Expressions of Interest in Instrument Loans

Member Institution	Category	Individual	Description	Intended Location	Units
Columbia Univ.	Member	Nano Seeber	David says that Nano will have uses for the instruments in central Asia.	Bangladesh	14
Kyrgyz Institute of Seismology	Foreign Affiliate	K. E. Abdrakhmatov	Back and forth e-mails suggest that they are looking for 3 RT72A-08 data loggers, to be canibalized for parts for their exisitng system.	Kyrgyzstan	3
Univ. of Warsaw	Foreign Affiliate	Pawel Wiejacz	Pawel originally asked about use for portable deployments. He seems reluctant to invest effort in preparing a proposal.	Poland	2
Orfeus	Foreign Affiliate	Domenico Giardini	Domenico plans expansion of Western Mediterranean virtual seismic network. I suggested that north African institutions should join as Foreign Affiliates and propose directly, with supporting material from Orfeus, etc.	Morocco, Tunisia	15
Observatório Nacional (Brazil)	Foreign Affiliate	Jorge Luis	Enquired about sensors. When I replied that no sensors are available now and suggested seeking other funding (leveraging), his response suggested that he does not regard the effort as worth pursuing.	Brazil	
Russian Academy of Sciences	Foreign Affiliate	Vitaly Adushkin	I responded to Adushkin's enquiry about the terms of the loans, but I have heard nothing further.	Russia	
Instituto Superior Tecnico (Portugal)	Foreign Affiliate	Joao Fonseca	In response to initial enquiry, I suggested that University of Buea, Cameroon, could join as Foreign Affiliate. I have heard nothing more.	Cameroon	
Univ. of Arizona	Member	Susan Beck, Patricia Alvarado	Susan has expressed general interest in instruments for Argentina and Turkey. Patricia attended SIG and was concerned that import law restrictions would prevent use unless the instruments were given.	Argentina, Turkey	
Univ. of Bucharest	Foreign Applicant	Victor Mocanu, Ray Russo	Russo wrote to Fowler about Bucharest's interest. Mocanu wrote to Fowler asking how to apply. Fowler referred Mocanu to the web page.	Romania	
CICESE	Foreign Affiliate	Jose Frez	Fowler wrote to Willemann that Frez has expressed interest.	Mexico	

From: nano@ldeo.columbia.edu

Subject: Re: IRIS instrument loans

- Date: August 4, 2006 8:55:59 PM EDT
 - **To:** Ray.Willeman@iris.edu
 - Cc: steckler@ldeo.columbia.edu, shakhter@univdhaka.edu, wykim@ldeo.columbia.edu, armb@ldeo.columbia.edu

Dear Raymond

We, the group cc'd on this mail, have been slowly but steadily developing a multi-disciplinal program of studies aimed at understanding the current geodynamics and the evolution of the collision zone between India and Burma. This collision is incipient and involves the Ganges-Brahmapurtra Delta. This is sedimentologically the most active of the world's deltas and is being squeezed by the converging plates. With 200 million people, it is also one of the most densely populated regions of the world. This humanity is concentrated at a seismic gap along the same plate boundary that generated the great Sumatra-Andaman earthquake of December 2004. We are working to develop knowledge that can better define the hazard that this seismo-tectonic environment entails, and to develop indigenous expertise and commitment that will continue the task and apply the knowledge toward an effective national risk-reduction program.

We have established and have operated a network of continuous GPS stations and one seismic station (using Reftek data logger, on the university campus in Dhaka) in Bangladesh for the last >3 years. Recently (June 06) we have submitted a proposal to NSF for expanding our geodetic and seismic work. This expansion entails the use off 14 IRIS/PASSCAL Reftek data loggers (12 in use and 2 spares). We plan to establish a regional network with stations at 6 universities around Bangladesh where we are now operating continuous GPS. This 'backbone' network would assess the distribution of seismicity over the Ganges-Brahmaputra delta and would give us a regional map of moho depth and other major crustal discontinuities by receiver function analysis. These university-based stations would also provide the 'glue' to hold the universities focused on a national consortium for monitoring geologic hazard -- an sort of IRIS/UNAVCO, if you will -- and would be the 'center pieces' in a still embryonic national program to raise consciousness about geologic hazards and attract students to the task of learning and dealing with this task.

We also plan semi-permanent deployment of 6 high-frequency stations in a more closely spaced network centered, in turn, in the NE and SE parts of Bangladesh that include the Tripura foldbelt. These areas are seismically very active and have experienced large and very damaging historic earthquakes. The primary purpose of this network is to decipher the structure and kinematics of seismogenic faults related to the accretion process and the convergence between Burma and India. We envision re-deploying this network on an as-needed base -- following the seismicity -- probably 1-2 times during our 3-year proposed project.

