GeoForschungs**N**etz
des GeoForschungsZentrums Potsdam
In memoriam Ernst von Rebeur-Paschwitz

The **GEOFON** Program

GEOFON Status Report for the FDSN Meeting Hawaii June 2002

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Network

The permanent GEOFON network consists presently of 48 stations (table 1). New stations were installed in 2001 in Al Marj (Libya) and Helgoland Island (Germany). The San Fernando (Spain) station was moved to another location due to vandalism. The station Mt. Meron (Israel) had to be closed and another North Israelian station (Kfar Sold) was chosen for the GEOFON network instead. In Spain, another station (Sierra Elvira, Granada) became part of GEOFON. At three stations, Piszkes (Hungary), Helgoland (Germany) and Summit Camp (Greenland), the new Earth Data digitizer was installed instead of the former Quanterra dataloggers (or Reftek in case of Summit) with great success. But the main activity in terms of network upgrade was the installation of in total 45 SeisComP communication systems in 35 stations and 10 data collection centers. Even from the Greenland ice cap real-time data are transmitted now in real-time to the GEOFON DC. A small, low power, PC/104 based SeisComP box with Linux OS was specially developed at GFZ and is now commercially manufactured by a German company and sold also to other customers worldwide.

Data Center

The complete data from 34 permanent stations are meanwhile transmitted to the GEOFON DC through SeedLink connections in (near) real-time (Fig. 3). The achieved time delays range between a few seconds (Internet or dedicated lines) over a few minutes (up to 30) for fast dial-up and up to 24 hours (resource saving overnight transfer). The incoming SeedLink data are immediately forwarded to several other data centers like the IRIS DMC, the ODC and several more. An automated NRT data processing and archival system checks the data for quality problems, runs an event picker and copies the data into the online NRT data base. A new software package (AutoLoc) takes the picks, associates arrivals, locates events and distributes the results for the most important events as alert emails and web page entries in less than 2 minutes after the first arrivals.

In replacement of the old SPYDER system, a new event window data base named QuickFARM was created. It is triggered by NEIC alerts and supplemented by Harvard CMT solutions. The windows are cut from the NRT data base and the window criteria are those of the former FARM system. Presently the QuickFARM MiniSEED event files are only available by ftp links through the GEOFON web site.

A twin Linux PC system with a total capacity of 2 TB disk for holding the entire data archive of the GEOFON DC online was installed in the beginning of 2002. The tape robot system is still used as backup medium. New archiving software was developed for automatic processing and archiving of the incoming online (NRT) and offline data (DCP) into the new

data base architecture (Fig. 4). The complete GEOFON data archive is being reprocessed and the most important part of the archive (e.g. the full permanent GEOFON network data) is available now online. The rest will be as well soon. Data requests can be fulfilled much quicker now. The required operator time could substantially be reduced another time with the new processing and
archival software and the increasing amount of SeedLink data.

The IRIS DMC email based request processing system NetDC was successfully implemented the GEOFON DC. The present usage is still very low compared to the more common breq_fast.

