fault model are determined based on the model of Wald and Somerville (1995). The fault is divided into 10x7 subfaults. The slip directions of the subfaults can vary by using a linear combination of 90- and 180- degree slips. Their magnitudes are determined by the inversion. The inversion result shows that there are two asperities. The larger one with the maximum slip of 11 m is located around the Uraga Channel between the Miura and Boso Peninsulas, and the second one with a slip of 9 m appears around the base of the Izu Peninsula, where the hypocenter is located. The slip direction changes from a right-lateral strike slip around the hypocenter to a thrust slip around the Uraga Channel. These features of the recovered slip distribution are consistent with the result of Wald and Somerville (1995), but the total seismic moment is slightly larger than their one. The calculated geodetic data show good agreement with the observed ones. We then invert the geodetic and teleseismic data jointly, and will finally carry out a joint analysis of all the geodetic, teleseismic and strong motion data. The geodetic data are insensitive to the deep slips. The seismic data, in particular near-field data, can improve the slip distribution in the deeper portion. The seismic data can also determine the temporal variation of slip. Two arrivals of S-wave are recognized in the horizontal component at several stations. They may be correspond to the two asperities inferred from geodetic data, and provide a constraint on the rupture process.

S52C MCC: Level 1 Friday 1330h

Seismic Data and Network Developments Posters

Presiding: **H Dragert,** Geological Survey of Canada**; L Zhu,** Saint Louis University

S52C-0144 1330h POSTER

Experiments With an Optical Seismometer

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Modern seismometers rely on electronic displacement transducers to sense the motion of an inertial mass suspended by a spring. The more sophisticated systems use electrostatic or electromagnetic force-feedback on the inertial mass to ameliorate the shortcomings of the spring and the displacement transducer. Recent advances in optical fiber technology and digital signal processing offer an alternative to the modern observatory seismometer. We have developed an optical fringe resolver to replace the electronic displacement transducer, which promises to lead to a greatly improved seismometer. The use of optical fiber interferometry rather than traditional electronic displacement transducers affords significant advantages, including: • A linear, high-resolution displacement detector the proposed optical sensor includes the functionality of a digitizer providing about a 30-bit digital output;
• Absolute displacement measurement referenced to the wavelength of light;
• Bandwidth sufficient to resolve the USGS Low Noise Model from DC to > 15 Hz;
• Dynamic range sufficient to record the largest teleseisms and most regional and local earthquakes;
• Minimum electronics in package - only optical fiber connection to the seismometer, minimizing heat from electronics in the sensor package and noise pickup from connecting electrical cables;
• Smaller package our design will be applicable to both vault and borehole installations and should be relatively easy to manufacture. Our first test of this concept was to apply it to a standard STS-1 seismometer. For this experiment, we added interferometric components to the seismometer frame and a retroreflector to the seismometer's mass. We removed the feedback electronics and recorded the STS-1 mass displacement with our new interferometric system. Simultaneously, we recorded the output of a standard STS-1 set up on the same pier. The results, which include observations of large teleseisms and microseisms, indicate that the new technique is promising. In our second experiment, we measured the inherent noise floor of the optical fringe resolver. In a 100 Hz bandwidth, the RMS noise was approximately 5 × 10-12 m, sufficient to resolve the USGS ground noise model up to at least 15 Hz with the STS-1 suspension.

S52C-0145 1330h POSTER

The GSN Noise Model: Estimates of the Least Ambient Earth Noise From the IRIS Global Seismographic Network.

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It has been a decade since the last comprehensive model of ambient earth noise was published*(Peterson, USGS Open-File Report 93-322, 1993).* Since then observations of ambient earth noise from the IRIS Global Seismographic Network of widely distributed, similarly equipped, and well-calibrated stations have been become available. The broad geographic sampling of this large data set and the ease of access to waveform data provided by the IRIS Data Management System facilitate analysis of global noise samples. We analyze data from the 118 GSN stations operating during the year July 2001 through June 2002. Based upon over 738,000 hourly spectral estimates computed from these stations' data, we have developed a robust noise model, which exhibits significant differences from the Peterson model both in the normal mode and body-wave bands.

