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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. For more information see http://www.anss.org.

ANSS Backbone

The US National Seismograph Network (USNSN) has been a FDSN member since the FDSN was founded. With the inception of ANSS, the USNSN has been renamed and is now known as the ANSS Backbone. Like the USNSN, the ANSS Backbone is a uniformly distributed broadband network spanning the US. Its development is a cooperative effort between the USGS, EarthScope, GSN, and many regional seismic networks. The full station list can be obtained online at http://earthquake.usgs.gov/anss/.

Recently installed stations

Station	Location	Code	Lat	Lon	Program
NORTH AMERICA					
Amarillo	Texas, U.S.A.	AMTX	35.18	-101.87	USGS/UT
Blue Mountain Observatory	Oregon, U.S.A.	BMO	44.85	-117.31	USGS
Corbin	Virginia,U.S.A.	CBN	38.3	-77.47	USGS
Dagmar	Montana,U.S.A.	DGMT	48.58	-104.20	USGS/MBMG
Erie	Pennsylvania,U.S.A.	ERPA	42.13	-80.09	USGS
Hull Mountain	Oregon, U.S.A.	HUMO	42.61	-122.96	USGS/BDSN
Konza Praire	Kansas,U.S.A.	KSU1	39.10	-96.61	USGS/KSU
Lasa	Montana,U.S.A.	LAO	46.69	-106.22	USGS/MBMG
Lakeview Retreat	Alabama,U.S.A.	LRAL	33.03	-87.00	USGS/AGS
Cornudas Mountain	Texas, U.S.A.	MNTX	31.70	-105.38	USGS/UT
Sabine Forest	Texas, U.S.A.	NATX	31.53	-93.88	USGS/UT
Sewanee	Tennessee,U.S.A.	SWET	35.22	-85.93	USGS/CERI
Tazewell	Tennessee,U.S.A.	TZTN	36.60	-83.72	USGS/CERI

CERI-Center for Earthquake Research and Information, University of Memphis
MBMG-Montana Bureau of Mines and Geology
KSU-Kansas State University
UT-Unversity of Texas

2006-2007 targeted

Improvments to existing ANSS Backbone stations continue in partnership with Earthscope. These upgrades include vault improvements and sensor upgrades. In addition, the Albuquerque Seismological Lab will be installing 13 new Backbone stations during the fiscal year as part of this effort.

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 2.5 Gbyte/day. Of this data, about 860 Mbytes/day are archived (two copies each) onto optical storage (an aggregate

of nearly 4 Tbytes to date). At the same time, the NEIC distributes 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 NEIC component of ANSS collects, processes, and provides about 870 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 Operation Center. The core of this transition is the development of a new real-time location and alert system known as Hydra. The system is being implemented in several phases. The first phase, just going into production, provides NEIC with faster alarms, improved automatic event locations, and sophisticated interactive review capabilities. Phase two, scheduled for completion in late 2006, will incorporates the NEIC catalog function and new processing algorithms (e.g., centroid moment tensor capability). 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://earthquake.usgs.gov/anss .

Improving Earthquake and Tsunami Warning for the Caribbean Sea, Gulf of Mexico, and the Atlantic Coast

The USGS will deploy nine new seismic stations to support US efforts to improve tsunami warnings in the Atlantic and Caribbean region. Installation of the new seismic stations will be a collaborative effort involving member institutions of the Middle America Seismograph Consortium (MIDAS) including: the United States Geological Survey (USGS), the Puerto Rico Seismic Network (PRSN), Seismic Research Unit of the University of the West Indies, The Jamaican Seismic Network, The Departamento de Fisica, Universidad Nacional Autonoma de Honduras, Instituto de Geociencias,Universidad de Panama and other institutions in the region.

USGS Geologic Hazards Team has initiated procurements for all of the equipment necessary to deploy the Caribbean stations. Each of the nine stations will have the following major pieces of equipment:

Datalogger:	Quanterra Q330HR with Baler
Broadband Sensor:	Streckeisen STS-2 Low gain Seismometer
Strong-motion Sensor:	Episensor ES-T Force Balance Accelerometer

Power System:
　　Primary:　　1000-2000 Watt Photovoltaic Solar Panel system with a bank of 5-10 deep-cycle, 24V, 60-100 amp-hour batteries, and a generator.

Secondary: Local AC power and UPS

Initial site evaluations will begin in October 2005 and continue through the end of the year. Stations installation will begin in early 2006 and be completed by September 2006. The following is a summary of the nine proposed station locations. For planning purposes stations are divided into two groups, based on two parameters: 1) the local cooperating partner, which roughly correlates to geographic region and, 2) the level of development required for installation of the site. This list is preliminary and is subject to change depending on issues such as local site conditions, the quality of existing and planned broadband stations, partner considerations and local infrastructure.

Trinidad/Tebago (lat: 10.350 lon: -61.241)
    Partner: Seismic Research Unit of the University of the West Indies in Trinidad.
    Development: equipment upgrade of existing short-period station.

Barbados (lat: 13.166 lon: -59.556)
    Partner: Seismic Research Unit of the University of the West Indies in Trinidad.
    Development: equipment upgrade of existing short-period station.

Antigua (lat: 1 7.566 lon: -61.795)
    Partner: Seismic Research Unit of the University of the West Indies in Trinidad.
    Development: equipment upgrade of existing short-period station.

Dominican Republic (lat: 19.016 lon: -71.145 15)
    Partner: Puerto Rico Seismic Network (PRSN)
    Development: equipment upgrade of existing short-period station.

Cuba, Guatnanamo Bay (lat: 19.983 lon: -75.196)
    Partner: USGS International Programs office
    Development: complete new station build.

Jamaica (lat: 17.950 lon: -76.500)
    Partner: Jamaican Seismic Network: University of the West Indies, Mona
    Development: equipment upgrade of existing short-period station.

Honduras (lat: 14.616 lon: -87.347)
    Partner: The Departamento de Fisica, Universidad Nacional Autonoma de Honduras
    Development: equipment upgrade of existing short-period station.

Panama (lat: 9.183 lon: -79.0769)
    Partner: Instituto de Geociencias,Universidad de Panama
    Development: equipment upgrade of existing short-period station.

Turks and Caicos Islands (lat: 21.883 lon: -71.942)
    Partner: Puerto Rico Seismic Network (PRSN)
    Development: complete new station build