Professor Humayun Akhter at the University of Dhaka has been in charge of the field operations and maintenance as well as much of the data analysis for this project. He has visited Lamont twice for extended periods and has gained familiarity with many of the hardware and software issues concerning both GPS and Reftek operations. He has several capable graduate students that plan to take part in the project and has amply proven that he and his team at the University of Dhaka are capable to maintain operational sophisticated instruments in rugged field conditions. If NSF funds us, he would come to the US and hope to visit the PASSCAL center for training.

Some of the seismometers will be acquired by the NSF budget and others will be borrowed from Lamont-Doherty. Any chance of borrowing a few L-22 from PASSCAL? Hope this gives you what you need now. Mike Steckler will send you a copy of the NSF proposal in a separate mail.

Nano

From: ray@iris.eduDate: August 5, 2006 8:29:56 AM EDTTo: nano@ldeo.columbia.edu

Dear Nano,

Thanks for the background about your project. Regarding your question about L-22s, IRIS is not offering any sensors for long-term loans in permanent installations.

Ray

From: Shane.Ingate@iris.edu

Subject: Re: IRIS Instrument Loans

Date: August 3, 2006 3:19:22 PM EDT

- **To:** alematix@rambler.ru
- Cc: tua@gdirc.ru, tgg@tiger.gdirc.ru, bleom@mail.ru, vitally_bragin@rambler.ru, instruments@iris.edu

Alexander,

I have spoken with Glen Offield about compatibility issues, and his response was:

Hello Shane,

Yes, if KNET needs spares, the 72A-08 is perfect. Just please give them "healthy" units (as opposed to dogs i.e: tagged "struck by lightning").

Assuming the 72A-08s are current with hardware revisions, they are basically identical to the KNET digitizers. Only the firmware on the main CPU would need to change as there are slight I/O differences between the two platforms.

We (UCSD) have all flavors of the CPU firmware required and could assist IVTAN sort this out (as time permits).

best regards, Glen

I have advised Glen that all the instruments being "loaned" under this program have been refurbished at RefTek and are in extremely good working order. It is good to know that the firmware is still available.

I would highly recommend that you prepare a brief proposal, say 2-3 pages, covering the key issues that should be addressed, namely (I have included some comments, but you should expand and include your own):

- Technical capability to operate instruments and deliver data

KNET has been operating 10 three-component broadband stations equipped with RefTek 72A-08 very successfully in a difficult mountain environment for 15 years

- Commitment to seamless data access

KNET has been delivering continuous data in near real-time to the IRIS DMC in SEED format, with a delivery rate in excess of 96% for the past several years, and works closely with DMC staff to identify and rectify data and communications outages.

- Operational plan

The KNET data loggers are aging, and though their productivity is still high, maintenance issues will increase. Parts for the RefTek 72A-08s (namely boards and other components) are no-longer available. In the event that one or more of the data loggers fails and cannot be repaired by IVTAN staff, then KNET will lose capacity indefinitely.

- Financial plan

IVTAN is dedicated to preserving the efficiency and effectiveness of KNET operations. During it's 2006 Spring meeting, the IRIS Board of Directors "unanimously recommended transfer of KNET to IRIS International Activities", indicating strong IRIS support for IVTAN's activities.

More information on these issues can be found at http://www.iris.edu/instrumentloan/.

Finally, I recommend that you increase the number of "spares" requested to 10 units. I would make the point that SCSI drives and GPS are not required.

If I can be of any help, please let me know. Shane

On Jul 26, 2006, at 4:23 AM, Alexander Matix wrote:

Dear Shane

Gennady has discussed and entrust me to answer about IRIS Instrument Loans.

We have seen IRIS announcement earlier and discussed it again.

The terms of the Loan are enough strong. RefTek RT72-A is not compatible with KNET RefTeks. But most of the card inside data loggers are compatible so we could use cards from RefTek RT72-A as a spare during a KNET RefTeks repair.

We like to get 3 RefTek RT72-A (without SCSI disks and GPS clocks) and a permission to use it as spare equipment for KNET.

Is it possible?

What have to be our next steps, if you will say "yes"? Would it be a Proposal in accordance to your announcement?

Gennady has offered KIS to decide this question separately for KIS autonomous stations. KIS has the information about Loans now.

Thank you Sasha Alexander Matix

> ----- Original Message ----- From: "Shane Ingate" <shane@iris.edu> To: "Research Station RAS" <tua@gdirc.ru> Cc: "Леонид Богомолов" <bleom@mail.ru>; "Bogomolov L.M." <leonidb@gdirc.ru> Sent: Wednesday, July 19, 2006 10:25 PM

Subject: Fwd: [IRIS] IRIS Instrument Loans

Gennady, Leonid,

In case you did not see it, here is the announcement of the "disposal" of the unused Reftek dataloggers. It is called a long-term loan, but eventually title will be turned over to the new owners. I highly recommend that you consider this carefully, as it may be a way of being able to provide you with spares. Remember, these data loggers are no-longer available! Of course, there is the issue of compatibility, so if you do wish to prepare a proposal, you will need to evaluate the current state (both firmware and hardware revision levels) of your dataloggers.