S52C-0146 1330h POSTER

CISN Display Progress to Date - Reliable Delivery of Real-Time Earthquake Information, and ShakeMap to Critical End Users

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The California Integrated Seismic Network (CISN) has collaborated to develop a next-generation earthquake notification system that is nearing its first operations-ready release. The CISN Display actively alerts users of seismic data, and vital earthquake hazards information following a significant event. It will primarily replace the Caltech/USGS Broadcast of Earthquakes (CUBE) and Rapid Earthquake Data Integration (REDI) Display as the principal means of delivering geographical seismic data to emergency operations centers, utility companies and media outlets. A subsequent goal is to provide automated access to the many Web products produced by regional seismic networks after an earthquake. Another aim is to create a highly configurable client, allowing user organizations to overlay infrastructure data critical to their roles as first-responders, or lifeline operators. And the final goal is to integrate these requirements, into a package offering several layers of reliability to ensure delivery of services. Central to the CISN Display's role as a gateway to Web-based earthquake products is its comprehensive XML-messaging schema. The message model uses many of the same attributes in the CUBE format, but extends the old standard by provisioning additional elements for products currently available, and others yet to be considered. The client consumes these XML-messages, sorts them through a resident Quake Data Merge filter, and posts updates that also include hyperlinks associated to specific event IDs on the display map. Earthquake products available for delivery to the CISN Display are ShakeMap, focal mechanisms, waveform data, felt reports, aftershock forecasts and earthquake commentaries. By design the XML-message schema can evolve as products and information needs change, without breaking existing applications that rely on it. The latest version of the CISN Display can also automatically download ShakeMaps and display shaking intensity within the GIS system. This can give Emergency Response managers' information needed to allocate limited personnel and resources after a major event. The shaking intensity shape files may be downloaded out-of-band to the client computer, and with the GIS mapping tool, users can plot organizational assets on the CISN Display map and analyze their inventory against potentially damaged areas. Lastly, in support of a robust design is a well-established and reliable set of communication protocols. To achieve a state-full server connection and messaging via a signaling channel the application uses a Common Object Request Broker Architecture (CORBA). The client responds to keep-alive signals from the server, and alerts users of changes in the connection status. This full-featured messaging service will allow the system to trigger a reconnect strategy whenever the client detects a loss of connectivity. This sets the CISN Display apart from its predecessors, which do not provide a failover mechanism, or a state of connection. Thus by building on past programming successes and advances in proven Internet technologies, the CISN Display will augment the emergency responder's ability to make informed decisions following a potentially damaging earthquake.

URL: http://www.cisn.org

S52C-0147 1330h POSTER

Conversion of Historic Seismic Data at the Southern California Earthquake Data Center (SCEDC)

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The Southern California Earthquake Data Center (SCEDC) archives and provides public access to continuous and event-based earthquake parametric and waveform data gathered by the Southern California Seismic Network. The mission of the SCEDC is to maintain an easily-accessible, well-organized, high-quality, searchable archive of earthquake data for research in seismology and earthquake engineering. The SCEDC has compiled and converted all available historic seismic data to create a single source of southern California earthquake data from 1932-present. The 1932-1976 era of seismic data was key-punched from the original phase cards into CUSP-format on a VAX system. The data was then imported into the SCEDC Oracle database, so phase and epicenter data is available for direct retrieval by users via STP. A problematic four-year span of CEDAR data from 1977-1980 is currently not accessible, but has been converted and is being processed to include magnitude information. The parametric data from 1981 to present has been loaded into the Oracle 9i database system and the waveforms for that time period have been converted to mSEED format and are accessible through the STP interface. Quality control of 1981-2000 historic parametric and waveform data has progressed using a detailed reverse-chronological examination and verification of magnitudes. Current efforts at the SCEDC are focused on continuing to expand the available seismic datasets, enhancing and expanding distribution methods, and providing rapid access to all datasets, historic and modern. Through the California Integrated Seismic Network, the SCEDC is working with the NCEDC to provide unified access to California earthquake data.

