

Alaska Earthquake Center

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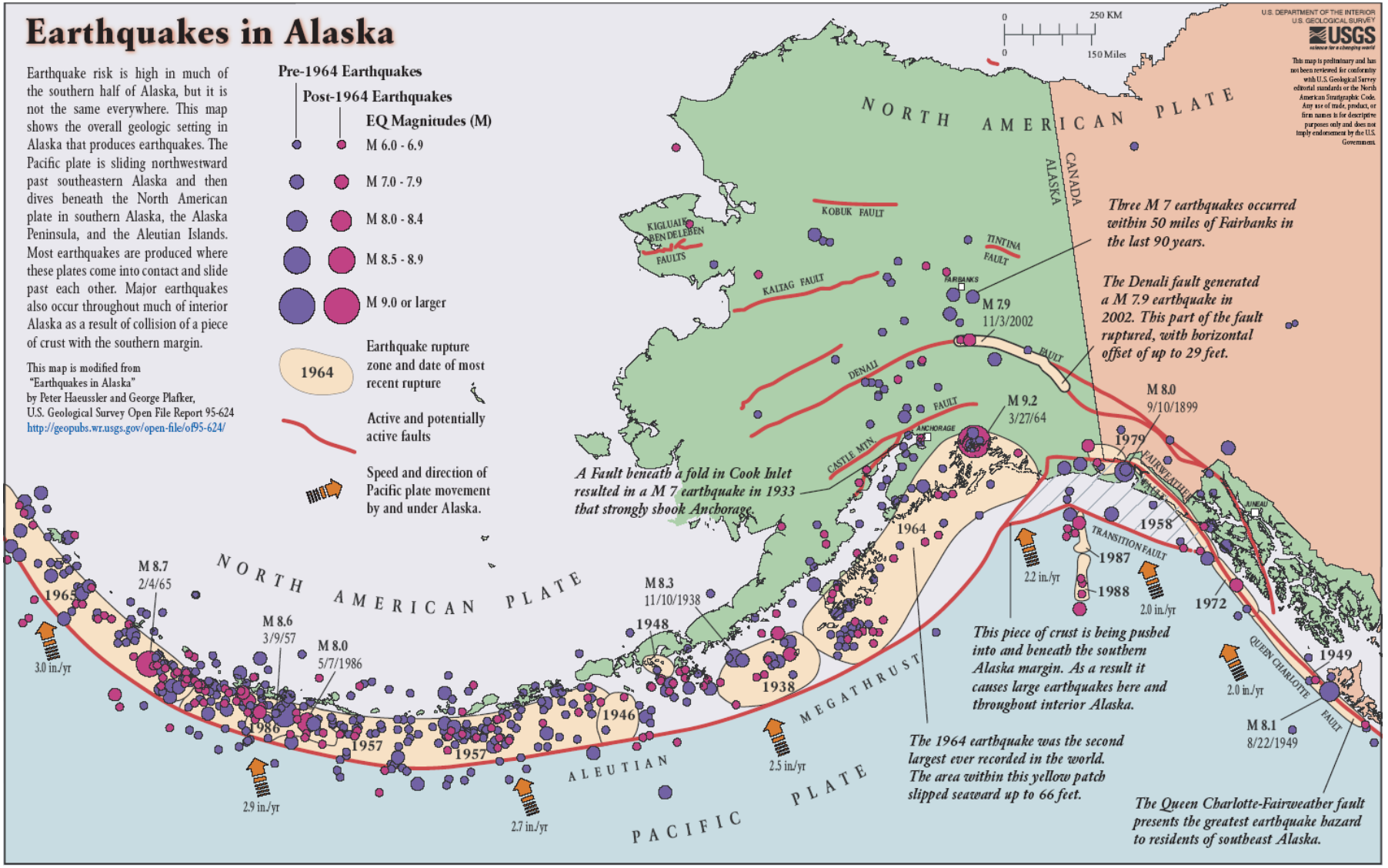
Alaska Earthquake Center mission and historical perspective

- Regional seismic network established in Alaska in late 60s-early 70s, in the wake of the 1964 M9.2 Great Alaska earthquake.
- Alaska Earthquake Center formally established in 1989 to:
  - Assess seismic hazards for Alaska
  - Collect, analyze and archive seismic data
  - Provide information and assistance to State and local agencies, public and research community
- We work in cooperation with many State and Federal partners.

