

# CHNet 2004: Status Report of the Swiss Seismological Service

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## Introduction

The Swiss Seismological Service (SED) monitors the seismicity within Switzerland and, for strong earthquakes, world wide with the aim of:

- recording all felt events within Switzerland, which means that the detection threshold is well below the perceptibility threshold,
- archiving all the seismic signals and event parameters on a long term base,
- disseminating information about strong earthquakes to Swiss authorities and the Swiss disaster relief unit,
- disseminating information on felt earthquakes to the public and media,
- providing the all seismological data to the scientific research community,
- developing new methods for detection, characterization and mapping of earthquakes and their effects on ground shaking.

## Seismic Networks

The monitoring system consists of the digital high gain seismic network (SDSNet), the strong motion network (SSMNet) and the portable instruments for aftershock measurements.

## SDSNet

Presently there are 28 broad band stations equipped with STS2 sensors and 7 short period stations with LE3D5 sensors installed (Fig. 1). Five of the broad band stations are installed at large dam sites. One of the stations is part of the global monitoring network of the CTBTO. Furthermore, 10 of the broad band sites are equipped with an additional ES-T strong motion sensor (see table Station list). The seismic signals are digitized on Nanometrics digitizers, either HRD24 or Trident (see table of station list), at 120 samples per seconds which permits to use the full frequency response of the STS-2 sensors. The digitizers have are equipped with a local solid state data buffer of about one hour to cover for short interruptions on the communication lines. The data are transmitted on the intranet of the Swiss federal government to two redundant acquisition systems (DAS) from where the signals and state of health information is transferred to the data processing computer (DPS) at the data centre of the SED. On the DAS event detection is performed by coincidence criteria of the single station STA/LTA detection. Upon declaring an event, a 100 second time window is transferred to the DPS where an

automatic phase picking and location procedures are run. In addition to the event data, the continuous signals are archived at the data centre of the SED. Currently the yearly data volume arises to about 700 Gbyte and goes back to 1999.

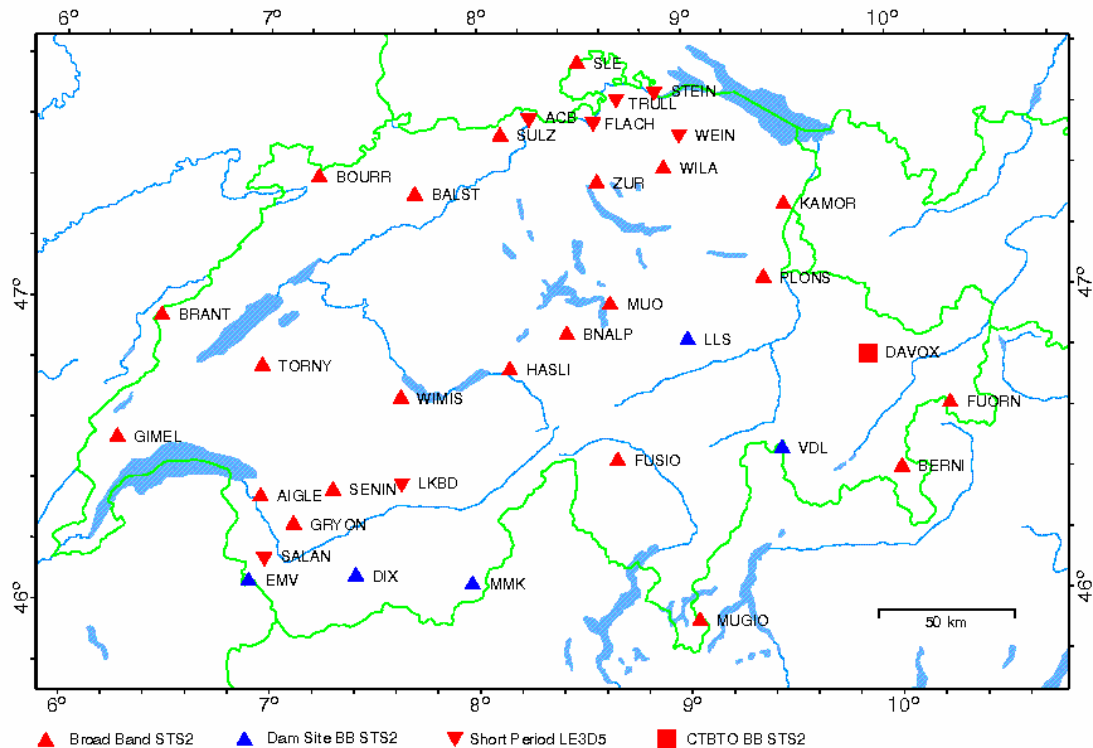


Fig 1 Station map of the Swiss Digital Network

## SSMNet

In addition to the highly sensitive SDSNet the SED is operating a strong motion network of 65 free field stations and 30 stations installed at the major Swiss dams.

