

The GEOSCOPE Program

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The purpose of the GEOSCOPE Program was the installation of 25 stations in the standard configuration defined by the FDSN (VBB 24 bit, continuous recording at 20 samples/s). The installation is almost complete. The effort this year focussed on the accessibility of data, either through the IRIS/GOPHER system for large earthquakes, through CD-ROM production, and on line using the Juke-box JUMBO in the GEOSCOPE Data Center (Paris). This aspect will be stressed as the cooperation between IRIS and GEOSCOPE intensifies.

Present status of the network

- 17 Stations maintained by DT/INSU (Saint-Maur, near Paris): ATD, CAN, CAY, HDC2, HYB, INU, KIP, NOU, PPT, RER, SCZ, SEY, SSB, TAM, UNM, WFM, WUS. Among these 17 stations, 14 stations are operating in the VBB configuration (triggered VBB channel at 20 samples/s, continuous recording of LP channel at 1 sps, VLP channel at 0.1 sps). 1 station has yet to be transformed (WFM in 1994). The AGD station (Djibouti) has been unoperational since December 1990 for political reasons, but was reinstalled at ATD in July 1993. CAY and HDC2 will be reinstalled in 1994 in a VBB configuration (CAY on another site called KOG, with a STS1 seismometer and HDC2 with a STS2 seismometer).

- 6 Stations maintained by EOPGS (Ecole et Observatoire de Physique du Globe de Strasbourg): AIS, CRZF, DRV, ECH, NOU and PAF. All these stations (except AIS) are now in VBB configuration; the last station transformed is CRZF, in December 1993. AIS (New Amsterdam Island, in the Indian Ocean) has been a GEOSCOPE station since 1993, December 25th.

- 2 Stations maintained by ORSTOM in Africa: BNG and MBO in BRB/VLP version (VLP continuous recording 0.1 sps, BRB triggered 5 sps). These stations will be transformed as soon as possible.

The location of all present GEOSCOPE stations is presented in fig. 1. The status of the network since 1982 is presented in table I, with the different steps of the configuration (VLP only, BRB/VLP, VBB/LP/VLP).

In the present VBB configuration, some data are lost in stations due to the imperfection of the triggering criteria. In parallel to the classical recording in station (VBB configuration described previously), seismic data are also continuously recorded on a magneto-optical disk at 20 sps. This method designed by the Technical Division at Saint-Maur is implemented in four stations, UNM, SCZ, ATD and WUS. It seems to give satisfactory results. The system will be implemented in other stations in the next few years.

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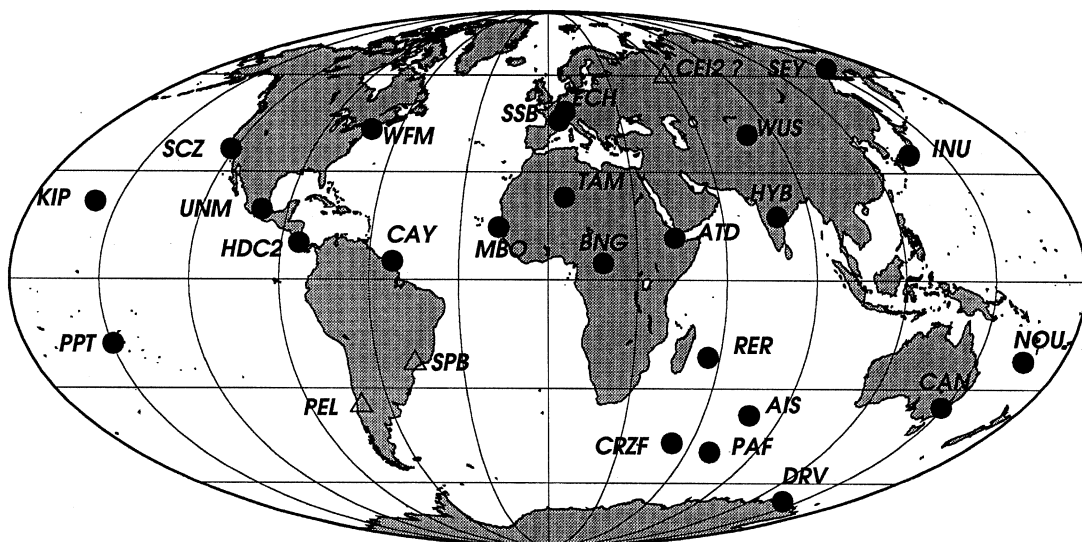


Fig. 1. GEOSCOPE stations as of 31 December 1993, and stations planned in 1994.

