

Minutes of the 1995 FDSN Meeting

July 4 and July 11, 1995
Boulder, Colorado

July 4, 1995

The 1995 FDSN meeting was called to order by Jean-Paul Montagner at 15:50. The proposed agenda was adopted without comment or modification. The agenda is attached to these minutes as Appendix A.

The minutes of the previous FDSN meeting in Wellington were approved without modification.

Professor Montagner opened the meeting with a brief chairman statement. He thanked the members of the previous FDSN executive committee for their contributions. He commented that this was a new format for the FDSN meetings with most of the network reports given during the previous IUGG session. In general the consensus was that this format worked very well and aided both in publicizing the activities of the FDSN more effectively as well as making the FDSN meeting shorter. The reports from the FDSN data centers will be presented during the second week of the IUGG on the same day as the follow-up FDSN meeting.

Professor Montagner indicated that the work to be performed by the working groups this year was even more important. There is significant work for future network operators and future data centers. Montagner drew attention to specific topics that should receive attention during the working group meetings. These topics are identified on the agenda.

There was a great deal of discussion related to whether or not the instrumentation working group should be resurrected. The primary motivation for its revival is related to the intent of several FDSN members to evolve their stations into platforms for multiple geophysical and other sensors. More discussion about the Instrumentation Working Group appears later in these minutes.

At the Wellington meeting a working group on Portable Broadband instrumentation was formed. However this working group failed to meet. Bernard Dost felt that this working group should meet. Hanka indicated that he felt that it was already too late for this group to be effective as another IASPEI commission headed by Karl Fuchs had already been established to deal with these issues.

Engdahl asked where the concept of hierarchical networks came from. Montagner indicated that this idea has been around for some time and that a specific project had been developed around this idea at IPG in Paris, France. Dost confirmed that this was an idea that had been discussed long ago and is now being renewed.

The meeting turned toward presentations from member networks that had not presented a report as part of the IUGG session. A brief summary of these networks follows with more complete information provided in the Appendices.

á AUSTRALIA

Dr. David Denham presented a brief report of the state of the Australian National network. The Australians presently are funded to install 18 telemetered stations. 14 of these stations are operating and all are on-line. Most of the Australian effort is related to the GSE. These stations generally use Guralp CMG3 sensors sampling at either 10 or 20 samples per second.

á CHINA

Dr. Chen Yun Tai presented the report for China. The CDSN started in May, 1983 with a significant effort between the SSB of China and the USGS. Presently there are ten stations operating. Emphasis is currently being placed on an Internet link between the CDSN Data Center in Beijing and the Albuquerque Seismic Lab. Dial-up connections are installed to BJT and XAN. China is making 3 stations available for the GSETT 3.

á CZECH REPUBLIC

Jan Zednik presented a brief report for the Czech Republic. Currently there are three very broad band stations operating., DPC, MORC and KHC are all contributing data at the present time.

á TAIWAN

Willie Lee was present and promised to send a complete report for Taiwan. It is known that in addition to the IRIS GSN station at TATO there are plans to install roughly six more VBB stations in Taiwan in the near future. The Taiwanese use the IRIS DBMS software.

á UNITED KINGDOM

No one from the United Kingdom was present. Bernard Dost indicated that little had changed since the last meeting.

á IRAN

Due to export controls to Iran, all plans were on hold.

á SOUTH AFRICA

There are plans to upgrade some older stations to broadband.

á FRANCE

Montagner gave a brief summary of the current situation in France. He highlighted some competition between the military and university communities.

á SPAIN

Dost reported that one station has closed in the Pyrenees. Quanterra data loggers and Guralp seismometers are being installed at several other stations.

á UNITED STATES --- USNSN

Buland reported that 40 stations are presently operating. There remains some equipment yet to be installed. They anticipate installation of 4-5 stations per year for several years. They are expending a significant amount of effort in GSETT3 of which they have two alpha stations and 9 beta stations. Discussions of the USNSN data center will be discussed during the second week of the IUGG.

á INDIA

Willie Lee indicated that 10 IRIS type stations are being installed in Southern India. A total of 26 networks funded by the World Bank are being installed. It was thought that the FDSN should contact H. Gupta to see if they could begin attending the FDSN meetings. Efforts in India are being coordinated by the Dept. Of Science and Technology.