Cheerio, Shane

Begin forwarded message:

> From: IRIS < irismail@iris.washington.edu>

- > Date: July 18, 2006 5:43:00 PM EDT
- > To: bulkmail@iris.washington.edu
- > Subject: [IRIS] IRIS Instrument Loans

>

> As part of its mission to facilitate cooperation among

- > seismologists and foster free and open exchange of seismological
- > data, IRIS intends to make "long term loans" of instruments that
- > are suitable for permanent geophysical observatories. The first set
- > of instruments offered are six-channel, 24-bit data loggers. IRIS's
- > goals for the loans are to:

>

> • Help densify global coverage of stations offering free and open > data access by complementing other efforts to expand or establish > permanent broadband seismic networks. > > • Advance partnerships and encourage IRIS Affiliates to adopt > standards and policies that support free and open data exchange. > > • Advance Earth sciences in regions that would benefit from the > introduction of digital broadband instrumentation. > > • Foster capacity building by making loans to institutions with a > technical capability to operate instruments independently and an > intention to educate students. > > Further details about the loans and how to apply for instruments > are posted at http://www.iris.edu/instrumentloan/ > > > > Bulkmail mailing list > Bulkmail@iris.washington.edu > http://www.iris.washington.edu/mailman/listinfo/bulkmail

From: kis@mail.elcat.kg

Subject: from Kyrgyzstan

Date: August 3, 2006 5:27:14 AM EDT

To: instruments@iris.edu

Reply-To: kis@mail.elcat.kg

Dear colleagues,

The Institute of seismology of the National Academy of sciences of the Kyrgyz Republic (IS NAS KR) is conducting the seismic monitoring in the territory of Kyrgyzstan and the adjacent states on the basis of KNET and a national analog network.

Estimating the importance of spent seismological supervision in the Tien Shan territory, we begin transition from analog seismic stations to digital one. In this connection, IRIS offers about the long-term loans of its instruments (RefTek RT72-A) let us to re-equip our national analog network to digital one.

We think much of the offer made by you and are ready to participate in this project.

Sincerely yours, Director of IS NAS KR, PhD. Abdrakhmatov K. E.

IRIS

1200 New York Ave. NW, Suite 800 Washington, DC 20005

PROPOSAL APPLICATION

Institute of Geophysics, Polish Academy of Sciences (IGFPAS) hereby applies for two sets of RefTek RT72-A data loggers within the IRIS long-term loan program announced at <u>www.iris.edu/instrumentloan</u>. The two loggers - if granted – would be used – one at the RAC observatory to replace the current 16-bit logger, the other at BEL in an attempt to revive the observatory that is being closed for 40 years. It is intended to equip the RAC site with GS-13 sensors and the BEL site with BB-13 sensors. IGFPAS possesses both sets of seismometers spare from previous setup of OJC observatory, where they have been replaced by an STS-2 seismometer. RAC observatory is near the Upper Silesian Coal Basin where many local induced seismic events take place – events can take place as near as 20 km of the observatory. BEL is located farther away from potential earthquake sources – nearest is the Belchatow mine at about 120 km distance. Hence the forementioned selection of the sensors.

Both RAC and BEL observatories remain in maintenance of IGFPAS and are property of the Polish Academy of Sciences which is IGFPAS'es funding body. BEL is the Polish Central Geophysical Observatory, though seismic recording there has been stopped in 1966 because of lack of qualified seismologist at the site and –obviously- no data transmission capabilities at that time. Today both RAC and BEL have permanent internet connection and data could be transmitted in real time provided hardware and software issues are handled.

At RAC there currently exists a 16-bit digital station working with SM-3 seismometers in detected mode only, with continuous recording only sent to an analogue paper display. The station – once it saves a detected data file – makes it available for transfer to a PC computer. The digital station at RAC was already obsolete when it was installed in 1999 and it has not been replaced due to funding matters. In the new setup with the Reftek logger, the PC computer could retrieve data from the Reftek and port it to the internet. If there exists a seedlink plugin for the Reftek, the data could be ported in real time along with data of other Polish seismic stations to the Orfeus data center. Otherwise – as there are no funds for software development, data would be provided by ftp mechanism on daily basis.

At BEL there currently exists no seismic station. Installation of the Reftek station would require electrical cabling works (1966 cabling has to be torn down as it does not meet modern parameters) and installation of a PC computer that would handle data retrieval off the Reftek and porting it to the internet. It is hoped that the cost of this system and of the cabling works would be minimal in comparison to costs of a digitizer should one have to order a brand new data logger for the site.

