

COSMOS

Consortium of Organizations for
Strong-Motion Observation Systems

*International Workshop for Site
Selection, Installation, and Operation
of Geotechnical Strong-Motion Arrays*

*Workshop 2
Guidelines for Installation, Operation,
and Data Archiving and Dissemination*

17 - 19 May 2006
La Jolla, California

Sponsors

COSMOS

*National Science Foundation
University of California, San Diego*

Cosmos Publication CP-2006/01

Editors

Pedro de Alba
Robert L. Nigbor
Jamison H. Steidl
J. Carl Stepp

General Editor

C. M. Johnson

Acknowledgments

The COSMOS gratefully appreciates the National Science Foundation for its support for this workshop under Grant No. CMS-0338094.

***Workshop 2: Guidelines for Installation, Operation,
and Data Archiving and Dissemination***

Agenda

CONSORTIUM OF ORGANIZATIONS FOR STRONG-MOTION OBSERVATIONS SYSTEMS
THE NATIONAL SCIENCE FOUNDATION

*International Workshop for Site Selection, Installation,
and Operation of Geotechnical Strong-Motion Arrays*

17 & 18 May 2005

San Diego Supercomputer Center
University of California, San Diego
La Jolla, California

Wednesday, May 17th

- | | |
|-------------------|--|
| 7:30–8:30 AM | Continental Breakfast |
| Session 1: | Guidelines for Geotechnical Strong-Motion Array Site Selection ♦
Moderator: <i>Jamison H. Steidl</i> |
| 8:30–8:50 AM | Site Selection and Installation of Geotechnical Arrays: Gaps in Our Knowledge ♦
<i>Pedro A. de Alba</i> |
| 8:50–9:10 AM | Inventory of Existing Strong-Motion Geotechnical Arrays ♦ <i>Jamison H. Steidl</i> |
| 9:10–9:30 AM | Nonlinear Modeling Needs for GSMA Sites: Invited Paper ♦ <i>Ahmed Elgamal</i> |
| 9:30–9:50 AM | Spatial Variation of Ground Motion Models for Use in Calculating Seismically
Induced Ground Strains ♦ <i>Timothy D. Ancheta, Jonathan P. Stewart & Robert L.
Nigbor</i> |
| 9:50–10:10 AM | Break |
| 10:10–10:30 AM | Engineering and Science Needs for GMSA Sites: An Invited Paper ♦ <i>Steven L.
Kramer</i> |
| 10:30 AM–12:00 PM | Facilitated Discussion: Priorities for Selection of Sites for Future Geotechnical
Strong-Motion Arrays ♦ Moderator: <i>Jamison H. Steidl</i> |
| 12:00–1:00 PM | Lunch |

Session 2:	Guidelines for Installation and Long-Term Operation of Geotechnical Strong-Motion Arrays ♦ Moderator: <i>Robert L. Nigbor</i>
1:00–1:20 PM	Guidance Needs for GSMA Installation and Operation ♦ <i>Robert L. Nigbor</i>
1:20–1:40 PM	Case Histories: Lessons Learned ♦ <i>Jamison H. Steidl</i>
1:40–2:00 PM	EuroSeis Experience ♦ <i>Christos A. Pappaioannou</i>
2:00–2:20 PM	Instrument Testing and Evaluation for the Taiwan Strong-Motion Instrumentation Program ♦ <i>Chun-Chih Liu, W. H. K. Lee & C.-F. Wu</i>
2:20–2:40 PM	Geotechnical Arrays in the CGS/Caltrans Project in California ♦ <i>Anthony F. Shakal</i>
2:40–3:00 PM	Break
3:00–3:20 PM	Strategies for Coordinated Long-Term Operation of Geotechnical Strong-Motion Arrays ♦ <i>J. Carl Stepp</i>
3:20–5:00 PM	Facilitated Discussion: Colloboration, Coordination, and Oversight ♦ Moderator: <i>Robert L. Nigbor</i>
5:00 PM	Adjourn First Day
7:00 PM	Hosted Dinner

Thursday, May 18, 2006

7:30–8:30 AM	Continental Breakfast
Session 3:	Archiving and Dissemination of Geotechnical Strong-Motion Array Recordings and Associated Metadata ♦ Moderator: <i>Loren L. Turner</i>
8:30–9:00 AM	COSMOS Geotechnical Virtual Data Center ♦ <i>Jennifer N. Swift</i>
9:00–9:30 AM	COSMOS Strong-Motion Virtual Data Center ♦ <i>Melinda Squibb, Ralph Archuleta & Jamison Steidl</i>
9:30–10:00 AM	DIGGS: An XML-Based Interchange Standard for International Exchange of Geotechnical and Geoenvironmental Data ♦ <i>Daniel Ponti, Marc Hoit, Mike Mcvay, Mark Styler, Jean Benoit, Salvatore Caronna, Roger Chandler, Paul Quinn & Tim Spink</i>
10:00–10:15 AM	Break
10:15–10:45 AM	NEESit Data Model ♦ <i>Lelli Van Den Einde</i>

