FDSN Report 2003
USGS/ANSS/USNSN/NEIC

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ANSS

The Advanced National Seismic System (ANSS) is a major national initiative that serves the needs of the earthquake monitoring, engineering, and research communities as well as national, state, and local governments, emergency response organizations, and the general public. The ANSS has begun to organize, modernize, standardize and stabilize seismic monitoring in the United States. The fully implemented ANSS will organize and manage seismic and associated data collection and distribution, and provide new products and services to a wide range of traditional and new partners, collaborators, and cooperators in the engineering, emergency response and mitigation, government, scientific, educational, industrial, and business communities as well as the general public. Fully implemented, the ANSS will provide (1) alerts within a few seconds of imminent strong earthquake shaking, (2) rapid assessments of the distribution and severity of earthquake shaking for use in emergency response, (3) data and information necessary to issue warnings of a possible tsunami from an off-shore earthquake, (4) data and information necessary to issue warnings of volcanic eruptions, (5) information for correctly characterizing earthquake hazards and for improving building codes, (6) critically needed data on the response of buildings and structures during earthquakes, for safe, cost-effective !design, engineering, and constructions practices in earthquake-prone regions, and (7) high-quality data fundamental to NEHRP-supported mitigation research. The ANSS national inventory includes contributions from numerous seismic networks and it consists of about 550 broadband stations, 1,350 short-period stations, and 2,500 strong motion stations (See attached figure).

Funding of $3.9 million for the ANSS was appropriated in the fiscal year (FY) 2003 federal budget. This money targets the installation of real-time national broadband and urban strong motion instruments in San Francisco Bay area, Nevada, Seattle, Alaska (Anchorage, Fairbanks, Juneau), Central and Southeast US, Hawaii, Northeast US, Salt Lake City, and Wyoming. For more information see http://www.anss.org.

ANSS-backbone/USNSN

!!!!!!!!!!!! The USNSN is in transition to become the national component of the ANSS backbone. The ANSS backbone is a uniformly distributed broadband network spanning the U.S. Its development is a cooperative effort between the USGS, GSN, and many regional seismic networks. An included figure shows the current ANSS-backbone station distribution, stations under development, and planned sites. The full USNSN station list can be obtained online at http://wwwneic.cr.usgs.gov/neis/usnsn/usnsn_home.html.

In addition, the USNSN acquires data from foreign broadband stations in near-real-time. In all, the USNSN automatically acquires over 2000 data channels with an aggregate data

volume of about 2.1 Gbyte/day. !Of this data, about 360 Mbytes/day are archived (two copies each) onto optical storage (an aggregate of nearly 1600 Gbytes to date). !At the same time, the USNSN distributes more than 450 Mbytes/day of seismic data to the research community via an AutoDRM (autodrm@usgs.gov) and the IRIS DMC. Real-time data is provided to ten Regional Seismic Networks including the Pacific and Alaska Tsunami Warning Centers, to augment regional and teleseismic monitoring.

Yearly, the USNSN collects, processes, and provides about 300 Gbytes of high quality raw and derived seismic data to the seismological community, locates more than 20,000 seismic events, and generates more than 1,400 seismic alarms. !Additionally, data from three stations is provided continuously in real-time to the National Data Center (NDC) for nuclear test ban monitoring purposes.

Two new stations began operating in 2002.

MSO	Aug-22-02	46.8293	-113.9406	STS-2	Missoula, MT USA
SDCO	Jul-11-02	37.7546	-105.4012	STS-2	Sand Dunes, CO USA

Targeted installations for 2003.

DGMT	48.58	-104.20	Dagmar, MT USA
MNTX	31.70	-105.38	Cornudas Mtns, TX USA
ERPA	42.13	-80.09	Erie, PA USA
SEKY	36.60	-83.72	Southestern, KY USA

Targeted installations for 2003-2004

| CCUT	37.68	-113.06	Cedar City, UT USA
MBCO	40.52	-108.09	Maybell, CO USA
KNNM	33.84	-103.77	Kenna, NM USA
AMTX	35.18	-101.87	Amarillo, TX USA
VBMS	32.35	-90.88	Vicksburg, MI USA
NNNM	36.42	-108.96	NM USA
OGNE	41.13	-101.72	Ogallala, NE USA
NATX	31.53	-93.88	Sabine Forest, TX USA
CSWY	42.87	-106.31	Casper, WY USA
ECSD	43.74	-96.62	SD USA
KCCO	38.76	-102.79	Kit Carson, CO USA

In addition to new installations, all 54 stations with VSATs will be upgraded to new satellite systems this year. Further station improvements are likely being planned in cooperation with the Albuquerque Seismological Lab as part of the USArray component of Earthscope. These upgrades will possibly include vault improvements and changing sensors to STS-2's or STS-1's.