á AUSTRIA

Ahern reported that he had discussed the Austrian network with individuals from Vienna. They presently have 5 VBB stations operating and would be willing to participate in FDSN activities. Information should be sent to them encouraging them to join FDSN activities.

The meeting then moved on to Working Group concerns.

Engdahl summarized the current inventory of stations. It is now quite an impressive list. The working group will meet on July 10, 1995 in the IASPEI office at 12:00. Dost described the need of hierarchical networks and data centers. He felt that this was partly necessary to shield operators from users.

Dost said a few words about the Working Group on Data Centers. He felt that format issues are still the main topic of discussion especially dealing with SEED and autodrm issues.

Rhett Butler indicated that the data center working group should be sure to address the issue of making GSETT data available to the research community. Engdahl suggested that the working group draft an IASPEI resolution and give it to Harsh Gupta by 8 AM on Wednesday July 12. The Data Center working group will meet at the IASPEI office on Monday July 10 at 7 PM.

A great deal of discussion was centered on the Instrumentation Group. It was generally felt that there was a need to set standards for other types of geophysical sensors since many networks are considering the installation of geophysical observatories.. P. Borman suggested that this group could perhaps specify test procedures for seismometers and other types of instrumentation. Basically it was felt that there are two tasks for the instrumentation group to consider.

á Set standards for other types of geophysical sensors colocated with seismic observatories

á specification of requirements at FDSN stations in order to assist other geophysical networks

It was felt that this working group could normally meet electronically. Some candidates for membership of this group include; Hutt (chair), Wielandt, Troempert, Paesano, Hauksson, Berger, Steim, Holcomb, Fremd.

The Portable Instrumentation Group established at the Wellington meeting did not meet since the Wellington meeting. Bernard Dost agreed to contact the MEMSAC group to try to establish a liaison

between the two groups.

There was discussion related to where the next annual meeting would take place. It appears that there are two options. First in conjunction with the EGS in The Hague (May, 1996) or in conjunction with the ESC in Iceland (August, 1996). This issue will be discussed at the July 11, 1995 FDSN meeting.

Meeting was adjourned at about 18:30.

FDSN MEETING --- WEEK 2 July 11, 1995

The meeting was called to order at 8:50 AM. In an attempt to clarify requirements for membership, Engdahl supplied the terms of reference for the FDSN. These are attached as an appendix to these minutes and helps to clarify the requirements for membership. The list of current FDSN members is attached. The membership of Australia needing clarification (David Denham was consulted and he verified that the AGSO is the FDSN member and ANU is not).

New members to the FDSN were approved as follows

Czech Republic, represented by Jan Zednik
Chile, represented by the University of Chile
Taiwan, represented possibly by the IES of Academia Sinica.

The FDSN secretary will write to Austria and Switzerland to clarify membership status.

Since FDSN Data Center reports will not be presented until an IUGG session later in the afternoon, a brief description of several data centers was presented at the FDSN meeting.

Bernard Dost presented a brief summary of the ORFEUS Data Center. He indicated that there were three primary ways to recover data from the ORFEUS Data Center. These include

á off-line CDROM

á on-line interactive through SPYDER™

á on-line non-interactive access through an AutoDRM

Dost also gave a brief summary of some other aspects and activities of the ORFEUS data center.

Genevieve Roullet next gave a presentation covering the current status of the Geoscope Data Center. There are presently 23 Geoscope stations operating. They have produced 15 CDROMs containing data from January 1, 1988 through July 25, 1990. GEOSCOPE keeps roughly 1-2 days of data on line where data are available by anonymous ftp and WWW. All GEOSCOPE data from 1982-1992 are on the GEOSCOPE mass storage system, JUMBO. GEOSCOPE also runs an AutoDRM although it is not the same autodrm as the GSE.

Tim Ahern then gave a brief review of the FDSN archive for continuous data at the IRIS DMC. IRIS has successfully archived and distributed data from most members of the FDSN at this time. Quality control remains a function of the FDSN Data Centers themselves. The IRIS DMC has assisted in the production of three different FDSN products. The production of the SEED volumes that appeared on the FDSN CDROM was done at the DMC, a variety of FARM products containing FDSN data exist on the IRIS DMC's FARM, and the IRIS DMS produced the first FDSN Station Book. Nearly 50 stations from FDSN members other than IRIS have contributed data to the DMC. The IRIS DMC has also played a crucial role in the coordination of the SPYDER™ system that is presently operated at many FDSN Data Centers around the world. As of June 1995, the DMC has received and archived nearly 160 gigabytes of seismic waveform data from the CDSN, MEDNET, Geoscope, CNSN, Grafenberg, and POSEIDON data centers. The physical shipments made by the DMC in 1994, 31% of were made to non-US researchers, most of them in FDSN countries. A total of 985 international shipments were made in 1994.