It is also considered that both stations would not involve substantial maintenance costs on behalf of IGFPAS. Both stations could be on-site maintained by the current observatory staff, and data transmitted over the existing internet links. The BEL station would of course consume extra power, but the amount of electricity used would be marginal in comparison to the total energy used by the Central Geophysical Observatory BEL. At RAC the Reftek station would replace the existing digital station so it is expected the power consumption (and therefore the costs) would stay at about the same level.

In Poland long term loans (over 12 months) from countries outside the European Union are subject to customs duty and related costs that amount to about 35% of the value of the equipment. The "value for customs purposes" quoted by the sending institution on the customs declaration is the basis for establishing the due amount. Considering this regulation IGFPAS is interested in obtaining the loan only if the "value for customs purposes" on the Reftek loggers gets quoted low to the point it cannot be compared to price of brand new data loggers. Otherwise it makes no sense to pay 35% of the value of equipment that is to be loaned and not owned.

From:ray@iris.eduSubject:Re: Reftek loanDate:July 24, 2006 5:05:34 PM EDTTo:pwiejacz@igf.edu.pl

Dear Pawel,

I am traveling this week, with limited acces to e-mail. From a brief look at you draft proposal, I suggest that more background work is necessary to prepare a proposal that will be well received. For example,

- There could be an explanation the your management has considered the issues related to using these instruments, and is definitely prepared to pay for the upgrades that you say are necessary at BEL.
- There could be some description of the technical capability of staff at these stations, sufficient to convince readers that the staff have the experience necessary to install and maintain these particular data recorders.
- The plan for making data available could be more complete. Orfeus has previously archived only event segments but, I think, is changing to continuous data. If you choose Orfeus as your data archive then the best proposal would be based on contacting Orfeus and having confirmed arrangements for them to archive continuous data from these stations.
- Your statement "If there exists a seedlink plugin for the Reftek, ..." seems to demonstrate that there are concerns about both your familiarity with data loggers such as these and you planning for making the data available. I think that you determine the answer to this question before trying to write a proposal.
- Is there some way for you to seek funding for broadband seismometers for these stations? That sort of effort is what is meant where the anouncement of the loans says "IRIS could promise to indefinitely loan instruments as one element of a broader plan to acquire all of the required equipment."

I realize that these things will take time. But please do not feel that everything must be prepared in a rush. IRIS does not expect to loan out all of the available Reftek instruments in the first few months.

I'm sorry to give this response, because I imagine that it might seem discouraging. But, I hope that my message will help you to prepare a proposal that is more likely to be well received.

Regards, Ray

From:	pwiejacz@igf.edu.pl		
Subject:	Re: Reftek loan		
Date:	July 25, 2006 3:12:10 AM EDT		
To:	ray@iris.edu		

Dear Ray,

There could be an explanation the your management has considered the issues related to using these instruments, and is definitely prepared to pay for the upgrades that you say are necessary at BEL.

This is an issue who reaches out first. Knowing my Management they would approve of paying for the upgrades if the logger is secured. But if they are to commit to pay for upgrade not knowing if IRIS will approve the proposal, they are likely to wait for the decision by IRIS. If IRIS is to wait for their commitment then IRIS will be looking at us, we at IRIS while the matter won't move.

There could be some description of the technical capability of staff at these stations, sufficient to convince readers that the staff have the experience necessary to install and maintain these particular data recorders.

Installation would have to be done by our service staff from Warsaw. Maintenance is the matter of the training of the staff and not knowing what maintenance the Refteks require, I cannot answer this question.

The plan for making data available could be more complete. Orfeus has previously archived only event segments but, I think, is changing to continuous data. If you choose Orfeus as your data archive then the best proposal would be based on contacting Orfeus and having confirmed arrangements for them to archive continuous data from these stations.

Orfeus gathers continuous data but keeps them available on-line only for weeks. There is a plan to build a European distributed data archive and have the newly designed arclink tool to handle requests but at our stage of development of internet services I doubt this would work. Maybe in 5 years the answer will be yes, but not now. We can put the data up on our server and have other parties use autodrm.

Your statement "If there exists a seedlink plugin for the Reftek, ..." seems to demonstrate that there are concerns about both your familiarity with data loggers such as these and you planning for making the data available. I think that you determine the answer to this question before trying to write a proposal.

I have no experience with Reftek loggers and as of my Institute they've been used only as field stations without data transmission. After measurements, the stations were retrieved and their disks read in a docking station.

Is there some way for you to seek funding for broadband seismometers for these stations? That sort of effort is what is meant where the anouncement of the loans says "IRIS could promise to indefinitely loan instruments as one element of a broader plan to acquire all of the required equipment."