S52C-0148 1330h POSTER

A Decade of Regional Moment Tensor Analysis at UC Berkeley

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Several magnitude estimates are routinely determined by regional networks in California. The issue of magnitude reporting hierachies, particularly the question of when moment magnitude (M_w) should be preferred over local magnitude (M_L), is being addressed in the framework of the development of a statewide earthquake monitoring system in California through the CISN, and is also faced by the ANSS. The Berkeley Seismological Lab (BSL) has made routine determinations of the seismic moment tensor and moment magnitude for over 10 years. These determinations are made automatically for events with local magnitude of 3.5 and higher in northern California and typically reviewed for events of M4.0 and higher. The moment tensor catalog includes nearly 400 events in northern and central California, southern Oregon, and eastern Nevada, as well as events of interest in Washington, Idaho, Utah, and Arizona. We compare the regional

estimates of M_W with estimates of local and duration magnitude. In general, both the automated and reviewed estimates of M_W compare well with other magnitudes, particularly in the M3.5-5.0 range. In some areas of Northern California, there are systematic differences, particularly between M_L and M_W. In the Cape Mendocino area, estimates of M_W are consistently 0.5-1.0 magnitude units higher than M_L for offshore events in the transform. Wurman et al.(this meeting) have found that these events have low Orowan stress drops and low corner frequencies. Other areas showing systematic difference are the Geysers and certain regions in eastern California. We also compare the regional estimates of M_W with global estimates from the Harvard CMT Project and the NEIC for events in the western United States. The regional estimates of M_W agree extremely well with the global estimates, with the exeception of an intriguing systematic shift of $\tilde{0}.08$ magnitude units. We investigate possible reasons for this shift.

S52C-0149 1330h POSTER

Contemporary Strong-motion Network in Southwestern Canada

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Contemporary digital strong-motion instruments, designed by the Geological Survey of Canada, have recently replaced the traditional analogue network in southwestern Canada. The newly designed and built three-component accelerometers are inexpensive to both produce and operate, and provide data retrieval and basic maintenance via the internet. Continuous 0.1-42 Hz data streams of acceleration, velocity and displacement are computed in real-time by the instrument's embedded computer. Upon detection of an event, peak ground motion values are reported to the data centre. The majority of strong-motion instruments are installed in greater Vancouver and Victoria, key areas of vulnerability as they lie in one of the most seismically active and populous areas of the country. One of the focusses of the network design is to study the response of the thick sediments of the Fraser River delta. Instruments are deployed in the urban regions on sites which vary from bedrock to more than 300 m of sediment, and may experience basin-edge effects associated with the delta. Upgrading and densification of the strong motion network in southwest BC will allow for accurate maps showing instrumental intensity to be produced within minutes of a serious earthquake, providing emergency services and city workers with the means to respond efficiently. Prior to such an event, records of smaller events can illuminate areas of high risk and aid in urban planning.

S52C-0150 1330h POSTER

Open Access to Decades of NCSN Waveforms at the Northern California Earthquake Data Center