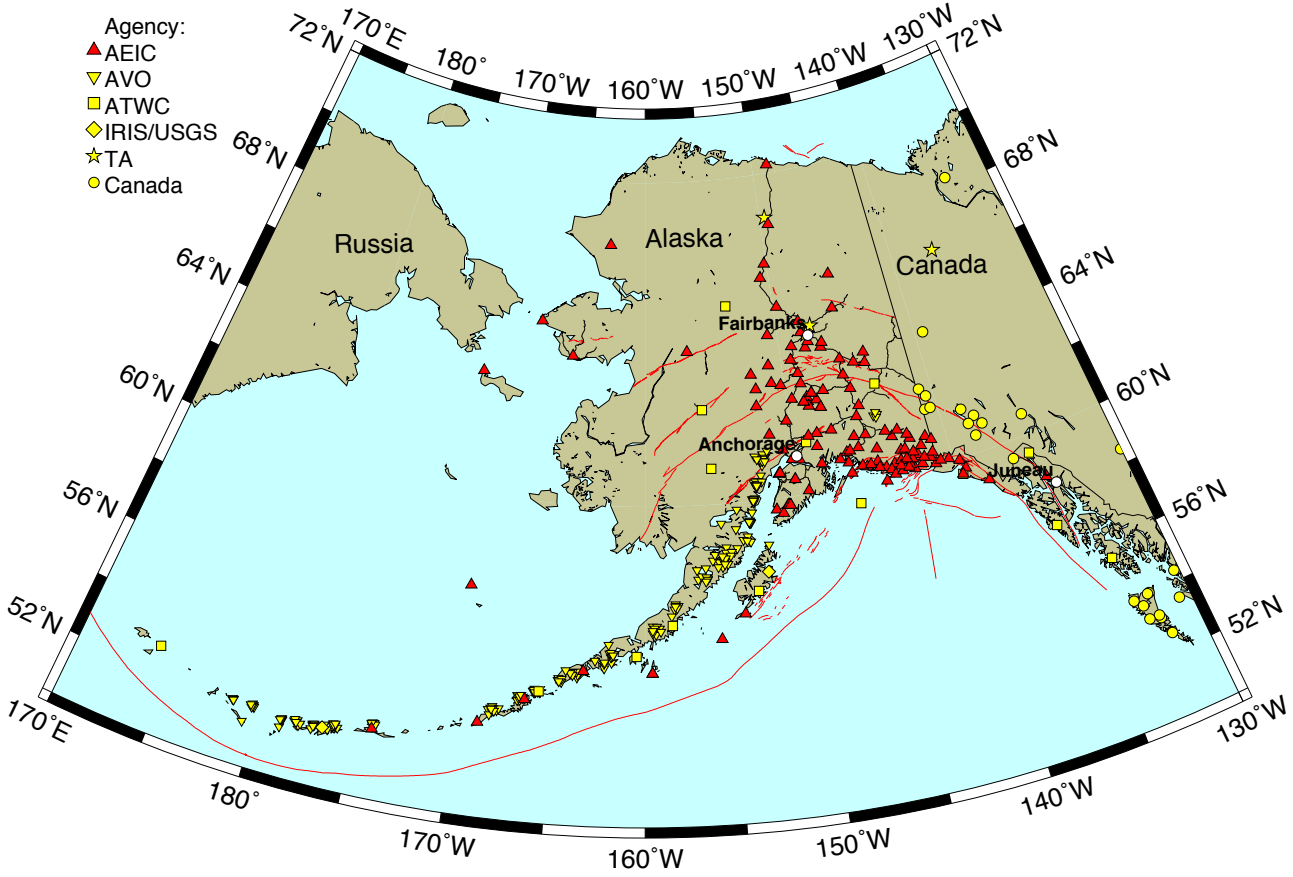
Current state of Alaska Earthquake Center

- We are members of ANSS – Advanced National Seismic System. One of our key responsibilities is real time earthquake reporting for Alaska region.
- We collect, analyze and archive data from about 400 seismic sites in the State, and also from our neighbors Canada and Russia and Global Seismic Network.
- We locate on average about 25,000 local and regional earthquakes per year.
- We are responsible for maintenance of ~150 seismic sites.
- We provide seismic monitoring of the Trans-Alaska Oil Pipeline and hydro-electric dams in the State.
- We participate in the Tsunami Hazard program by producing tsunami inundation maps for coastal communities in the State.
- We have staff of 17: 1 sysadmin, 1.5 analysts, 5 field techs, 2 seismologists, 1 public outreach officer, 2 tsunami modelers, 2 TA staff, 2 postdocs. AEIC director is the State Seismologist Dr. Michael West.
- Operating funds: 1/3 from the State, 1/3 through USGS, 1/3 through targeted contracts.