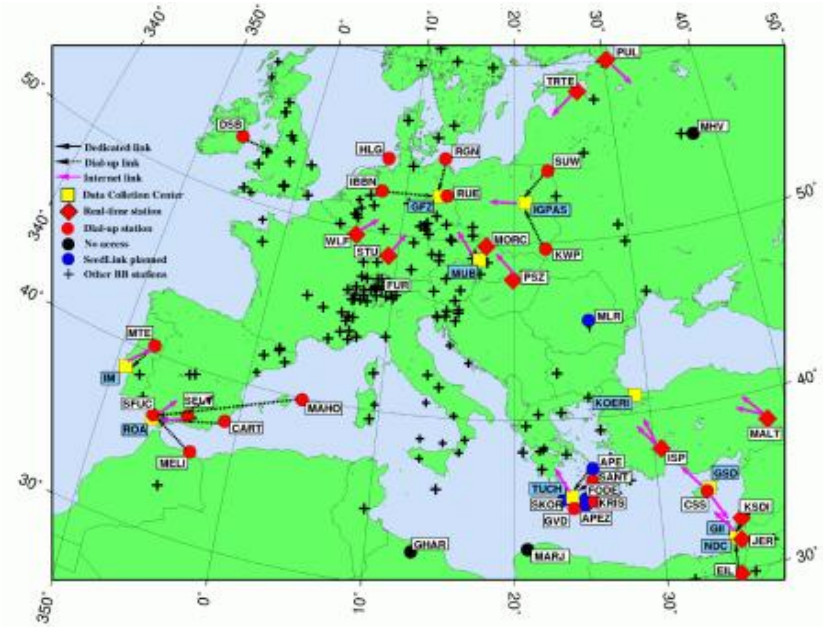

Fig. 1: GEOFON stations in Europe and the Mediterranean and data communication.scheme.

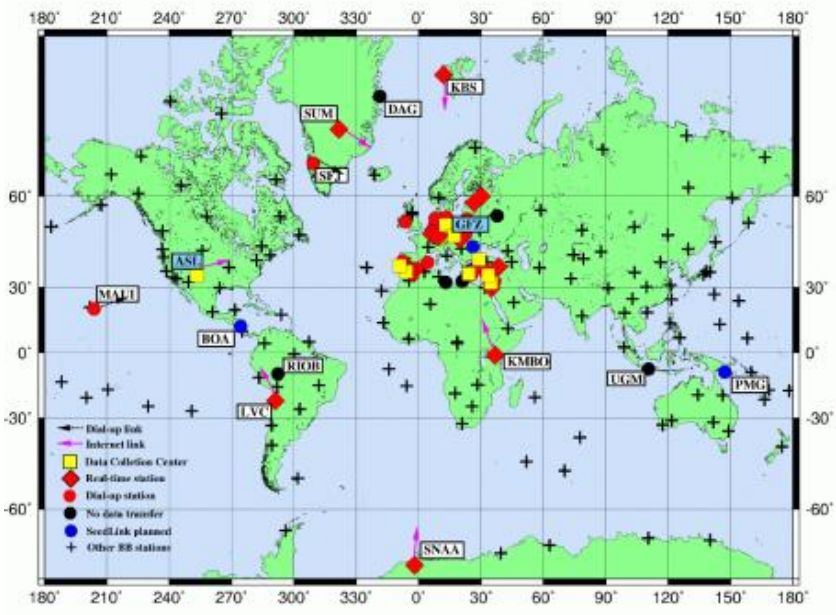

Fig. 2: GEOFON stations worldwide and data communication scheme.