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The USGS in Menlo Park has operated the Northern California Seismic Network (NCSN) since 1967 and has generated digital seismograms since 1984. Since its inception, the NCSN has recorded 2900 distinct channels at over 500 distinct sites. Although originally used only for earthquake location and coda magnitude, these seismograms are now of interest to seismologists for studying earth structure, precision relocations through cross correlation timing, and analysis of strong motion records. Until recently, the NCSN waveform data were available only through research accounts and special request methods due to incomplete instrument responses. Over the past 2 years, the USGS has assembled the necessary descriptions for both historic and current NCSN instrumentation. The NCEDC and USGS jointly developed a procedure to assemble the hardware attributes and instrument responses for the NCSN data channels using a combination of a simple spreadsheet that defines the attributes of each data channel, and a limited number of attribute files for classes of sensors and shared digitizers. These files are used by programs developed by the NCEDC to populate the NCEDC hardware tracking database tables and then to generate both the simple response and the full SEED instrument response database tables. As a result, the NCSN waveform data can now be distributed in SEED format with any of the NCEDC standard waveform request methods. The NCEDC provides access to waveform data through Web forms, email requests, and programming interfaces. The SeismiQuery Web interface provides information about data holdings. NetDC allows users to retrieve inventory information, instrument responses, and waveforms in SEED format. STP provides both a Web and programming interface to retrieve data in SEED or other user-friendly formats. Through the California Integrated Seismic Network, we are working with the SCEDC to provide unified access to California earthquake data. The NCEDC is a joint project of the UC Berkeley Seismological Laboratory and the USGS Menlo Park that provides a long-term archive and distribution center for geophysical data for northern California.

URL: http://quake.geo.berkeley.edu

S52C-0151 1330h POSTER

Results From the Expanded and Upgraded High Resolution Borehole Seismic Network (HRSN) at Parkfield, CA

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As part of the U.S. Geological Survey's Parkfield Prediction Experiment the HRSN of 10, 3-component borehole seismometers was installed in 1987 to monitor the evolution of seismicity to very low magnitudes (M<0) in the expected nucleation region of a repeating M6 earthquake. During the period 1987 thru mid-1998, high frequency broad-band width (0 to 125 Hz) seismograms from over 5100 earthquakes were recorded in a triggered mode at 500 sps on a 16-bit acquisition system. These events typically clipped at magnitudes greater than 1.5 due to the high gain levels required for small earthquake detection. Data tapes were mailed to Berkeley for processing, and assessment of HRSN performance was made only after the data tapes were read. The expected M6 has yet to occur, nonetheless, data from the HRSN has contributed markedly to our basic understanding of fault zones and earthquake physics by providing a picture of seismic evolution and earthquake recurrence on a compressed time scale (made possible by the numerous small events), and by bridging the gap between laboratory and large earthquake scales. In 1998 the aging HRSN acquisition system failed. With emergency funding from the USGS NEHRP program, the system was replaced with modern 24-bit acquisition and telemetry systems, providing on-scale recording of larger magnitude events and remote access of the system from UCB. This allows for more rapid data analysis and network trouble shooting. Coincident with the network's upgrade, and with NSF support, the HRSN was also expanded from 10 to 13 stations to improve its coverage of low magnitude seismicity at the SAFOD deep drilling site. Upgrade and expansion were completed in August of 2001, and fine tuning of operational parameters and efforts at reducing noise continues. Collection of many more microearthquakes is now possible with the new system. For example, in a 4x4x6 km deep region around SAFOD about 130 evs./yr are now being collected compared to 50 evs./yr from the original HRSN. We discuss the upgrade and expansion efforts and present recent monitoring results from the new HRSN configuration.

URL: http://www.seismo.berkeley.edu/seismo/bdsn/hrsn.overview.html

S52C-0152 1330h POSTER

Circuit-Detour Design and Implementation - Enhancing the Southern California's Seismic Network Reliability through Redundant Network Paths

