as hypocenters, magnitudes, moment tensors, and shake distribution maps that can provide ancillary information on the tsunamigenic potential of an earthquake.
Below are photographs and data from two existing Alaska CREST stations, Bremner River (BMR) and Divide (DIV).

BMR photos and data, clockwise from bottom left: a look at the site from the air; fully constructed vault; wind generator; hut with solar panels; waveforms from the July 28, 2001 mb 6.5 earthquake near King Salmon, Alaska.

DIV photos and data, counter-clockwise from bottom left: the hole (dug to bedrock) for the vault; using a helicopter to sling equipment to the site; leveling the vault in the hole; an AEIC seismic network engineer conducting maintenance; waveforms from the July 28, 2001 mb 6.5 earthquake near King Salmon, Alaska;