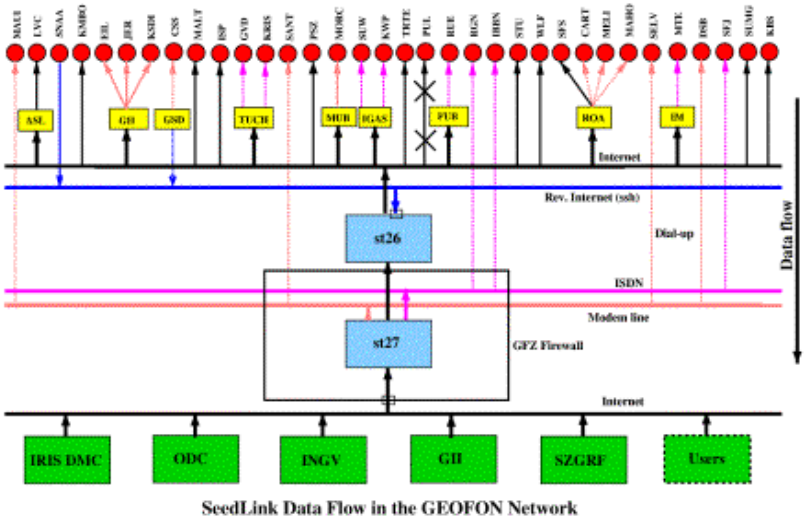

Fig. 3: SeedLink data flow within the GEOFON network

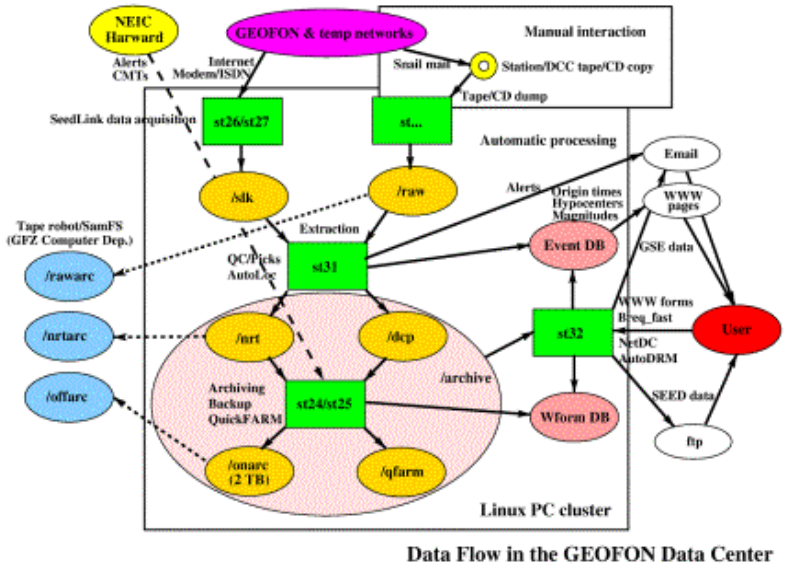

Fig. 4: Data processing scheme of the GEOFON Data Center

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GEOFON Station Summary Permanent Network (Status June 2002)