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We provide enhanced network robustness by apportioning redundant data communications paths for seismic stations in the field. By providing for more than one telemetry route, either physical or logical, network operators can improve availability of seismic data while experiencing occasional network outages, and also during the loss of key gateway interfaces such as a router or central processor. This is especially important for seismic stations in sparsely populated regions where a loss of a single site may result in a significant gap in the network's monitoring capability. A number of challenges arise in the application of a circuit-detour mechanism. One requirement is that it fits well within the existing framework of our real-time system processing. It is also necessary to craft a system that is not needlessly complex to maintain or implement, particularly during a crisis. The method that we use for circuit-detours does not require the reconfiguration of dataloggers or communications equipment in the field. Remote network configurations remain static, changes are only required at the central site. We have implemented standardized procedures to detour circuits on similar transport mediums, such as virtual circuits on the same leased line; as well as physically different communications pathways, such as a microwave link backed up by a leased line. The lessons learned from these improvements in reliability, and optimization efforts could be applied to other real-time seismic networks. A fundamental tenant of most seismic networks is that they are reliable and have a high percentage of real-time data availability. A reasonable way to achieve these expectations is to provide alternate means of delivering data to the central processing sites, with a simple method for utilizing these alternate paths.

S52C-0153 1330h POSTER

JWaveViewer – An extensible, platform-independent waveform viewer for Earthworm

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Earthworm is a data acquisition and analysis system which is widely used for seismological networks and volcano monitoring. JWaveViewer is a project to bring a cross-platform, extensible wave viewer to the Earthworm suite. The project is being written in Java to allow cross-platform compatibility. JWaveViewer is based on a wave viewer for the SDAS protocol (a development project providing access to various forms of time-series data) and provides a set of interfaces for data retrieval through various protocols. JWaveViewer is capable of displaying data in real-time as it becomes available on the server or in history mode where any data stored on the server may be selected. The length of data to be displayed on screen may be customized, and likewise, the appearance of the user interface. Any combination of available traces may be displayed at once and a facility for grouping traces is provided. A range of facilities to undertake basic processing on the displayed waveforms is being developed, for example, filtering, integration and spectrographic (frequency-time) analysis. We plan to demonstrate some of these at the poster session.

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S52C-0154 1330h POSTER

Seismic Monitoring of Alaska's Volcanoes: A Comparison of Event Detection With IASPEI and Earthworm Acquisition Systems

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The Alaska Volcano Observatory (AVO) currently operates 140 seismic stations that are used to monitor 24 active volcanoes in Alaska. Each volcano generally has 6 to 10 short-period stations within 25 km of the summit. From October 1989 through February 2002, seismic events were detected and digitally recorded using an IASPEI acquisition system. In March 2002, the IASPEI system was replaced by an Earthworm acquisition system running in event detection and continuous modes. We have compared seismicity rates, magnitude of completeness and the proportion of low frequency to volcano-tectonic (VT) events detected at Mount Wrangell, Makushin Volcano, and the Katmai volcanic cluster for representative time periods using both acquisition systems. These volcanoes were chosen because each had minimal station outages, significant seismicity with no eruptive activity, and represented different tectonic regimes. The comparison indicates that the Earthworm system detects more events and a greater number of low frequency events than the IASPEI system. With the increase in detected events, a corresponding decrease in false triggers was also observed. For Wrangell there was an increase in the proportion of low frequency events detected (90.9% to 98.9%) and a decrease in magnitude of completeness from 1.8 to 0.9. For the Katmai volcanic cluster the proportion of low frequency events detected (3.8% to 1.4%) and the magnitude of completeness (0.8 to 0.7) both declined. At Makushin, the proportion of low frequency events detected increased slightly (6.4% to 7.7%) and the magnitude of completeness dropped from 1.4 to 1.0. Further, the magnitude of completeness for all 24 monitored volcanoes either declined or remained constant with the introduction of the Earthworm system, resulting in a greater total number of detected events. The increased numbers of detected VT earthquakes and low frequency events allow for more accurate assessments of the seismicity of Alaskan volcanoes.

