

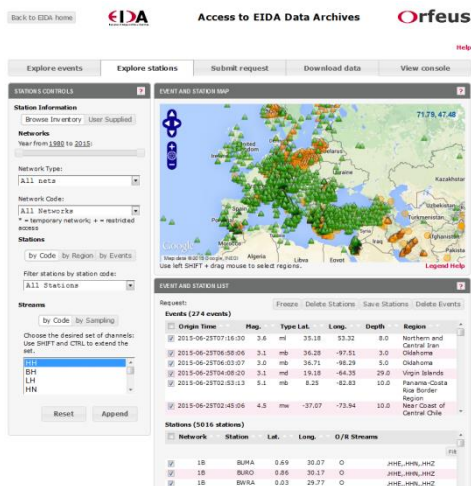
## ORFEUS data infrastructure, services and products

### EIDA => EIDA-Next Generation

More than just data and federated archive

- Coordination of data holdings and software/strategic developments
- Provides quality control of data/metadata
- Helps define seismological center 'best practice' for ORFEUS community

<http://www.orfeus-eu.org/eida/eida.html>



  
**Users:**  
**Geoscientists**  
**Etc...**



## ORFEUS data infrastructure, services and products

### NERA key products: Station Inventory, RRSM and ESM

**NERA**

**Station inventory:** up-to-date station information (“Station Book”) for strong motion and broad-band stations operational in Europe (station metadata, site characterization). [www.orfeus-eu.org/stationbook](http://www.orfeus-eu.org/stationbook)

**Rapid Raw Strong Motion database (RRSM):** a high-quality, automatically and rapidly filled database build on state-of-the-art data collection and processing software to provide near real-time (web) access to open (unrestricted) strong motion data after a significant earthquake in Europe.

<http://www.orfeus-eu.org/rrsm>

**Engineering Strong Motion database (ESM):** a single, high quality database with historical and present time strong motion waveforms and carefully reviewed metadata, dynamically updated with manually processed data when significant new events occur. <http://www.orfeus-eu.org/esm>

## ORFEUS data infrastructure, services and products

### NERA key products: Station Inventory, RRSM and ESM

**NERA**

#### **RRSM** Rapid Response SM

Collection of accelerometric data from EIDA immediately after an earthquake

- Magnitude threshold: 3.5
- since **2005**
- wfs are processed automatically (software **scwfparam module of SeisComp3** )
- Station and event metadata are not revised
- Input for SHAKEMAPS provided

**At 2015-06-15:**

- **3700** events
- **>50000** waveforms,
- only digital instruments
- raw wf, DS and PSA (5%-dam.) comp. up to 10s
- PGA and PGV, SA @ 0.1s 0.3s and 1s

#### **ESM** Engineering SM

Collection of accelerometric data from EIDA and/or offline data

- Magnitude threshold: 4
- since **1969**
- wfs are processed manually (Paolucci et al. 2011)
- Station and event metadata are periodically revised

**At 2015-06-15:**

- **2345** events
- **2500** stations
- **14800** waveforms including records from analog instruments
- Unpr. acc, vel, DS and PSA (5% damping) PGA, PGV, PGD

## Digital Object Identifiers for seismic networks

**“... to ensure that permanent seismic networks and individual experiments undertaken by small groups or individuals are reliably identified in citations by researchers or monitoring networks that make use of their data ...”**

ID#	Network Name	Number of Stations	Operator	Region	Active	Identifier
AB	National Seismic Network of Azerbaijan	3	RISIC-IRIAD	Azerbaijan	ODC	-
AI	Andean Seismographic Array (And-Net)	9	ODC, IAA	Andarica	ODC	-
AW	AWI Network Antarctica (AWI-Net)	18	AWI	Antarctica	GFZ	-
BA	Università della Basilicata	1		Italy	ODC	-
BE	Belgian Seismic Network	5	RSB	Belgium	ODC	-
BN	UK-Net, Blacknet Array	5	AWI Blacknet	United Kingdom	ODC	-
BS	Bulgarian Seismic Network	18		Bulgaria	NIEP	-
BW	BayernNetz	62		Germany	LMU	-
CA	Catalan Seismic Network	7	ICOP	Catalonia	ODC	-
CH	CH - Swiss Seismological Network	198	Swiss Seismological Service	Switzerland	SED	-
OC	GEONON, Centre Asian Cross-border Network (GEONON)	7	Kyrgyz Institute of Seismology	Central Asian	GFZ	-
CL	Corvish RIA Laboratory (FRANCE)	17		France	RESB	doi:10.14470/TR56040
CR	Canadian National Seismograph Network	3	GLSN	Canada	GFZ	-
OR	Orfeus Seismograph Network	1	Umw. Zaphis	Greece	ODC	-
CO	ODC Seismic Network (Strategic Plate Boundary Observatory Chile)	20	GFZ/IDP	Northern Chile	GFZ	-
CZ	Czech Regional Seismic Network	14	IGCIS/PEHU	Czech Rep.	GFZ	-