	Code	Coordinates		Inst.Date	Cooper. with	Communication
Existing Permanent Stations						
Port Moresby, PNG	PMG	9.409S	147.154E	Sep 93	IRIS/PACIFIC21	phone
Moravsky Beroun, CR	MORC	49.776N	17.547E	Nov 93		Internet/SLK
Dublin, Ireland	DSB	53.245N	6.376W	Dec 93		phone/SLK
Walferdange, Luxembourg	WLF	49.665N	6.152E	Mar 94		Internet/SLK
Bar Giora, Israel	BGIO	31.722N	35.088E	May 94	GII +++ May 96	
Muntele Rosu, Romania	MLR	45.492N	25.946E	Oct 94		no
Ny Alesund, Spitsbergen	KBS	78.915N	11.938E	Nov 94	IRIS/AWI	Internet/SLK
Kilimambogo, Kenya(rep.NAI)	KMBO	1.274S	36.804E	Jan 95	IRIS	Internet/SLK
Michnevo, Russia	MHV	54.958N	37.767E	May 95		no
R&#65533;gen, Germany (rep. LID)	RGN	54.546N	13.364E	May 95	GRSN	ISDN/SLK
Suwalki, Poland	SUW	54.013N	23.181E	Nov 95		phone/SLK
R&#65533;dersdorf, Germany (temp)	RUE	52.480N	13.780E	Nov 95	+++ Jan 00	
Soend. Stroemfjord, Greenl.	SFJ	66.997N	50.615W	May 96	IRIS	ISDN/SLK
Piszkes, Hungary	PSZ	47.919N	19.894E	Jun 96	IG Budapest	Internet/SLK
San Fernando, Spain	SFUC	36.637N	6.175W	Jun 96	UCM/ROA +++ Oct 01	
Tartu, Estonia	TRTE	58.379N	24.721E	Jun 96		Internet/SLK
Eilath, Israel	EIL	29.670N	34.951E	Jul 96	GII	Internet/SLK
Wanagama, Indonesia	UGM	7.913S	110.523E	Aug 96		Inmarsat
Isparta, Turkey	ISP	37.843N	30.509E	Oct 96	MEDNET	Internet/SLK
Limon Verde, Chile	LVC	22.618S	68.911W	Nov 96	IRIS	Internet/LISS
Sanae, Antarctica	SNAA	71.671S	2.838W	Mar 97	AWI	Internet/SLK
Manteigas, Portugal	MTE	40.403N	7.537W	Oct 97		ISDN/SLK
Cartagena, Spain	CART	37.587N	1.001W	Dec 97	UCM/ROA	phone/SLK
St. Petersburg, Russia	PUL	59.767N	30.316E	May 98		Internet/SLK*
Danmarkshavn, Greenl.	DAG	76.772N	18.654W	Aug 98	AWI	Inmarsat
Ibbenb&#65533;ren, Germany	IBBN	52.307N	7.757E	Sep 98	U. Bochum	ISDN/SLK
Mathiatis, Cyprus	CSS	34.962N	33.331E	Dec 98	GII	phone/SLK
Boaco, Nicaragua	BOA	12.48 N	85.72 W	Jan 99		no
Rio Branco, Brasil	RIOB	10.150S	67.747W	Jan 99		Inmarsat
Mahon, Menorca, Spain	MAHO	39.896N	4.267E	Jun 99	UCM/ROA	phone/SLK
Kalwaria Paclawska, Poland	KWP	49.631N	22.708E	Jun 99		phone/SLK
Maui, Hawaii, USA	MAUI	20.768N	156.245W	Jun 99		phone/SLK
Melilla, Spain	MELI	35.290N	2.938W	Dec 99	ETH/UCM/ROA	phone/SLk
R&#65533;dersdorf, Germany	RUE	52.480N	13.780E	Jan 00	GRSN	ISDN/SLK
Malatya, Turkey	MALT	38.313N	38.427E	May 00	MedNed	Internet/SLK
Gharyan, Libya	GHAR	31.122N	13.089E	Dec 00	ETH	no
San Fernando, Spain	SFS	36.466N	6.206W	Oct 01	UCM/ROA	Internet/SLK
Al Marj, Libya	MARJ	32.553N	20.878E	Dec 01	ETH	no
Helgoland, Germany	HLG	54.185N	7.884E	Dec 01	U. Kiel	ISDN/SLK
Summit Camp, Greenland	SUMG	72.576N	38.454W	Jun 02		Internet/SLk
Greek Sub Network (longterm)						
Skordalos, Crete	SKD or SKOR	35.412N	23.928E	Aug 96		GSM
Kristallenia, Crete	KRIS	35.178N	25.503E	Aug 96		ISDN/SLK
Santorini, Greece	SANT	36.371N	25.459E	Aug 96		phone/SLK
Gavdos Island, Greece	GVD	34.839N	24.087E	Nov 99		ISDN/SLK
Moni Apezanon, Crete	APEZ	34.977N	24.886E	Apr 00		GSM
Fodele, Crete	FODE	35.380N	24.958E	Apr 00		GSM
Apirathos, Naxos, Greece	APE	37.07 N	25.53 E	Aug 00		GSM
Loosely Associated Stations (Data Distribution only)						
Stuttgart, Germany	STU	48.770N	9.193E	Apr 94	IG Stuttgart	Internet/SLK
Jerusalem, Israel	JER	31.772N	35.197E	May 96	GII	Internet/SLK
Mount Meron, Israel	MRNI	33.011N	35.400E	Mar 98	GII +++ Jan 02	
Sierra Elvira, Spain	SELV	37.238N	3.728W	Nov 01	IAG Granada	phone/SLK
Kfar Sold, Israel	KSDI	35.659N	33.192E	Feb 02	GII	Internet/SLK

SLK SeedLink (near) real-time data transfer
* Access denied by Russian authorities

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+++  Station closed
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