These strong motion stations are not continuously recording. The detected events are transferred to the SED by dial up and integrated into the waveform archive of the SDSNet.

## Data Access and Data Exchange

All data, waveform and earthquake parameters, can be requested from the database of the SED by means of AutoDRM. The data format supported is GSE2.x or IMS1.0. For some selected stations, the wave forms are available through SeedLink. However, all connections to the server need to be registered in the firewall. Currently the following institutions retrieve real time data from the SED: ORFEUS data centre, the Austrian NDC ZAMG, the Geophysical Institute in Prague, the INGV in Rome and the IRIS data centre.

## Station List

Name	Latitude	Longitude	Elev	Sensor	Digitizer/sps
ACB	47.58755	8.25434	470	LE3D5	Trident, 120Hz
AIGLE	46.34280	6.95470	800	STS-2	HRD24, 120Hz
BALST	47.33578	7.69498	910	STS-2	HRD24, 120Hz
BERNI	46.41340	10.02310	2310	STS-2	HRD24, 120Hz
BNALP	46.87190	8.42610	1540	STS-2/ES-T	HRD24, 120Hz
BOURR	47.39500	7.23130	860	STS-2/ES-T	HRD24, 120Hz
BRANT	46.93806	6.47294	1145	STS-2	Trident, 120Hz
DAVOX	46.78056	9.87966	1830	STS-2	Trident, 120Hz
DIX	46.08130	7.40910	2410	STS-2/ES-T	HRD24, 120Hz
EMV	46.06440	6.89970	2210	STS-2/ES-T	HRD24, 120Hz
FLACH	47.57197	8.56763	370	LE3D5	Trident, 120Hz
FUORN	46.62022	10.26352	2330	STS-2	HRD24, 120Hz
FUSIO	46.45490	8.66310	1480	STS-2	HRD24, 120Hz
GIMEL	46.53480	6.26590	1130	STS-2	HRD24, 120Hz
GRYON	46.25053	7.11106	1300	STS-2	HRD24, 120Hz
HASLI	46.75680	8.15110	1280	STS-2	HRD24, 120Hz
KAMOR	47.28960	9.48750	1730	STS-2	Trident, 120Hz
LKBD	46.38830	7.62810	1550	LE3D5	HRD24, 120Hz
LLS	46.84830	9.00930	1740	STS-2/ES-T	HRD24, 120Hz
MMK	46.05190	7.96510	2210	STS-2/ES-T	HRD24, 120Hz
MUGIO	45.92186	9.04160	830	STS-2	HRD24, 120Hz
MUO	46.96910	8.63820	1920	STS-2	HRD24, 120Hz
PLONS	47.04921	9.38070	1020	STS-2	HRD24, 120Hz
SALAN	46.14410	6.97300	1885	LE3D5	HRD24, 120Hz
SENIN	46.36335	7.29930	2035	STS-2/ES-T	HRD24, 120Hz
SLE	47.76450	8.49236	590	STS-2	HRD24, 120Hz
STEIN	47.66974	8.86899	540	LE3D5	Trident, 120Hz
SULZ	47.52880	8.11280	670	STS-2/ES-T	Trident, 120Hz
TORNY	46.77365	6.95862	760	STS-2	HRD24, 120Hz
TRULL	47.64870	8.68161	525	LE3D5	Trident, 120Hz
VDL	46.48450	9.45080	1930	STS-2/ES-T	HRD24, 120Hz
WEIN	47.52873	8.98586	555	LE3D5	Trident, 120Hz
WILA	47.41465	8.90753	910	STS-2	HRD24, 120Hz
WIMIS	46.66630	7.62520	770	STS-2	HRD24, 120Hz
ZUR	47.37050	8.58200	615	STS-2/ES-T	Trident, 120Hz