We can apply to our Ministry for funds for broadband seismometers. We apply to them every year since 1999. In 1999 there was no result. In 2000 they've granted us funds for two STS-2s that we asked. In 2001 there was no result. In 2002 we applied for 3 and got funds for 2. In 2003, 2004 and 2005 there was no result. So we can apply again but there is no guarantee we shall get these funds. Things are now perhaps more difficult than before because of the new government that seems not care about needs of institutions but devotes efforts to witch-hunt for former communists. In this respect when my Dad was a deputy-minister (1981-1984) under communism, our Technical Director at one time (until 1975) worked for military intelligence under communism and our Chief Director had to sign a collaboration leaflet because he led a scientific expedition to Vietnam in the 1970s - we seem to have the chance small as never before. Frankly the current

political situation here is very gloomy. I can't do anything about it so I'm just trying to do my work. but our current government is introducing nationalism and socialism. It does not resemble the German nazi movement, but the Italian version of Benito Mussolini - oh ves it does! Sometimes I start to fear - they are introducing "lustration statements". In other words, if someone is to occupy a post, he must make a public written confession on what information he has ever passed to communist secret services (only people born after 1973 are exempt from this). This statement is later checked against the secret service archives. The problem is that a person has no access to these archives. So if the person is a political opponent, then government authorities can say he has lied in his lustration statement and thus not allow him to the post. Travelling with me Dad to the Polish embassies abroad I know I have a secret service file but don't know what is in it (and there surely must be something: in America I had FBI security for a week because some emigrant Polish person threatened to kidnap me if Poland did not recall its ambassador - my Dad was his deputy but the ambassador had no kids himself - the security was lifted when FBI caught the emigrant. That emigrant was an anti-communist so from today's point of view he was oppressed because of me. What is more, Polish government has taken revenge on his family that was left behind in Poland.). Lustration statements were first introduced for government workers, but now they are broadened to include also managements of all budget institutions - i.e. including Institutes like IGFPAS. Who knows if they don't broaden it still, as to cover all workers of budget institutions. And what then?

I realize that these things will take time. But please do not feel that everything must be prepared in a rush. IRIS does not expect to loan out all of the available Reftek instruments in the first few months.

I'm sorry to give this response, because I imagine that it might seem discouraging. But, I hope that my message will help you to prepare a proposal that is more likely to be well received.

Thanks anyway. Pawel From: domenico.giardini@sed.ethz.ch

- Subject: FW: Last EMSC update before the summer break
 - Date: July 5, 2006 1:23:30 AM EDT
 - To: ray@iris.edu
 - Cc: bossu@emsc-csem.org, vaneck@knmi.nl, tim@iris.washington.edu, rhett@iris.edu, mazza@ingv.it

Ray, ciao,

I write to enquire about the long-term loans of refurbished IRIS instruments, an excellent initiative!

Attached you find a MoU we worked out with all the networks of the Western Mediterranean (existing or under installation) to create an effective policy of data exchange, essentially a WM Virtual Seismic Network. This was prepared in a meeting in Spain the week after the IRIS assembly, and will be signed by end August, with start in October. EMSC and ORFEUS are brokering this agreement and will see to the collection of parameters and waveforms. Note that for the first year the data exchanged will remain only within the network, but later should be opened outside. This one-year test is proposed to reduce the anxiety of some of the North-Africa participants.

The North-African countries have various levels of development. Libya has a fully functional network, Algeria already bought a new Kinemetrics network and is proceeding to install, Tunisia has plans (helped by MedNet and Monaco), Morocco has selected a number of sites with Internet connection and has funding to start.

Both Morocco and Tunisia could apply for the IRIS instruments, since they do not have enough funding to acquire a full network on their own, and use the existing resources to buy sensors and processing equipment. Of course the condition in this case would be that the data acquired would be freely distributed. We would be looking for 10-15 instruments for the two countries.

My question to you is the following. Would you prefer to receive individual applications from the two countries or a single application for the whole regional network coordinated with EMSC/ORFEUS?

Domenico

From: ray@iris.edu

Subject: Re: Last EMSC update before the summer break

- Date: July 5, 2006 9:46:31 AM EDT
 - To: domenico.giardini@sed.ethz.ch
 - Cc: vaneck@knmi.nl, bossu@emsc-csem.org, rhett@iris.edu, mazza@ingv.it, jim@iris.edu, tim@iris.washington.edu

Domenico,

Applications directly from INM in Tunisia and CNR or ISRabat in Morocco would most clearly demonstrate the commitment of those organizations to the goals of the instrument loans, but supporting material from ORFEUS and EMSC regarding data management (and, perhaps, from other partners regarding instrument maintenance) probably would strengthen the proposals. If two proposals were submitted at about the same time with notes about joint plans and the MOU regarding monitoring of the western Mediterranean region then those strengths would certainly be taken into consideration.