Working Group Reports

FDSN Working Group on Station Siting

The meeting then turned toward reports of the various Working Groups. Bob Engdahl presented the station siting report. The discussion of this working group was focused on hierarchical networks and how these networks are divided on both spatial and temporal basis. The working group thought that the organization of hierarchical networks on continent wide scales was possible. A copy of the FDSN station working group report is attached. A resolution was drafted by an ad hoc group consisting of Bob Engdahl, Stu Sipkin, and Bernard Dost. Copies of the draft resolution and that adopted by IASPEI are attached.

FDSN Working Group on Data Exchange

Bernard Dost presented the report of his FDSN Working Group. There were basically no new SEED issues as the format is now very stable.

There was discussion about the progress on the FDSN CDROM. Data from the March-June 1990 was sent from the IRIS DMC to ASL several months ago. NEIC indicated that there is a hold up related to staff resources at the NEIC and the fact that there processing machines went to DEC Alpha and utility programs needed in the preparation of the CDROM had not yet been ported.

It was again clarified by Dost and the working group that the contributing data centers are responsible for the quality of the data delivered to the DMC for inclusion in the FDSN SEED volumes. It is not a responsibility of the IRIS DMC or of the USGS NEIC.

Ahern indicated that there were plans to include FDSN data as part of the FARM products at the IRIS DMC.

Dost provided a summary of the Data Request Managers related to the FDSN. The Working Group concurred that there had not been a firm resolution to adopt the GSE autodrm. It was felt that the FDSN needed strong representation on the GSE working group that defines the autodrm in order for it to be a viable FDSN alternative. It was also felt that there was a need for Professional Manuals in order to justify the effort in implementing the AutoDRM. It was also felt that for the GSE AutoDRM format to be adopted by the FDSN, the support for delivery of data in SEED format must be an inherent part of GSE 2.0 AutoDRMs.

The working group discussed the issue of quality control performed at various FDSN data centers. It was felt that as a first step all FDSN data centers should document their present quality control practices and distribute this information to the other FDSN data centers. Interest existed in adopting the IRIS Data Problem Reporting Mechanism (DPR). It was agreed that all FDSN data centers should set up a Quality Control Account (qc@machine.domain) in order for the DPRs to begin. IRIS will distribute the document describing the IRIS DMS DPR mechanism to FDSN data centers.

FDSN Station Book

One paper copy of the FDSN station book has been distributed to all contributing FDSN networks. An electronic version of the station book is also available on the IRIS DMS home page at URL=<http://www.iris.edu/>. Ahern reported that a template is available for creation of FDSN pages using Aldus (now Adobe) Pagemaker. Software to do the Noise Characterization is not yet available although it had been anticipated to be ready by now. There was a discussion of mirroring the various web sites for the Station Book entries and this will require future coordination. The issue of handling new printed pages for new stations has not been resolved. IRIS indicated it is only committed to producing these pages for the IRIS GSN.

There were discussions between Woodward and Ahern concerning issues about FDSN data flow for the FDSN CDROM.

FDSN Working Group on Instrumentation

Bob Woodward presented a brief report on behalf of Bob Hutt who was not able to attend. The working group did not meet during the previous week as several of the members of the group were not attending the IUGG. Hutt requested that the FDSN clarify the purpose and charter of the Working Group. It was generally felt that the preliminary report that Hutt had prepared correctly conveyed the mission of this working group. In summary the main purpose of the Instrumentation Working Group is as follows

- á a brief description of the types of measurements, and requirements at seismological observatories including the identification of known parameters that make a good Very Broad Band Seismographic Observatory
- á gain an understanding of observatory requirements needed by other geophysical sensors
- á Publish the "Standards for Seismometer Testing" document
- á Report on requirements for new instrumentation development (such as tilt meters)

A copy of the preliminary Instrumentation working group is attached.

IASPEI RESOLUTION

The FDSN unanimously passed the draft resolution related to FDSN access to data at the International

Data Center.