S52C-0155 1330h POSTER

Comprehensive Processing of the Apollo Lunar Seismic Data

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The Apollo Passive Seismic Experiment consisted of four seismic stations deployed on the lunar surface between 1969 and 1972. We have successfully read and processed all of the lunar seismic event tapes available from the IRIS Data Management Center. Our studies have focussed on the long-period data, and have included filtering and despiking noisy data, event classification, cluster identification, and robust methods for amplitude estimation. We have completed cross-correlation analyses for known groups of deep events. In these analyses, every event in a previously-classified group was cross-correlated with every other event in that group. We find good correlation between events, confirming earlier visual classifications. By combining the cross-correlation approach with a robust median despiking algorithm, we have produced greatly improved differential times and amplitudes, enabling us to construct much cleaner stacks. Because of the inferior signal-to-noise ratio exhibited by a majority of the traces, we have tested several methods of calculating the amplitude of an event. These include relative amplitudes calculated through cross-correlation and several different estimates of absolute amplitude. Our preferred amplitude estimate (the 75th percentile of the absolute deviation about the median) produces the best x-component vs. y-component correlation when plotting events from a single deep event group. Because of the small geographical area spanned by the stations, deep events from the same source region should produce similar amplitudes on the horizontal channels at different stations. Both our previous "grading" technique (in which each event is assigned a grade of A, B, or C based on such factors as signal-to-noise and initial impulse coherence) and our new amplitude estimates indicate that stations 12 and 16 have the greatest number of "visible" events with the most consistent amplitudes. We will begin our search for more events using the continuous data from these stations. Each deep event group can be represented by a stack of its constituent members, appropriately despiked and time-shifted. This will permit new waveform cross-correlations. Instead of using the time-consuming event-by-event method employed earlier, each event group, represented by a single waveform stack, can be correlated with the continuous time series. Using this approach, we hope to identify additional events that can be associated with previously-defined deep clusters.

S52C-0156 1330h POSTER

An homogeneous seismological bulletin for the European-Mediterranean region

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The Euro-Mediterranean Seismological Center (EMSC) has been working on the production of an homogeneous seismological bulletin for the European-Mediterranean region. Such a catalogue could be useful as a reference for seismic hazard studies in the region. The 3 main objectives are to rapidly (with few months delay) provide a bulletin for events with $M > 3$ occuring in the Euro-Med region (from Iceland in the North-West to the Arabic Peninsula in the South-East) by merging parametric data, to obtain better location accuracy in border regions and to improve data availability. The different tools (data merging, data exchange procedures...) have been developed during a 2-years EC funded project carried out in collaboration with 10 partners including the ISC. The developement period ended with the EC project by the end of 2002. Seismological data from 1998 to 2003 have been gathered from about 60 contributors (mainly national networks) providing data from 1500 stations. Up to now, nearly 5,000,000 arrival times for more than 340 000 events were reported (both values including redundancies). Numerous tests have already been performed to validate the automatic processing of the bulletins. To finalize this test period and start the operational production, we have decided to create a 2 years catalogue for 1998 and 1999 and to carry out a careful comparison of the results with the ISC catalogue. More precisely, the station distribution and data coverage obtained with the EMSC database is presented in parallel with the ones provided by the ISC. A statistical analysis is performed to assess the accuracy of the EMSC relocation. For specific regions (ie. Poland, Italy, North Africa), we present the improvements made using larger dataset than the one provided by national organisations. Finally, we will analyse the performances, point out possible weaknesses and present the necessary improvements before starting the operational production, probably by early 2004.