Regards, Ray

Perfect, thanks, we will start preparing. Domenico

Memorandum of Understanding

for the establishment of a

Cooperation framework on earthquake surveillance in the Western Mediterranean Region

Recognizing:

- The history of large earthquakes which affected the Western Mediterranean region, often with catastrophic consequences for the population and society.
- The requirements of modern society to understand and mitigate the earthquake risk, and the need to improve earthquake surveillance and hazard assessment as a first step toward mitigation of seismic risk.
- The long-standing tradition of scientific and operational cooperation in the Western Mediterranean.
- The current rapid upgrading of modern networks in northwestern African countries along the Mediterranean, specifically Morocco, Algeria, Tunisia and Libya.
- The significance of rapid and long-term availability of high-quality earthquake waveform data especially of broadband stations to both the international scientific community and the hazard mitigation communities as outlined in among others the 'Global Earth Observation System of Systems' (GEOSS) 10-year plan.
- The current rapid developments of the European earthquake data exchange infrastructure and data handling techniques achieved in on-going EC-projects such as 'Network of Research Infrastructures for European Seismology' (NERIES).
- The wish of the European and the Northern African countries to establish a close collaboration in the fields of science and natural disaster mitigation across the Mediterranean countries.
- The importance of a regional homogeneous data exchange infrastructure and real-time availability of waveform data to all observatories around the Mediterranean region to create an efficient tsunami warning systems in the Mediterranean region as specified in the 'North Eastern Atlantic and Mediterranean Tsunami Warning System' (NEAMTWS) project of the UNESCO-IOC ('Intergovernmental Oceanographic Commission')
- The commitments and goals of the Federation of Digital Seismograph Networks (FDSN), 'Observatories and Research Facilities for European

Seismology' (ORFEUS) and the 'European-Mediterranean Seismological Center' (EMSC) non-profit and non-governmental organizations dedicated to data exchange and other seismological activities and to promote the collaboration of European partners in Research programs.

 The objectives of the 'European Seismological Commission' (ESC), the EMSC and ORFEUS to establish close collaboration between seismological observatories and research institutes in Europe and Northern Africa.

The parties agree to the following Memorandum of Understanding.

1 Overall long-term objectives for the Western Mediterranean region

- 1.1 to improve the cooperation in earthquake monitoring
- 1.2 to provide input for improved assessment of seismic hazards
- 1.3 to build a regional network for earthquake surveillance
- 1.4 to reinforce and ally the local institutions and personnel
- 1.5 to facilitate access to advanced technologies
- 1.6 to increase the regional participation in international activities

2 Demonstration activities for the 1st year of application

- 2.1 The ultimate goal is the establishment of a Regional Seismic Network in the Western Mediterranean (RSN-WM), building largely on the existing infrastructures already installed or planned by the national and local agencies. The RSN-WM will provide a backbone for earthquake monitoring in the area, complementing the coverage of the national and local networks. The RSN-WM aims at a composition of 25-30 high-quality digital stations shared by the MoU parties. The stations will be chosen on the basis of their quality, on the reliability of the real-time data telemetry, and of criteria of homogeneous geographical distribution. Only stations equipped for real-time telemetry will be considered. Preference will be given to Very Broad Band (VBB) and Broad Band (BB) stations. A model for the target distribution of the RSN-WM is given in Figure.
- 2.2 The RSN-WM is expected to be built over the years. Progress will be evaluated after the 1st test year.
- 2.3 The RSN-WM will build the backbone for the participation of the Western Mediterranean countries in the IOC 'North-Eastern Atlantic and Mediterranean Tsunami Warning System' (NEAMTWS).

- 2.4 All the data collected by the RSN-WM will be equally open to all MoU parties that contribute with real-time continuous waveform data of at least one station. In the first test-year, the data access will be restricted only to the parties signing the MoU, as listed on the last page. This restriction will be evaluated at the end of the test-year. The data exchange will be organized and managed by ORFEUS infrastructure using existing technologies.
- 2.5 A coordinated, structured strategy for long-term capacity building in the whole region will be initiated during the 1st year of application of the MoU. Capacity building will be achieved under the 'Earthquake Monitoring and Earthquake Risk in Western Mediterranean' (EERWEM) project and by associating the parties to the NERIES technology transfer activities. EMSC and ORFEUS will organize the participation of different European institutions in the capacity building. The activities planned for the 1st year will cover technical assistance on:
 - The installation of high-quality digital stations
 - The acquisition, storage and distribution of waveform data
 - The rapid determination of earthquake source properties

3 Budget and financial contributions

- 3.1 The development of the RSN-WM will be mostly based on equipment and stations operated by the parties. The possibility of acquiring additional equipment for key locations will be evaluated.
- 3.2 Additional equipment required for the improvement of the data exchange at the participant data centers may be partly supported under an agreement with ORFEUS.
- 3.3 Technical implementations foreseen in point 2 will be financed under the EERWEM and NERIES projects. Such activities might include training workshops, technical training and technical visits.

