SCEC 2005 Annual Report
International Collaboration with Earthquake Research Institute, University of Tokyo
Principal Investigator: Ralph Archuleta

SCEC and the Earthquake Research Institute, University of Tokyo held a joint workshop October 25-27 at ERI. Thirty-two presentations were given. The program is listed below. SCEC participants were John Anderson, Ralph Archuleta, Steve Day, Tom Heaton, Tom Jordan, Kim Olsen, Paul Somerville, Toshiro Tanimoto, Kenichi Tsuda. Travel for these participants was funded by SCEC and by ERI.

Besides the normal exchange of research results, the workshop provided an opportunity for SCEC scientists to look for common research themes where collaborative projects might be initiated.

2nd International Workshop on Strong Ground Motion Prediction and Earthquake Tectonics in Urban Areas

Workshop Program

October 25 AM
10:00-10:10 Shuhei Okubo (ERI Director)

Opening Remarks
10:10-10:20 Yoshichika Nishio (Earthquake Research Division Director, MEXT)

Greetings from MEXT

Research Projects
10:20-10:50 Naoshi Hirata (DaiDaiToku project leader; ERI, Univ. Tokyo)
Overview of results from the Metropolitan Project: Regional characterization of the crust in metropolitan areas for prediction of strong ground motion
10:50-11:20 Thomas H. Jordan (SCEC Director; Univ. Southern California)
SCEC's program of earthquake system science in southern California
11:20-11:50 Hiroyuki Fujiwara (J-SHIS project leader; NIED, Tsukuba)
National seismic hazard maps of Japan

October 25 PM
Earthquake Tectonics
13:30-14:00 Toshiro Tanimoto (Univ. California, Santa Barbara)
A method to determine S-wave velocity in the shallow crust: Frequency dependence in Rayleigh wave ellipticity
14:00-14:20 Hiroshi Sato, Naoshi Hirata, Kazuki Koketsu (ERI, Univ. Tokyo), Kiyoshi Ito (DPRI, Kyoto Univ.), David Okaya (Univ. Southern California), Takaya Iwasaki (ERI, Univ.

Tokyo), Tanio Ito (Chiba Univ.), Keiji Kasahara (NIED, Tsukuba), Takeshi Ikawa, Susumu Abe, Taku Kawanaka (JGI Incorporated), Makoto Matsubara (NIED, Tsukuba), Reiji Kobayashi (ERI, Univ. Tokyo), and Steven Harder (Univ. Texas El Paso)
Seismic reflection profiling for prediction of strong ground motion in the metropolitan areas, Japan: Results from Tokyo and Osaka
14:20-14:40 Kiyoshi Ito, Yasuhiro Umeda (DPRI, Kyoto Univ.), Hiroshi Sato, Naoshi Hirata (ERI, Univ. Tokyo), Taku Kawanaka, and Takeshi Ikawa (JGI Incorporated)
Deep seismic profiling in the Kinki district: The Shingu-Maizuru line
14:40-15:00 Kin'ya Nishigami (DPRI, Kyoto Univ.)
Modeling deep structure of active faults and 3-D crustal structure in and around the Kinki district

Earthquake Source
15:20-15:50 Ralph J. Archuleta, Susana Custodio (Dept. Earth Sci. and Inst. Crustal Studies, Univ. California, Santa Barbara), and Pencheng Liu (Inst. Crustal Studies, Univ. California, Santa Barbara)
Resolving the source parameters of the Parkfield earthquake by multiple inversions of different data sets
15:50-16:10 Tomotaka Iwata (DPRI, Kyoto Univ.)
Source inversion of recent destructive earthquakes and characterized source model
16:10-16:30 Shin'ichi Miyazaki (ERI, Univ. Tokyo)
Transient crustal deformation as deduced from a dense GPS array - imaging evolutions of slip, slip-rate, and shear stress change
16:30-16:50 Manabu Hashimoto (DPRI, Kyoto Univ.), Nithiwatthn Choosakul, Michio Hashizume (Chulalongkorn Univ.), Shuzo Takemoto, Hiroshi Takiguchi, Yoichi Fukuda, and Kunio Fujimori (Kyoto Univ.)
A geodetic fault model for the 2004 Sumatra-Andaman earthquake derived from CGPS data
16:50-17:10 Naoyuki Kato (ERI, Univ. Tokyo)
Numerical simulation of recurrence of asperity rupture in the Sanriku region, northeastern Japan