Future sites planned

We plan to install 2 or 3 more stations:

- PEL (Peldehue, Chili) - A STS1 station in VBB configuration will be installed this year, as soon as possible (some works are necessary before hand);
- SPB (Sao Paulo, Brazil) - A STS1 station in VBB configuration is planned in 1994, waiting for final authorization;
- Russia - One possibility is a joint GEOSCOPE-IRIS station in Borovoye (Kazakhstan). We are also exploring other sites with our colleagues at I.I.E.P.T.M.G. (Moscow).

The purpose of the GEOSCOPE Program is almost complete with the installation of these last stations. Now our goal is to finalize the transformation of all stations in VBB configuration (with 24 bits digitizers) in order to improve their quality.

The GEOSCOPE Data Center

The GEOSCOPE Data Center has been organized since 1992 around the master piece of the Center, «JUMBO», a juke-box of 300 Gbytes. All incoming data are stored in the juke-box after time corrections (fig. 2). The data are also written on CD-ROMs in seed format, which are distributed worldwide. 14 CD-ROMs are now available with data from January 1988 (julian date 88 001) to June 1990 (julian date 90 174). The CD-ROMs # 9-14 were produced in 1993. In order to facilitate the exchange of data with the scientific community, the juke-box is now open to external users and data are easily available using our anonymous ftp. The procedure is presented in the section below («README»).

Table 1. GEOSCOPE stations as of February 1994.

Station	Location	Latitude	Longitude	Elev. (m)	Started			Temporarily interrupted or stopped	Station
					VLP m/s/s	BRB/VLP m/s/s	VBB/VLP m/s/s		
RA	AGD	Arta grotte, Djibouti	11.529 N	42.824 E	450.0	9 Mar. 1985	6 Aug. 1987	9 Dec. 1990	AGD
	AIS	New Amsterdam Island	37.797 S	77.569 E	35.9			25 Dec. 1993	AIS
RA	ATD	Arta tunnel, Djibouti	11.530 N	42.847 E	610.0			7 Jul. 1993	ATD
RA	BNG	Bangui, Centrafica	4.435 N	18.547 E	378.0	17 Dec. 1987	12 Sep. 1988		BNG
RA	CAN	Canberra, Australia	35.321 S	148.999 E	650.0			27 Nov. 1987	CAN
RA	CAY	Cayenne, French Guyana	4.948 N	52.317 W	25.0	22 Jul. 1985	18 Dec. 1985		CAY
	CRZF	Port Alfred, Crozet Islands	46.430 S	51.861 E	140.0	13 Mar. 1986	20 Jan. 1988	1 Dec. 1993	CRZF
	DRV	Dumont d'Urville, Antarctica	66.665 S	140.010 E	40.0	1 Feb. 1986	1 Feb. 1988	25 Jan. 1991	DRV
RA	ECH	Echery, France	48.216 N	7.158 E	580.0			7 Nov. 1990	ECH
RA	HDC2	Heradia, Costa Rica	10.027 N	84.117 W	1233.2		25 Sep. 1987		HDC2
RA	HYB	Hyderabad, India	17.417 N	78.553 E	510.0			15 Jan. 1989	HYB
RA	INU	Inuyama, Japan	35.350 N	137.029 E	132.3			5 Mar. 1987	INU
RA	KIP	Kipapa, Hawaii, USA	21.423 N	158.015 W	70.0		17 Apr. 1986	28 May 1988	KIP
	MBO	M'Bour, Senegal	14.391 N	16.955 W	3.0	1 Sep. 1985	30 Nov. 1987		MBO
	NOC	Nouméa, New Caledonia	22.284 S	166.432 E	5.0	10 Dec. 1985		27 Oct. 1987	NOC
RA	NOU	Port Laguerre, New Caledonia	22.101 S	166.303 E	112.3	21 Mar. 1988	8 May 1989	2 Nov. 1992	NOU
	PAF	Port aux Français, Kerguelen	49.351 S	70.213 E	17.0	1 Jan. 1983	28 Jan. 1988	1 Jan. 1993	PAF
	PCR	Plaine des Cafres, La Réunion	21.196 S	55.578 E	1520.0	25 Jul. 1982			PCR
RA	PPT	Papeete, Tahiti	17.569 S	149.576 W	340.0	31 May 1986	24 Nov. 1986	5 Oct. 1991	PPT
RA	RER	Rivière de l'Est, La Réunion	21.159 S	55.746 E	834.0		10 Feb. 1986	4 Jul. 1990	RER
RA	SCZ	Santa Cruz, California, USA	36.598 N	121.403 W	261.0	11 Jun. 1986	11 Jun. 1987	28 Sep. 1991	SCZ
	SEY	Seymchan, CEI	62.933 N	152.373 E	206.0			23 Sep. 1990	SEY
RA	SBB/SSB	St. Sauveur Badole, France	45.279 N	4.542 E	700.0	27 Apr. 1982	14 Jan. 1985	16 Dec. 1986	SBB/SSB
	TAM	Tamanrasset, Algeria	22.791 N	5.527 E	1377.0	10 Nov. 1983		11 Mar. 1990	TAM
RA	UNM	Unam, Mexico, Mexico	19.329 N	99.178 W	2280.0			7 Jun. 1990	UNM
RA	WFM	Westford, Massachusetts, USA	42.611 N	71.491 W	87.5	13 May 1984	10 Apr. 1986		WFM
	WUS	Wushi, Xinjiang, China	41.199 N	79.218 E	1457.0			29 Oct. 1988	WUS