**Basic Network Information**

Network code: GE Type: Permanent Identifier: doi:10.14470/TR56040  
 Restricted: No Archived at: GFZ (Citation information)  
 Network KML file: [View in Google Earth](#) DataCite metadata: [HTML](#) [XML](#)  
 Time Range: 1993 - Seismic metadata: [Station XML](#)  
 Institution(s): GFZ/partners  
 Creator(s): GEOFOR Data Centre  
 Description: GEOFOR Program, GFZ Potsdam, Germany  
 Abstract: GEOFOR (GEOFORschungsNetz) is the global seismological broad-band network operated by the German GeoForschungsZentrum (GFZ). The GEOFOR seismic network came into being in 1993 as one of the three pillars of the GEOFOR program dedicated to Ernst von Rebeur-Paschwitz, proposer of a global earthquake monitoring system, who recorded the first teleseismic seismogram in Potsdam in 1889. The program and its seismic network were created to provide high quality broad-band data for scientific use and foster common standards in the seismological community. The network has evolved towards real-time data acquisition and distribution while keeping the high quality broad-band data in focus. Today the network plays a leading role in global real-time seismology providing valuable data for almost all fundamental and applied (global/regional) seismological research projects at GFZ and the wider seismological community. The GEOFOR network is operated jointly with more than 50 international partners and in 2014 consists of about 50 active stations on all continents, but concentrated in Europe and the Mediterranean region as well as in the Indian Ocean. Station operation is mostly performed by local partners with GFZ guidance and logistic support, allowing the global network to be well-advanced technically while still extremely cost-effective. All stations are equipped with broad-band sensors (generally STS-2) that allow resolution of the complete seismic spectrum from small high-frequency local earthquakes to the largest global earthquakes. Data from all stations are freely redistributed in real-time for earthquake monitoring and tsunami warning centers immediately after acquisition at the GEOFOR data centre via wired or satellite links. Archived data is also available. GEOFOR is part of the Modular Earth Science Infrastructure (MESI) housed at GFZ.  
 \* Description is taken from seismic metadata, and may not match the preferred title for citations.

**Network Codes**

The following network codes are assigned by the FDSN archive (IRIS DMC) to provide uniqueness to seismological data streams.

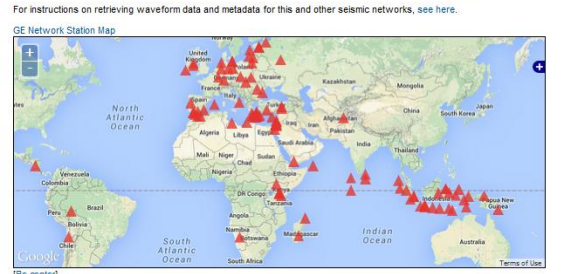
Request a new network code | Other available formats:

Show network types:  All  Permanent  Temporary

Show only network codes starting with:

Search for network code or name:

network code	network name	network operator	operator country	deployment country/region	DOI
IA(Q009-2002)	Aifla	Institut des Sciences de la Terre	FR France	France	-
IA(Q03-2003)	Waste Isolation Pilot Plant Noise Analysis	New Mexico Tech INMET Mining & Technology (NM USA)	US United States	United States	-
IA(Q04-2003)	Mining-Induced seismicity network at mine Trogen-Hotel, Bozop	Ruhr Universität Bochum (RUB Germany)	DE Germany	Germany	doi:10.14470/TR56040
IB(Q006-2008)	UCANDIA	University of Frankfurt	DE Germany	Germany	-
IB(Q00-2010)	Culf of Alaska Active Source Experiment	Woods Hole Oceanographic Institution (WHOI)	US United States	United States	-
IB(Q03-2003)	Assured Arctic Awareness	University of Washington	US United States	United States	-
IB(Q04-2004)	Sweetwater Array	IRIS HD (DO)	US United States	United States	-
IC(Q009-2000)	Urban Seismology 2	Karlsruhe Institute of Technology (KIT GFZ Germany)	DE Germany	Germany	-
IC(Q09-2004)	Seismic Characterization of Menengit Crater, Kenya	University of Texas at El Paso (UTEP)	US United States	United States	-
IC(Q00-2010)	Whitlans/USCS	UC Santa Cruz	US United States	United States	-
IC(Q04-2004)	MSH Node Array	University of New Mexico (UNM)	US United States	United States	doi:10.14470/TR56040