ISOP Report

Eric Bergman gave a brief report concerning ISOP. There were two primary areas of activity. The coordination of the waveform database is being managed by David Jepsen. The Inter-array project being proposed by Hiroshi Innui of Japan also has great potential for having a positive impact on the ISOP program.

There has been a "ISOP Advisors" email list set up to provide information and advise to the ISOP program.

There are still plans to continue publishing the ISOP Newsletter once or twice a year.

The PreProc program written by Axel Plessinger's group is essentially complete and work on the PITSA program is nearing completion also.

There could be potential FDSN involvement of the Measurement Protocols group with the FDSN.

Training courses for ISOP have continued primarily through the efforts of Frank Scherbaum. There is presently a plan to conduct an annual month long training course at a variety of locations. The first of which will most likely be in South America.

Bergman mentioned that the future of ISOP is problematic given the current restructuring taking place within the USGS. It may be possible to integrate ISOP within a new company that he is setting up.

ION

Jean-Paul Montagner gave a brief review of the status of the ION project. Its goal is primarily to broaden the role of the OSN and install geophysical observatories in the oceans. The first achievement of the OSN was to conduct the 1995 meeting in Marseille. The concept of having multisensor ocean bottom observatories was endorsed at this meeting.

Montagner mentioned that ION is closely coordinating the efforts of the Japanese, French, United States and the Ocean Drilling Program.

GSE

With Bob North's absence there was no official GSE representative at this meeting. John Coyne from the Center for Monitoring Research (CMR) provided the FDSN with a brief meeting report. The GSE is now conducting its 3rd Technical Test (GSETT-3). Its purpose is to monitor the world for nuclear tests. The alpha network consists of about 55 stations whose data are available in real time (meaning about 10 minutes in GSE terms). The International Data Center (IDC) at CMR produces a preliminary location in about one hour. The alpha network is augmented with a set of beta stations which are all broadband stations with dial up capability. There are presently about 100 beta stations. Data from the alpha and beta stations are used to produce the alpha/beta bulletin. This bulletin is reviewed by a human and the Reviewed Event Bulletin is produced 48 hours after real time. There is also gamma data available primarily in the form of bulletin information.

There is potential for web access to become limited to GSE members only although at the present time it is open access. The bulletin information is available and also a very small amount of waveform data around events. The windows available are one waveform per detecting station starting one minute before P and continuing for a short time after Lg. Information is available through an autodrm at the IDC. Presently the IDC has a 330 gigabyte mass storage system and is used for holding the continuous data for alpha stations. The plan is to hold 4 months of data. There are plans to acquire a multiyear mass storage system.

With the departure of Bob North from the FDSN group, Peter Basham will be asked to serve as the GSE liaison member for the FDSN.

Miscellaneous Items

Near the end of the meeting several short reports were also presented.

Spain gave a brief description of the current state of stations in Spain. There are presently four VBB stations in Spain. Spain expressed interest in joining the FDSN. Representatives from Spain agreed to

send a report to the FDSN secretary for inclusion with these minutes.

Ahern gave a brief report on the FDSN archive at the IRIS DMC. Much of the material was also presented in the afternoon session in a regular IASPEI session. A report is attached to these minutes.

Bob Woodward mentioned that a PC SEED reading program was still needed very much. There appeared to be some software that could read the miniSEED format on a PC.

There was some discussion about additional FDSN products, in addition to the Station Book and the FDSN CDROMs. There were no suggestions as to additional products that the FDSN might produce.

The Czech Republic officially requested to become members of the FDSN. The FDSN unanimously accepted the Czech Republic with Jan Zednik the official FDSN representative.

The next FDSN annual meeting will be held in the Netherlands, The Hague meeting if a special symposium can be held. If not then we will plan on having the next meeting in Iceland. Jean-Paul Montagner will contact the appropriate people and determine where the next meeting will be held.

There was a notification that all networks should have their FDSN reports to the FDSN secretary no later than one month from the end of the IUGG meeting.

The meeting was adjourned.

Attachments:

- List of Attendees
- Terms of Reference, FDSN
- IASPEI Resolution
- Member Reports
 - Germany, GEOFON
 - China
 - Australia
 - Canada
 - France, Geoscope
 - Italy, MEDNET
 - Japan, POSEIDON
 - US, IRIS GSN
 - IRIS DMC
- Working Groups Reports
 - Working Group on Station Siting
 - Working Group on Data Exchange
 - Working Group on Instrumentation

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