RA = Remotely accessible.

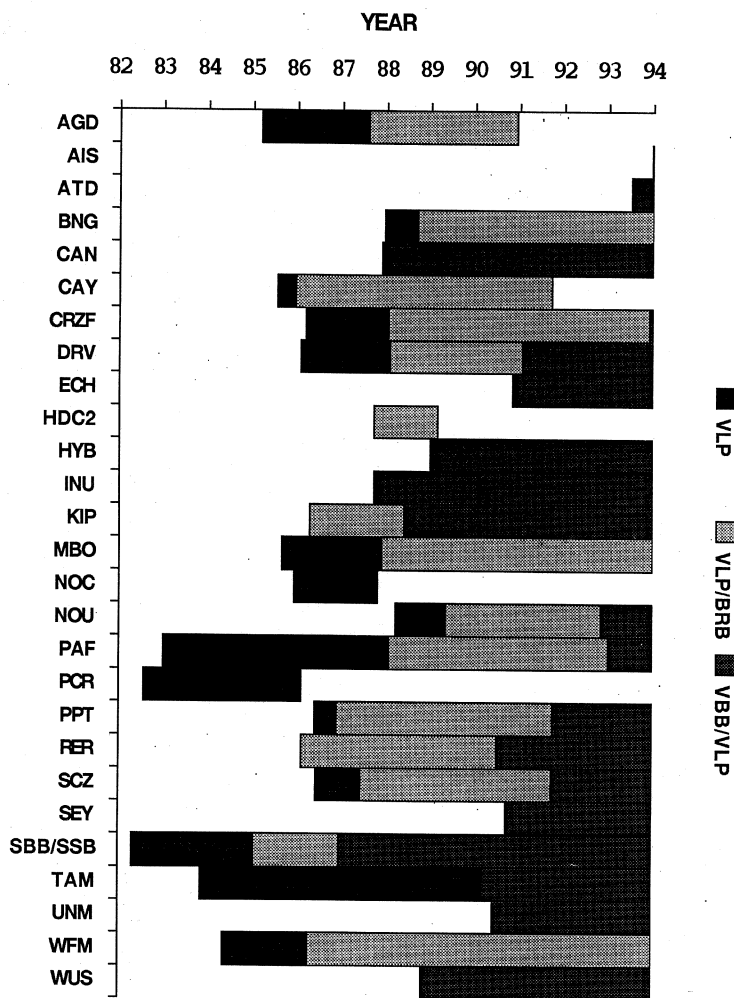


Fig. 2. Data availability for GEOSCOPE stations.

Since the end of February, 1994, all GEOSCOPE data have been on JUMBO (except a few data gaps in 1990 which will be filled in the coming months). The objective of the Data Center, which should be achieved in 1994, is to produce the corresponding CD-ROMs and to open the juke-box more easily through a procedure of automatic data request (request put in the e-mail address geoscope@ipgp.jussieu.fr and data available in the anonymous ftp «[geosp1.ipgp.jussieu.fr](ftp://geosp1.ipgp.jussieu.fr)»).