4 **Proposed schedule**

- 4.1 The MoU is expected to enter in force on October 1, 2006.
- 4.2 The MoU is valid for testing period of twelve months, with possible extensions based on a successful evaluation.
- 4.3 During the 1st year of application, the parties engage to implement the activities listed under point 2. There is no legal obligation for any of the parties to fulfill all the expectations of the MoU.
- 4.4 The MoU remains open to join by relevant parties during the first six months of its testing period.

5 Evaluation and follow-up

- 5.1 The review of the achievements of the activities carried out under the present MoU will be conducted after 12 months from the start.
- 5.2 The review will be done by the parties with the goal of deciding on the MoU follow-up.
- 5.3 The review will be conducted during an ad-hoc workshop to be organized in connection with the IOC.

6 **Participation in international activities**

6.1 The parties will be invited to actively participate in the regional and international seismological organizations. In particular, they will be invited to become members of the EMSC, of ORFEUS, of the FDSN (Federation of Digital Seismic Networks) and to participate in the activities of the IOC NEAMTWS.

7 Data ownership

- 7.1 The data distributed remains the property of the contributing organization. The receiving organizations take upon themselves the responsibility to properly acknowledge this ownership.
- 7.2 Redistribution of the data or commercial use of the data is not allowed unless specific written permission is given by the organization owning the data.

8 Parties of the MoU

8.1 The MoU is open for signature to any institute, observatory or organisation involved in the seismic monitoring of any part of the Western Mediterranean region

From: jorge@on.br Subject: Long-term loans Date: July 13, 2006 11:38:54 AM EDT To: ray@iris.edu

Dear Raymond,

First of all, thank you so much for your letter of june 20th 2006, which you describe the new IRIS initiative. It is really very interesting !!!

According to the brochure enclosed in your letter, IRIS is offering only data loggers (RefTek RT72A). Is it correct?

We would like to know if sensors are also available and how many equipments are available ?

In our country, we have many difficulties in getting money to buy equipments and, for this reason, this possibility seems very interesting.

Best regards, Jorge Luis

From: ray@iris.edu Subject: Re: Long-term loans Date: July 13, 2006 3:52:31 PM EDT To: jorge@on.br

Dear Jorge,

I am pleased to hear from you, and glad that the instruments available from IRIS are generating interest.

Yes, the RT72A data loggers are the only instruments that we can offer now.

No, IRIS has no sensors that might be loaned right now. Sensor technology seems to have changed less in recent years, so our older sensors continue to be compatible with new systems and therefore used in our own operations.

In the future it is possible that we might be able to obtain funding from sources other than the US National Science Foundation, which would allow us to purchase instruments specifically for loans such as this. Perhaps, if we can demonstrate some initial success, then there may even be ways for IRIS and to work with Observatório Nacional and other IRIS Foreign Affiliates to jointly seek funding from UNDP, the World Bank, and similar organizations. The IRIS Board of Directors is very hopeful that the initial loans can lead to bigger things.

Best regards, Ray

From: jorge@on.br Subject: Re: Long-term loans Date: July 14, 2006 9:24:43 AM EDT To: ray@iris.edu

Thanks a lot for your e-mail below.

I would like to use this opportunity to congratulate IRIS for this new and very important initiative.

Unfortunately, at this time, we do not have "broadband sensors" to use with IRIS data loggers. Now, we have only some old short-period seismometers (Willmore MKIIIA), which must be deeply checked first before using in field work.

I agree with you that this IRIS initiative can, in the future, be the beginning of bigger things.

Thanks for your attention, Jorge Luis

From: ray@iris.edu Subject: Re: long-term loans of instruments Date: July 20, 2006 9:56:47 AM EDT To: Adushkin@idg.chph.ras.ru

Dear Dr. Adushkin,

Thank you for writing. I am glad that there is interest in these instruments.

These data recording systems remain the property of the United States Government, so IRIS cannot give them away. But we have approval to loan the instruments to other organizations for as along as it is useful to everybody that the instruments are used in permanent stations. I would guess that some of them will be used to collect data and send the data to the IRIS DMC for many, many years until they are so old that they are worth less than the cost of shipping them back to the U.S. Under those circumstances, the U.S. Government sometimes decides that equipment should be "abandoned in place".

But, perhaps some institutions will receive the loaned instruments and not succeed in installing them in permanent stations even after several years. Or, some institutions may not find a way to send the data to the the IRIS DMC reliably and promptly. In that case, IRIS could ask those institutions to return the instruments at the expense of the institution that received them.