NEIC

The NEIC is in transition to become the Interim ANSS national operations center. The core of this transition is the development of a new realtime location and alert system. The system will be implemented in several phases. Completion of the first phase is

scheduled for mid July. Phase one will provide NEIC with faster alarms and improved automatic event locations. Phase two, scheduled for completion in May 2004, will be a functionally complete system that includes basic interactive review capabilities. Phase three, tentatively set for release in mid 2005, will incorporate more advance displays, improved interactive analysis software, and new processing algorithms. For more information on the goals of the upgrade, see the *Technical Guidelines for the Implementation of an Advanced National Seismic System, V. 1.0* online at http://www.anss.org.

ANSS - GSN, USNSN, and Possible stations
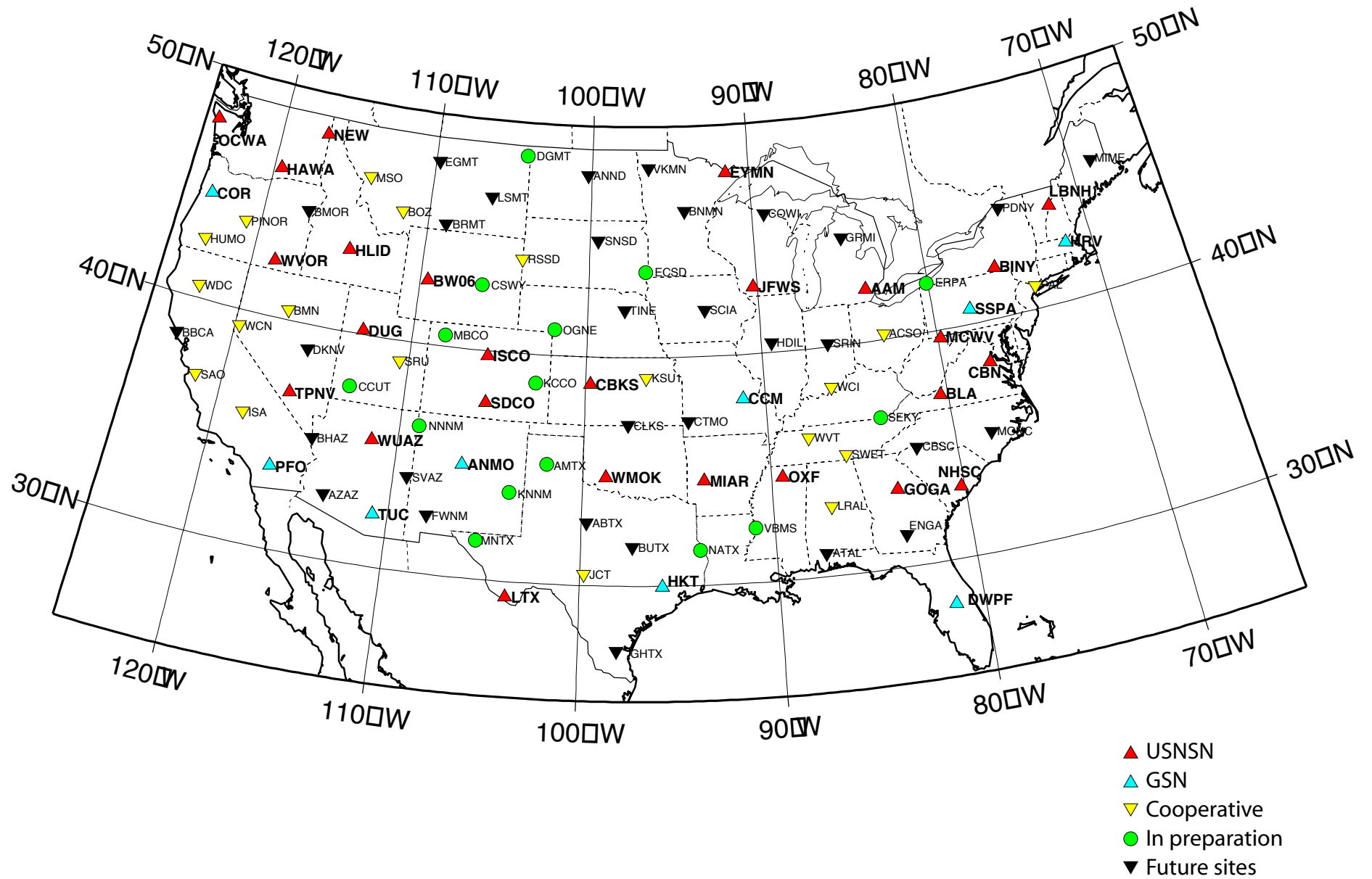
ANSS Inventory
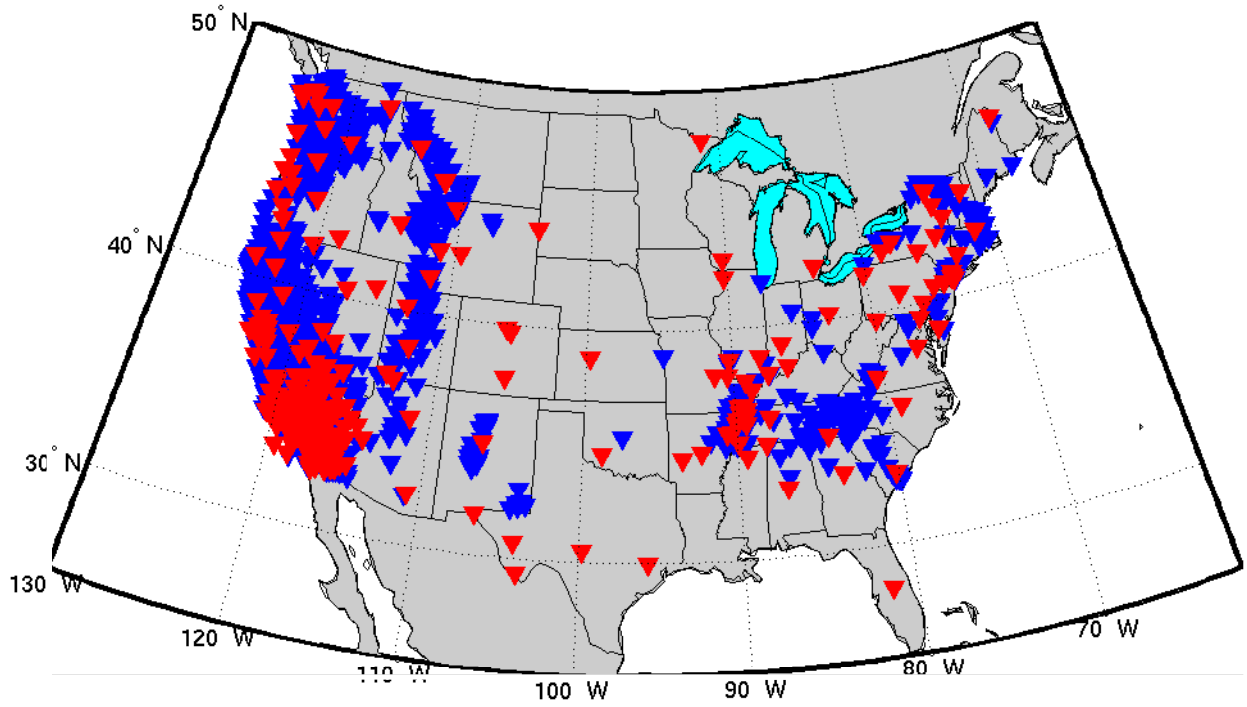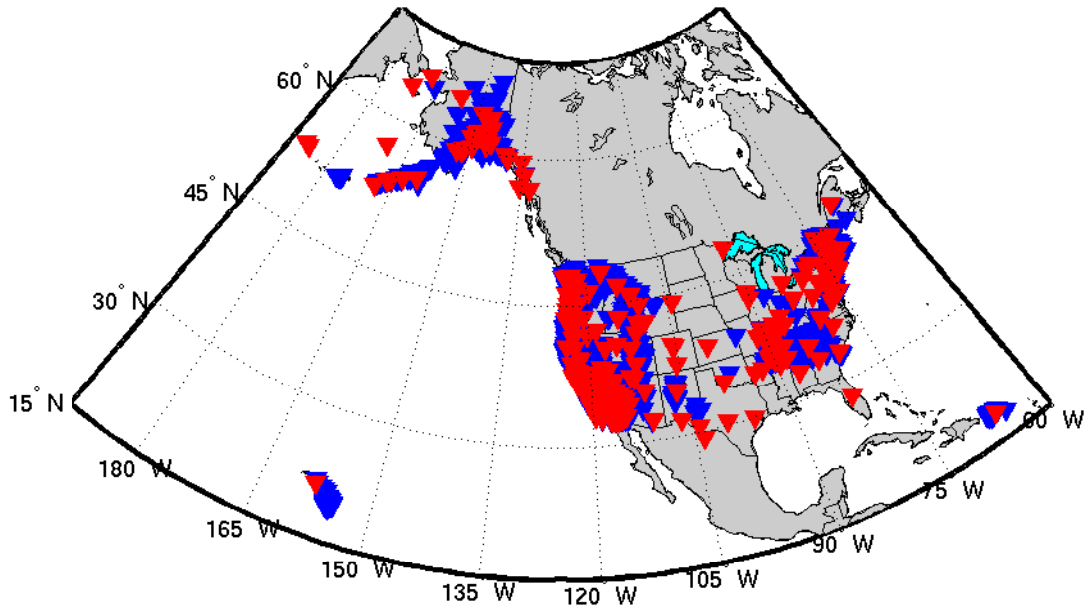
Blue: short-period
Red: broadband