Macintosh Program performs time-series analysis

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fornia, and along the Nojima fault (origin of the Kobe quake) might be worth developing further.

- *To better understand near-source motions, geological effects, and structural responses so that risk managers can reduce hazards.*

The Stanford meeting participants asserted that better studies of liquefaction, lateral spreading, and slope instability would be necessary to quantify the effects of such motions on structures and to allow engineers to develop design alternatives for new buildings and for retrofitting existing structures.

- *To develop and improve real-time seismic information systems.*

By transforming and augmenting existing rapid earthquake analysis and notification systems—such as the Caltech-USGS Broadcast of Earthquakes system—earthquake researchers could develop "more practical information systems that can quickly (within a few minutes) provide seismological information, as well as damage distributions following earthquakes."

- *To make better estimates of actual and potential earthquake losses.*
- *To reduce the vulnerability of new steel buildings.*
- *To improve the evaluation of existing buildings and infrastructure, and to better focus efforts to retrofit such structures.*
- *To develop cost-effective methods for designing structures able to withstand major earthquakes with less damage and disruption of service.*
- *To better control fires started in the wake of earthquakes.*

After these priorities were compiled in March, the idea for the partnership was presented to U.S. President Bill Clinton and to Japanese Prime Minister Ryutaro Hashimoto during an April summit in Tokyo. Both leaders agreed that the Partnership could become an important part of the Common Agenda for Cooperation in Global Perspective.

The "Common Agenda," as it is known, is a joint program through which the United States and Japan address mutual challenges in health and human development, global stability, global environmental protection, the advancement of science and technology, and in fostering exchanges for mutual understanding. The Common Agenda—which originated in July 1993, when Clinton and then-Prime Minister Miyazawa were looking for new ways for their nations to work together—also includes programs to study global change, to protect coral reefs and oceans, and to improve and coordinate use of the Global Positioning System.

According to Robert Hamilton, a USGS geophysicist and cochair of the Stanford meeting, Japan is believed to have already set aside money for the Earthquake Disaster Mitigation Partnership. (The Japanese Science and Technology Agency (STA) recently received an 8.4% boost in its 1997 budget, including a 24% increase for public safety and disaster mitigation.) Plans are being made in Japan for the installation of 1000 free-field, strong-motion instruments and 1000 continuous-recording GPS monitors. The STA also is planning to build the world's largest three-dimensional "shake table," a platform that uses hydraulic vibrators to simulate earthquake motion. As Ellsworth added, Japanese researchers "already have more data than they can handle," so the partnership with U.S. scientists should help with the processing and analysis of data.

In the United States, new funding for the Partnership is unlikely to be appropriated, so administrators involved in the National Earthquake Hazards Reduction Program (NEHRP)—which includes resources and staff from the National Science Foundation (NSF), USGS, the National Institute of Standards and Technology, and the Federal Emergency Management Agency (FEMA)—will have to find already funded programs that can be expanded or restructured to accommodate the new relationship with Japanese scientists.

At press time, scientific and diplomatic leaders from Japan and the United States were conducting an earthquake policy symposium from September 16–18 at the National Academy of Sciences in Washington, D.C. According to sources at FEMA and NSF, the agenda of that meeting was to include a discussion of government policies on earthquake disaster mitigation and of ways adopt the latest advances in technology. Policymakers also were expected to consider the possibility of developing a comprehensive Pan-Pacific Natural Disaster Watch Network, a surveillance system for better monitoring and prediction of disasters in the Pacific region.

According to Ellsworth, the first phase of the partnership is likely to include a program to analyze and log boreholes on Awaji Island (on the Nojima fault) and another to compare paleoseismic tsunami data.—*Michael Carlowicz*

Macintosh Program Performs Time-Series Analysis

PAGE 379

A Macintosh computer program that can perform many time-series analysis procedures is now available on the Internet free of charge. Although AnalySeries was originally designed for paleoclimatic time series, it can be useful for most fields of Earth sciences. The program's graphical user interface allows easy access even for people unfamiliar with computer calculations. Previous versions of the program are already used by hundreds of scientists worldwide.

AnalySeries has graphical and interactive tools for stratigraphic correlation of sedimentary records and age-model development. Several possible age models are available. The program also performs interpolation, integral sampling, smoothing, filtering, fitting of time series, and contains an algorithm for calculating astronomical and insolation time series. Tools for spectral analysis are also provided, including the Blackman-Tukey, maximum entropy, multitaper methods, as well as singular spectrum analysis.

Input of data and output of results are easily performed using the cut and paste commands to or from any spreadsheet, though more basic text file input and output is, of course, also possible. All commands are menu-driven and results appear graphically on screen. A simple on-line help is also included in the application.

AnalySeries is available on the Internet at the two following locations, one in Europe: ftp://ftp-lmce.cea.fr/incoming/paillard/AnalySeries, and one in the United States: http://www.ngdc.noaa.gov/paleo/softlib.html. This stand-alone application works on all Macintosh systems. An optimized Power-Macintosh version and an optimized coprocessor version are also available. For more information, contact Didier Paillard at paillar@asterix.saclay.cea.fr. This is LMCE contribution number 00375 and CFR contribution number 1882.—*Didier Paillard, Laboratoire de Modelisation du Climat et de l'environnement, Gif-sur-Yvette, France, and NCAR, Boulder, Colo.; Laurent Labeyrie, CNRS, Gif-sur-Yvette, France, and Universite d'Orsay, Orsay, France; and Pascal Yiou, Laboratoire de Modelisation du Climat et de l'environnement, Gif-sur-Yvette, France*

An electronic supplement to this article written by the authors can be obtained on the World Wide Web at http://www.agu.org/eos_elec as 96097e.html.