**Extended Network Information for network GE**

Show/Hide additional network information:

Creator(s): GEOFOR Data Centre  
 Title: GEOFOR Seismic Network  
 Publisher: Deutsches GeoForschungsZentrum GFZ  
 Network DOI: doi:10.14470/TR56040  
 Citation example: GEOFOR Data Centre (1993): GEOFOR Seismic Network. Deutsches GeoForschungsZentrum GFZ. Other/Seismic Network: doi:10.14470/TR56040.

Related Reference(s): 1. Hanks, W.; Kind, R.: The GEOFOR Program. *Annals of Geophysics* v. 37, n. 5, Nov. 1994. *ISBN 2037-416X*. doi:10.4401/ag-4196

**Network Station List (Network Code: GE)**

#	Station Code	Station description	Begin	End	Loc	Channels
<<	return to network list					
1	APE	GEOFOR Station Apirathos, Naxos	2000-200	2008-122	-	BH BHN BHZ HHE HHN HHZ LHE LHN LHZ SHE SHW SHZ VHE VHN VHZ

**FDSN recommendations for seismic network DOIs and related FDSN services**

Adam Clark (1), Peter L. Evans (2), Angelo Strollo (2)

- Incorporated Research Institutions for Seismology (IRIS), 2200 New York Avenue NW, Suite 400, Washington, DC 20005, 202-462-2200. [www.iris.washington.edu](http://www.iris.washington.edu)
- Deutsches GeoForschungsZentrum GFZ, Telegrafenberg, 14473 Potsdam, Germany. [www.gfz-potsdam.de](http://www.gfz-potsdam.de)

Version 1.0  
21 July 2014

**6. Examples and overview**

- FDSN recommendations for metadata fields, station format and landing page
- FDSN Metadata Field Recommendations
- Metadata (Citation Fields)
- Station
- Station
- Publication Year
- Recommended Fields
- Resource Type
- Description
- Station
- Optional Fields
- Coordinate
- Location
- Site
- State
- Related Identifier
- Citation Format
- Landing Page

**2. DOI services to be offered by FDSN**

- DOI Migration Service
- Station Value Lookup
- Temporary Network Listing
- Full Data Retrieval
- Virtual Networks
- High Storage
- Station
- DOI Generation and Management Service (FDSN-extended DOI's)
- DOI Metadata Generation

<http://www.fdsn.org/services/doi/>

## Digital Object Identifiers for seismic networks

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**Article**

**Development and Operation of a Regional Moment Tensor Analysis System in the Philippines: Contributions to the Understanding of Recent Damaging Earthquakes**

Punangbaran, Hiroaki Kumagai, Nelson Pulido, Jun Bonita, Masaru Nakano, Tadahshi Yamashina

01/2015

**ABSTRACT** A network of 10 satellite-telemetered broadband stations was established under a cooperative project between Japan and the Philippines, and a source analysis system based on waveform inversion of regional seismology.

Full-text [Download full-text](#)

Available from: Nelson Pulido, Feb 03, 2015

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**REFERENCES (2)** **CITED IN (8)** Sorted by: Appearance in publication

Article: **Estimation of the magnitudes and epicenters of Philippine historical earthquakes**  
 Maria Leonida P. Baudista, Kazuo Oike  
[\[Show abstract\]](#)  
 Tectonophysics 622000; 317-337-369. DOI 10.1016/S0040-3851(98)00272-3 · 2.87 Impact Factor

Performance of Broadband Seismic Network of the Philippines: A A Melosantos, K V C Soriano, P C M Alcones, J U Parang, J D Bonita, I C Narag, H Kumagai, H Inoue · *Journal of Disaster Research* 10 2015

GEOFON Seismic Network. Geofon Data Centre - 1993. Deutsches Geoforschungszentrum GFZ, Other/Seismic Network