Tectonics of Alaska

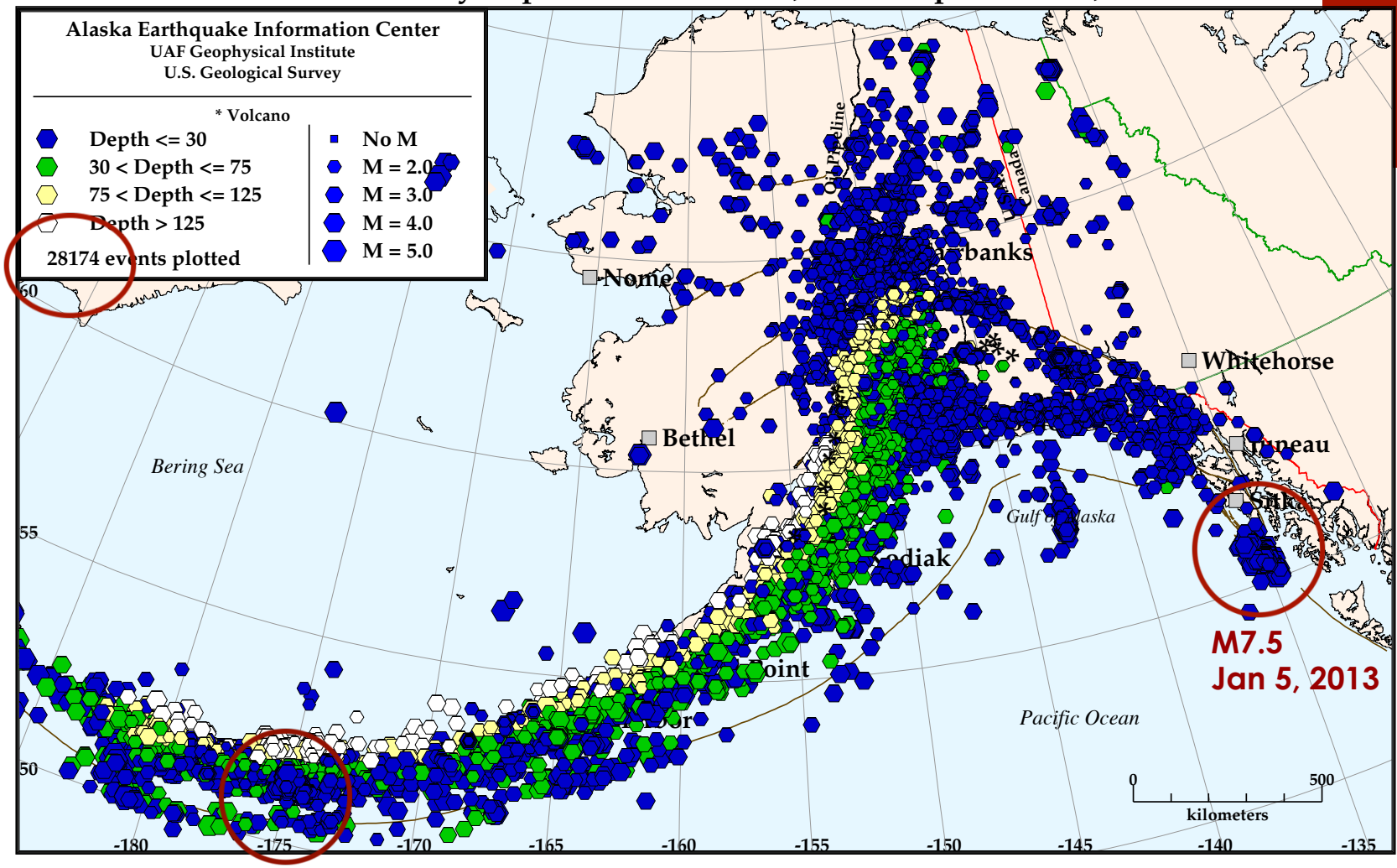


Alaska regional seismic network



- 400+ stations
- Regional network:
  - 1/3 is AEIC
  - 1/3 is Alaska Volcano Observatory
  - 1/3 is Alaska Tsunami Warning Center, GSN, USGS, TA
- 2/3 of stations are digital broadband, ~1/3 of stations are short period analog

AEIC Seismicity Report for October 01, 2012 - September 30, 2013



Products

- Real-time:
  - local, regional and teleseismic earthquake locations
  - Ml, mb and Mwp
  - ShakeMaps
- Reviewed:
  - Local and regional earthquake locations and picks
  - Ml
  - P-wave first motion mechanisms (Ml>=3.5)
  - Regional moment tensors (Ml>=4)
  - ShakeMaps
- Catalogs/archives:
  - Earthquake catalog (1898-present)
    * flagged event types: quarry blasts, glacial, volcanic
  - Continuous waveforms archive mid-1990s to present
  - Event segmented waveform archive 1987-2012
  - Broadband stations are archived at IRIS DMC

Challenges for real-time earthquake monitoring

- Need to adhere to reporting standards set by ANSS (Latency of earthquake reporting, accuracy of locations and magnitudes).
- Inhomogeneous station distribution.
- Inhomogeneous seismicity distribution, with earthquake depths ranging down to 250 km.
- Quality of waveforms data, data outages.

Future plans

- Short term goals:
  - Revamp the website including earthquake map and station state of health diagnostics
  - Need to implement PDL and QuakeMl
    * Does anybody have db2quakeml and/or quakeml2db converters?
  - Need to phase out remaining SUN computers
  - Need to replace Mac servers with LINUX-based
  - We are working on real time earthquake source inversion using seismic and GPS data

- Earthscope and USArray are coming to Alaska in 2014 and will be present at least through 2019. We need to get ready for it.

Seismic station at the Table Mountain with Mount St. Elias in the background. Photo by Sara Meyer, Alaska Earthquake Center.