

## **FDSN Report 2004 USGS/ANSS/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.

Funding of \$4.3 million for the ANSS was appropriated in the fiscal year (FY) 2004 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**

The ANSS backbone is a uniformly distributed broadband network spanning the U.S. Its development is a cooperative effort between the USGS, EarthScope, GSN, and many regional seismic networks. An included figure shows the current ANSS-backbone station distribution, stations under development, and planned sites. The full station list can be obtained online at [http://wwwneic.cr.usgs.gov/neis/usnsn/usnsn\\_home.html](http://wwwneic.cr.usgs.gov/neis/usnsn/usnsn_home.html).

2003-2004 installed

ERPA	42.12	-79.99	Erie, Pennsylvania USA
MNTX	31.70	-105.38	Cornudas Mountains, Texas USA
NATX	31.53	-93.88	Sabine Forest, Texas USA
DGMT	48.47	-104.20	Dagmar, Montana USA
LAO	46.66	-106.22	Lasa, Montana USA

2004 planned

BMO44.85	-117.31	Blue Mountains, Oregon USA	
OGNE	41.13	-101.72	Ogallala, Nebraska USA
AMTX	35.18	-101.87	Amarillo, Texas USA
MARC	35.00	-119.34	Maricopa, Kern County, California USA
TZTN			Tazwell, Tennessee USA

2005 targeted

KCCO	38.76	-102.79	Kit Carson, Colorado USA
MBCO	40.52	-108.09	Maybell, Colorado USA
CCUT	37.68	-113.06	Cedar City, Utah USA
KNNM	33.84	-103.77	Kenna, New Mexico USA
VBMS	32.35	-90.88	Vicksburg, Michigan USA
DKNV			

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

## NEIC

The National Earthquake Information Center component of ANSS acquires data from foreign broadband stations in near-real-time. In all, the NEIC automatically acquires over 2000 data channels with an aggregate data volume of about 2.3 Gbyte/day. Of this data, about 710 Mbytes/day are archived (two copies each) onto optical storage (an aggregate of nearly 3500 Gbytes to date). At the same time, the NEIC distributes data to the research community via an AutoDRM ( [autodrm@usgs.gov](mailto: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 NEIC component of ANSS collects, processes, and provides about 725 Gbytes of high quality raw (ANSS Backbone) 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.

The NEIC is in transition to become the Interim ANSS national operations center. The core of this transition is the development of a new real-time location and alert system. The system will be implemented in several phases. The first phase is near completion. Phase one will provide NEIC with faster alarms, improved automatic event locations, and basic interactive review capabilities. Phase two, scheduled for completion in late 2005, will be a functionally complete system that incorporates the NEIC catalog function and 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>.