I look forward to an application from the RAS or your colleagues to borrow these instruments.

Best regards, Ray

On Jul 20, 2006, at 7:49 AM, Adushkin wrote:

Dear Raymond,

Thank you very much for information and I think our Institute could take part in this activity. In this case I have a question. How long is "long-term loans" and what are the conditions of returning instruments to IRIS (not only pay all costs).

Best regards, Adushkin mailto: Adushkin@idg.chph.ras.ru From: jfonseca@ist.utl.pt
Subject: long term loan of IRIS instruments
Date: July 5, 2006 11:31:29 AM EDT
To: ray@iris.edu

Dear Ray,

I am indeed very excited by this opportunity that IRIS is providing. I was approached a few months ago by colleagues from the University of Buea, in the Cameroun, who wanted to deploy a seismic network to monitor Mount Cameroun. My plan so far was to give U.Buea some old EarthData equipment that we no longer use, but this would have the disadvantage that the old format imposed by the digitizers would not allow data exchange. I would like to take advantage of IRIS's long term loan of RefTeks to solve this.

My institute (IST, Lisbon) is a foreign affiliate of IRIS. We have experience of volcano monitoring with both short period and broadband stations in Africa (Cape Verde Islands).

Please advise if there are any rules to apply for this type of loan, besides what is in the brochure.

Best regards, Joao Fonseca

From:ray@iris.eduSubject:Re: long term loan of IRIS instrumentsDate:July 12, 2006 11:27:11 AM EDTTo:jfonseca@ist.utl.pt

Dear Joao,

I am pleased to hear from you, and glad that the instruments available from IRIS are generating interest. The idea with the instrument loans is to not impose unnecessary restrictions, so that IRIS can be as open as possible in making the instruments available in many places where they could be useful.

Ideally, I would say, it would be good if the University of Buea applied to become a foreign affiliate of IRIS. That way, an organization in Cameroon (as American's spell it) could be the one to whom the instruments are loaned. Of course, a proposal would be much stronger if it described an ongoing collaboration with you and your colleagues at IST. For example, you can probably describe experience with RefTeks or similar digitizers, which might be essential to plans for installing them.

The IRIS Board of Directors has recently instructed me to change the procedures for applying to become a foreign affiliate, in part hoping that positive decisions can be made more quickly. I will send you information on the new procedures soon.

Best regards, Ray From: Ray Russo <rrusso@ufl.edu>

Subject: Re: PASSCAL Standing Committee Meeting

Date: Thu, 10 Aug 2006 14:54:00 -0400

To: Jim Fowler <jim@iris.edu>

Hi Jim -

I just got back from Romania last night, in fact, and was discussing this with the two people principally interested there, Victor Mocanu, current head of the Geophysics group at the University of Bucharest's Dept of Geology & Geophysics, and Laurentiu Munteanu, who is a staff scientist at the National Inst. for Earth Physics (NIEP) in Bucharest. They are definitely still interested if it's not too late. I forwarded your email to Victor, and I am sure you will hear from him or Laurentiu or both soon.

Best, Ray

 From:
 jim@iris.edu

 Subject:
 Re: Express of interest

 Date:
 August 11, 2006 10:27:30 AM EDT

 To:
 mocanu@gg.unibuc.ro, russo@geology.ufl.edu

 Cc:
 Ray.Willeman@iris.edu

Dr Mocanu

Thank you for your interest in our long term loan program. You should go to the IRIS web site http://www.iris.edu to get information on how to apply for the instruments.

If you have any questions or problems contact Dr. Willemann or myself.

jim

Dear Dr. Fowler,

It's a few good years since we (our group from the University of Bucharest) work together with US scientists from various groups, mainly with Dr. Ray Russo from the University of Florida Gainesville, Steve harder from UTEP and so on. This is how we started to learn about PASSCAL and its facilities. Several deployments for both active and passive experiments, using PASSACL facilities, allowed us to come into repeated contacts with several of your colleagues like Mike and Noel, here in Romania and overseas. We just learned about the possibility PASSCAL considers to offer to various groups active in this field, to apply for long term loans of acquisitions systems from PASSCAL.

Taking into account our previous, present and (hopefully) future activities in this field, herewith we would like to express our official interest to apply for such a loan. Please be so kind and let us know how if this possibility is also valid for non-US groups and, if so, how to proceed.

Kind regards, Victor

Dr. Victor Mocanu Head, Department of Geophysics University of Bucharest 6 Traian Vuia Street RO-020956 Bucharest 2 Romania Phone: +40 21 318 1557 Fax: +40-21-212 3486 Mobile: +40 722 242 654, +40 740 859 012 E-mail: mocanu@gg.unibuc.ro, vi_mo@yahoo.com PLEASE SEND YOUR MESSAGES TO BOTH ADDRESSES!!!!!!!