October 26 AM
Ground Motions
09:30-10:00 John G. Anderson (Univ. Nevada, Reno)
Extreme ground motions
10:00-10:20 Saburo Midorikawa (Tokyo Inst. Tech.)
Some problems on empirical strong motion prediction
10:20-10:50 Paul G. Somerville and Arben Pitarka (URS Corporation, Pasadena)
Differences in earthquake source and ground motion characteristics between surface and buried earthquakes
10:50-11:10 Hiroe Miyake, Kazuki Koketsu, Reiji Kobayashi, Yasuhisa Tanaka, and Yasushi Ikegami (ERI, Univ. Tokyo)
Broadband source modeling and integrated 3D velocity model in the Tokyo metropolitan area: towards ground motion validation of the great 1923 Kanto earthquake
11:10-11:40 David J. Wald (USGS, Golden)
Prompt assessment of global urban earthquakes: challenges producing rapid ground motion estimations

October 26 PM
Site Effects
13:00-13:30 Thomas L. Pratt (USGS, Seattle)
Site response, basin effects and attenuation in the Puget lowland, Washington state
13:30-13:50 Shoji Sekiguchi (NIED, Tsukuba), Hiroki Hayashi (Shimane Univ.), Masashi Tsukui (Chiba Univ.), Yo Uesugi (Tsuru Univ.), Tanio Ito (Chiba Univ.), Yukio Yanagisawa (AIST, Tsukuba), Fumio Yamamizu, Kazushige Obara, Sadaki Hori, Hisanori Kimura, Makoto Matsubara, and Keiji Kasahara (NIED, Tsukuba)
Deep drilling at the arc-arc collision zone in the Yamakita area, central Honshu, Japan
13:50-14:10 Masaki Takahashi, Yukio Yanagisawa (AIST, Tsukuba), Keiji Kasahara (NIED, Tsukuba), Haruko Sekiguchi (AIST, Tsukuba), and Hiroshi Hayashi (Shimane Univ.)
Subsurface half-grabens in the Kanto Plain, central Japan, and its effect for long-period strong motion
14:10-14:30 Hiroaki Yamanaka (Tokyo Inst. Tech.)
Construction of 3D S-wave velocity model of the Kanto basin, Japan, using Rayleigh wave phase velocity
14:50-15:20 Kenichi Tsuda and Ralph J. Archuleta (Univ. California, Santa Barbara)
Nonlinear site response: case study from 2003 and 2005 Miyagi-oki earthquakes
15:20-15:40 Hiroshi Kawase (Kyushu Univ., Faculty of Human-Environment Studies)
Site effects derived from spectral inversion method for K-NET, KiK-net, and JMA strong-motion network wtih special reference to soil nonlinearity in high PGA records
15:40-16:00 Kazue Wakamatsu (NIED, Kawasaki)
Development of 7.5-arc-second engineering geomorphologic classification database for metropolitan areas in Japan
16:00-16:30 Tom Heaton (California Inst. Tech.)
Simulated high-rise building response using strong motions recorded during the 2003 Tokachi-oki earthquake

October 26 Evening
Public Lectures (in Japanese)
17:00-18:00 Kojiro Irikura (Kyoto Univ.)
Prediction of strong ground motion with “recipe”
18:00-19:00 Kazuki Koketsu (ERI, Univ. Tokyo)
Future earthquakes and their strong ground motions in the Tokyo metropolitan area

October 27 AM
Large-scale Simulation and Rupture Dynamics
09:10-09:30 Muneo Hori (ERI, Univ. Tokyo), Tsuyoshi Ichimura (Tokyo Inst. Tech.), and Kenji Oguni (ERI, Univ. Tokyo)
Integrated earthquake simulation - Estimation of strong ground motion and structural responses
09:30-10:00 Kim B. Olsen (San Diego State Univ.)
TeraShake: Large-scale simulations of M7.7 earthquakes on the Southern San Andreas Fault
10:00-10:30 Steven M. Day (San Diego State Univ.)
Analysis of long-period amplifications from TeraShake
10:30-10:50 Hidenori Kawabe and Katsuhiro Kamae (RRI, Kyoto Univ.)

Underground structure modeling of Kii peninsula, Japan, for long period ground motion simulation

10:50-11:10 Takashi Furumura (ERI, Univ. Tokyo)

Computer simulation of long-period ground motions associated by large subduction zone earthquakes

11:10-11:30 Satoshi Ide (Dep. Earth Planet. Sci., Univ. Tokyo)

Rupture propagation along fault surfaces of fractal characteristics

11:30-11:50 Takashi Miyatake (ERI, Univ. Tokyo)

Effect of negative stress drop on faulting process

11:50-12:00 Mizuho Ishida (NIED, Tsukuba)

Closing Remarks