Ocean Bottom Observatory «OFM»

The improvement of global coverage by seismic station is only possible with the installation of Ocean Bottom Seismometers. A first stage was overcome with the pilot OFM/SISMOBS experiment (Ocean Bottom and Borehole Observatory) which was conducted between April 28 and May

11, 1992 close to the Mid-Atlantic Ridge. The technical goal of the experiment was to show the feasibility of installing and recovering two sets of three-component broadband seismometers, one inside an ODP borehole and another inside an OBS sphere in the vicinity of the hole. The second goal was to obtain for the first time the seismic noise level in the broadband range 0.5-3600 s, to conduct a comparative study of broadband noise on the sea floor, downhole and on a continent, and to determine the detection threshold of seismic events.

The next step will be the installation of a permanent Ocean Bottom seismic station which can provide the scientific community with high quality seismic data in some oceanic areas devoid of seismic instrumentation. The conquest of the oceanic space constitutes the new challenge for the next ten years, making active international cooperation necessary.

Data distribution

How to get GEOSCOPE data and network information

GEOSCOPE data are stored on different media. Recent data of large earthquakes are on magnetic disks; they are also available through the IRIS GOPHER system for three or four stations only. All data are stored on «JUMBO», a juke-box of 300 Gbytes in the GEOSCOPE Data Center of Paris. The data are also distributed on CD-ROMs, presently from January 1988 to June 1990. The next CD-ROMs will be produced in the coming months.

The best way to get information on the teletransmitted GEOSCOPE data for all recent large events is to use anonymous ftp. Here is an example of what you have to do:

ftp 134.157.27.191 or ftp geosp1.ipgp.jussieu.fr

```
Name:      anonymous
password:  remote_loginname
ftp >      cd DATAGEOSCOPE
ftp >      ls                               to see all present files (file1, file2...)
ftp >      get file1
ftp >      get file2
ftp >      quit
```

Example of files:

```
alas93133
hokk93015
hokk93195
ERRATA           these errata concern the CD-ROMs
geopz            file corresponding to instrument transfert functions
geoloc           file corresponding to station locations
```

The files (file1, file2...) are in seed format, the filename indicates the region of the event, the year and the julian day. Example: hokk93015 (Hokkaido, January 15th, 1993).

Attention: in these files the time corrections may be imprecise when the length of record was too short to get a good estimation of these time corrections.

It is possible to automatically get data from the GEOSCOPE data base. To do this, you have to follow the instructions of «**README**» described in the section below. An automatic data request procedure via e-mail will be installed very soon (geoscope@ipgp.jussieu.fr).

Data distribution

«README» short presentation for an immediate use of the GEOSCOPE data base

Please do the following:

- 1) **ftp geosp1.ipgp.jussieu.fr** or **ftp 134.157.27.191**

user: **anonymous**
Password: **remote_loginname**
> **cd INFO-GEOS**
> **get README** (please read it attentively)
> **get readme-geos** (short presentation)
> **get rqgeos** (program preparing your request)
> **quit**

add your e-mail address at line 12 of the rqgeos script
chmod +x rqgeos (to make the rqgeos script executable)

- 2) > **rqgeos**

station name: * (for all) or **SSB ATD bng** (it is allowed to use lowercases,
channel name: * (for all) or **vh lh mh bh** specifies channels using seed naming
or **vlp lp brb vbb** specifies channels using Geoscope naming)

starting time:
year: **1990**
julian day: **61**
hour: **12**
minute: **30**

final time:
year: **1990**
julian day: **61**
hour: **21**
minute: **40**
option: **1 or 2** (1 to get the listing of the existing data files only)
(2 to get the data only)

Your request file will be: **rqg-11221431-remote_loginname-1**
11221431 ⇒ month, day, hour, minute of the date of the request

- 3) **ftp geosp1.ipgp.jussieu.fr** or **ftp 134.157.27.191**

user: **anonymous**
Password: **remote_loginname**
> **cd consulte**
> **put rqg-11221431-remote_loginname-1**
> **quit**

- 4) **At least 15 minutes later**

an e-mail message will be sent to you to inform you of the completion (or the failure) of your request.

ftp geosp1.ipgp.jussieu.fr or **ftp 134.157.27.191**

user: **anonymous**
Password: **remote_loginname**
> **cd consulte**
> **get data-rqg-11221431-remote_loginname-1** (for option 1)
> **get seism-rqg-11221431-remote_loginname-1** (for option 2; data in seed format)
> **quit**