Article: **Waveform inversion in the frequency domain for the simultaneous determination of earthquake source mechanism and moment function**  
 M. Nakano, H. Kumagai, H. Inoue  
[\[Show abstract\]](#)  
 Geophysical Journal International 042000; 173(3):1600 - 1611. DOI 10.1111/j.1365-246X.2008.03763.x · 2.72 Impact Factor

Article: **Real-time earthquake monitoring for tsunami warning in the Indian Ocean and beyond**  
 Hanika W. Saul, J. Weber, B. Becker, J. Harjoto, P. Fauzi, GITEWS Seismology Group  
[\[Show abstract\]](#)  
 Natural hazards and earth system sciences 012010; 10(12). DOI 10.5194/nhess-10-2811-2010 · 1.83 Impact Factor

Article: **Discrete wave number representation of elastic wave fields in three-space dimensions**  
 Michel Bouchon  
[\[Show abstract\]](#)  
 Journal of Geophysical Research Atmospheres 011979; 84:3698-3614. DOI 10.1029/JB084B07p3699 · 3.44 Impact Factor

The authors of this publication are on ResearchGate and have made the full-text available on their profiles.

Article: **Development and Operation of a Regional Moment Tensor Analysis System in the Philippines: Contributions to the Understanding of Recent Damaging Earthquakes**  
 Available from: Nelson Pulido

Sign up for a free account to access the full-text version from them.

[Join for free](#)

**GFZ**  
Helmholtz-Zentrum  
Potsdam

**GEOFON Program**

Mission | Earthquake Info | Waveform Access | Software | Contribute | Contact | Home

**Basic Network Information**

Network code: GE Type: Permanent Identifier: doi:10.14470/TR560404

Restricted: No Archived at: GFZ (Citation information)

Network KML file: [N](#) (View in Google Earth) DataCite metadata: [\[HTML\]](#) [\[XML\]](#)

Time Range: 1993 - Seismic metadata: [Station XML](#)

Institution(s): GFZ partners

Creator(s): GEOFON Data Centre

Description\*: GEOFON Program, GFZ Potsdam, Germany

Abstract: GEOFON (GEOForschungsNetz) is the global seismological broad-band network operated by the German Geoforschungszentrum (GFZ). The GEOFON seismic network came into being in 1993 as one of the three pillars of the GEOFON program dedicated to Ernst von Rebeur-Paschwitz, proposer of a global earthquake monitoring system, who recorded the first teleseismic seismogram in Potsdam in 1889. The program and its seismic network were created to provide high quality broad-band data for scientific use and foster common standards in the seismological community. The network has evolved towards real-time data acquisition and distribution while keeping the high quality broad-band data in focus. Today the network plays a leading role in global real-time seismology providing valuable data for almost all fundamental and applied global/regional seismological research projects at GFZ and the wider seismological community. The GEOFON network is operated jointly with more than 50 international partners and in 2014 consists of about 50 active stations on all continents, but concentrated in Europe and the Mediterranean region as well as in the Indian Ocean. Station operation is mostly performed by local partners with GFZ guidance and logistic support, allowing the global network to be well-advanced technically while still extremely cost-effective. All stations are equipped with broad-band sensors (generally STS-2) that allow resolution of the complete seismic spectrum from small high-frequency local earthquakes to the largest global earthquakes. Data from all stations are freely redistributed in real-time for earthquake monitoring and tsunami warning centers immediately after acquisition at the GEOFON data centre via wired or satellite links. Archived data is also available. GEOFON is part of the Modular Earth Science Infrastructure (MESI) housed at GFZ.

\* Description is taken from seismic metadata, and may not match the preferred title for citations.

For instructions on retrieving waveform data and metadata for this and other seismic networks, see [here](#).

GE Network Station Map

[Re-center]

**Extended Network Information for network GE**

Show/hide additional network information:

Creator(s): GEOFON Data Centre

Title: GEOFON Seismic Network

Publisher: Deutsches Geoforschungszentrum GFZ

Network DOI: doi:10.14470/TR560404

Citation example: GEOFON Data Centre (1993): GEOFON Seismic Network. Deutsches Geoforschungszentrum GFZ. Other/Seismic Network. doi:10.14470/TR560404.

Related Reference(s): 1. Hanks, W.; Kind, R. - The GEOFON Program. *Annals of Geophysics* v. 37, n. 5, Nov. 1994. *ISSN* 2037-416X. doi:10.4401/ag-4196

[+]

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