URL: http://www.emsc-csem.org

S52C-0157 1330h POSTER

InSAR Seismic Wave Imaging In Real Time: Inversion Theory

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Synthetic Aperture Radar (SAR) can detect surface deformation resulting from seismic events by phase comparison (SAR interferometry or InSAR) of two images acquired before and after the event. We present here theoretical analysis of the application of InSAR to imaging seismic surface waves as they propagate, that is, where one of the two image acquisitions occurs in 'real time' during an earthquake. (This notion was brought to our notice by Dr. Paul Vincent of Lawrence Livermore National Laboratory.) The full problem is that of inverting an InSAR image of a surface-propagating earthquake to a characterization of the source seismic event. We consider the seismicity and the SAR to comprise a coupled system which produces an output as a function of both ground motion and imaging parameters; a system which only under some circumstances behaves linearly. The important recent accomplishments in this analysis are twofold: First, derivation of interferometric phase as a function of seismic and SAR parameters, and second the characterization of the system impulse response. This latter is expressed as output in response to a spike-wave propagating at seismic speed across flat terrain as it is swept by a SAR antenna beam. These results give us considerable insight into the non-linear aspects of the system behavior and more generally permit us to invert interferometric phase to seismic motion, to the extent that this is possible. A second inversion from seismic motion to source event characteristics–yet to be completed–will complete the solution to the full inversion problem. We present here theoretical results, model anlaysis, and remarks on practical implementation of a seismic imaging system.

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S52D MCC: Level 1 Friday 1330h

Ocean Bottom Noise Posters *(joint with OS)*

Presiding: **G J Fryer,** School of Ocean and Earth Science and Technology, University of Hawaii**; R N Hey,** University of Hawaii

S52D-0158 1330h POSTER

Seismic background noise and signal detection near Yucca Mountain, Nevada

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The seismic monitoring network for Yucca Mountain, Nevada, a potential high-level nuclear waste repository, consists of thirty 24-bit, 3-component digital stations located within a ring of approximately 50 km radius around Yucca Mountain. This network has operated since October 1, 1995; and a catalog of nearly 20,000 earthquakes has been compiled thus far. The network has an extremely low threshold, with apparently complete detection to ML = 0.5 for earthquakes within the network. Within the denser part of the network at less than 25 km from Yucca Mountain, the complete detection threshold is ML = -0.2. The major reason for this low threshold is the low seismic background noise in the region. To characterize this noise, a sampling of all channels was made at hourly intervals for a period of one year. This provided data to quantify the background noise behavior and its statistics. Most stations have average rms noise levels of 10 nm/s or less. Day-night differences in average noise levels are present; some stations show up to a factor of four while most stations show much less than a factor of two. The distribution of noise samples at a given station is roughly log-normal, but usually with a tail on the upper side. The correlation matrix of noise rms shows significant values for almost all station pairs in the network, largely due to the day-night variations. The correlations are weakly dependent on inter-station distances. Noise samples taken regularly over one month were used to compute power spectra. These spectra confirm that noise levels are among the lowest in North America. The magnitude bias at each station (station correction) was computed from the large database of station ML's. A model of signal detection was coded by using the noise statistics derived in this study for mean, standard deviation, and inter-station correlation, by incorporating the station magnitude corrections, and by simulating the STA/LTA detection algorithm. A synthetic catalog of earthquakes was created from this model to compare predicted detection thresholds with those of the actual catalog. The thresholds derived from the synthetic catalog agree well with the actual ones seen for the network. A slight upward bias in estimated magnitude exists for small magnitudes where only a few stations detect; this is due to the fact that stations with positive magnitude bias added to a positive random component detect events preferentially.

S52D-0159 1330h POSTER

Temporal Variation of Ambient Seismic Noise of the Seafloor Borehole Broadband Seismic Observatory WP-1 in the West Philippine Basin

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The seafloor borehole seismological observatory WP-1 is positioned in the west Philippine Basin west of the Kyushu-Palau Ridge. The observatory was installed in April 2001 to fill observational gaps for global seismological networks. The two identical seismometers (Guralp Systems Ltd., CMG-1T) were cemented into the hole as required to assure good coupling. All the necessary power is supplied from lithium batteries. The system has two units of batteries. The data recorder and control unit are placed on the sea floor and a remote operated vehicle (ROV) services the station. We usually operated only one seismometer to reduce the consuming power of the system. The WP-1 observatory was activated in March 2002 using an ROV KAIKO and long-term observation was started using first lithium battery unit. In October 2002, the KAIKO re-visited