**Workshop 2: Guidelines for Installation, Operation,
and Data Archiving and Dissemination**

Agenda

- 10:45 AM–12:00 Facilitated Discussion: Archiving and Dissemination Strategies ♦ Moderator:
John Bobbitt
- Panel: *Charles R. Real, Melinda Squibb, Jennifer N. Swift, Daniel Ponti, Lelli Van
Den Einde, Clifford J. Roblee, and Loren L. Turner*
- 12:00 **Adjourn Workshop**
- 12:00–1:00 PM **Lunch**
- 1:00 PM **Depart for Field Trip**

**Workshop 2: Guidelines for Installation, Operation,
and Data Archiving and Dissemination**

Geotechnical Strong-Motion Array Workshop – Field Trip Schedule
Wildlife Liquefaction Array
Borrego Valley Array
Garner Valley Array

Field Trip Leaders: Robert L. Nigbor
Jamison H. Steidl
T. Leslie Youd

Field Trip Agenda

Thursday, May 18th

1:00 PM: Depart from San Diego
3:00 PM: Wildlife Liquefaction Array Field Site Tour
5:00 PM: Depart for Borrego Springs
6:00 PM: Hotel check-in at Borrego Springs at the Palm Canyon Resort
7:00 PM: Dinner

Friday, May 19th

7:00 PM: Breakfast
8:00 PM: Field Sites Training Session – At hotel facility

Research use of the field sites

10:00 PM: Depart for Borrego Valley Array
10:15 PM: Borrego Valley Array Field Site Tour
11:15 PM: Depart for Garner Valley
12:00 Lunch at Warner Springs Glider Port
1:30 PM: Garner Valley Field Site Tour
3:30 PM: End of Field Trip

Depart for Regional Airports (San Diego/Ontario/Los Angeles)

List of Contributors and Attendees

Timothy D. Ancheta
Department of Civil Engineering
5731-H Boelter Hall
University of California
Los Angeles, CA 90095-2593
Email: tancheta@seas.ucla.edu

Dominic Assimaki
Civil & Environmental Engineering
Georgia Institute of Technology
790 Atlantic Drive N. W.
Atlanta, GA 30332-0355
Email: dominic.assimaki@ce.gatech.edu

John Bobbitt
Petrochemical Open Software Consortium
14919 Carolcrest Street
Houston, TX 77079
Email: bobbitt@posc.org

Roger D. Borchardt
U. S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025
Email: borcherdt@usgs.gov

Pedro de Alba
Department of Civil Engineering
University of New Hampshire
Kingsbury Hall
Durham, NH 03824-2364
Email: padealba@hypatia.unh.edu

Stephen Dickenson
Department of Civil Engineering
Oregon State University
Apperson Hall
Corvallis, OR 97331-2302
Email: stephen.dickenson@oregonstate.edu

Ahmed Elgamal
Department of Structural Engineering
SERF Building Rm 345, Mail Code 0085
La Jolla, California 92093-0085
Email: elgamal@ucsd.edu

Steven D. Glaser
University of California
Department of Civil & Environmental Engineering
Berkeley, CA 94720-1710
Email: glaser@ce.berkeley.edu

Thomas L. Holzer
U. S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025
Email: holzer@usgs.gov

Claire M. Johnson
COSMOS
1301 South 46th Street
Richmond, CA 94804-4698
Email: clairejohnson@berkeley.edu

Stephen L. Kramer
University of Washington
Department of Civil Engineering
More Hall #201, Box 352700
Seattle, WA 98195-2700
Email: Kramer@u.washington.edu

Jon Lee
NEES Consortium, Inc.
400 F Street,
Davis, CA 95616
Email: Jon.Lea@nees.org

Andrew J. Murphy
22309 Fitzgerald Drive
Laytonsville, MD 20882
Email: ajm1@nrc.gov

Robert L. Nigbor
Department of Civil Engineering
5731 Boelter Hall
University of California
Los Angeles, CA 90095-1593
Email: nigbor@ucla.edu

Christos A. Pappaioannou
ITASK
PO Box 53 Finikas
Thessaloniki 55102, GREECE
Email: chpapi@itsak.gr

Daniel Ponti
U. S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025
Email: ponti@usgs.gov

Hank Ratzesberger
Institute for Crustal Studies
Mail Code 1100
University of California
Santa Barbara, CA 93106-1100
Email: hankr@crustal.ucsb.edu

Ellen M. Rathje
University of Texas
Ecj 9-227, MC 1792
Austin, TX 78749
Email: e.rathje@mail.utexas.edu

Charles Real
California Geological Survey
801 K Street, MS-13-35
Sacramento, CA 95814-3531
Email: creal@consvr.ca.gov

Clifford J. Roblee
NEESinc.
707 4th Street, 307
Davis, CA 95616
Email: cliff.roblee@nees.org
William U. Savage
U. S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025
Email: wusavage@usgs.gov

Anthony F. Shakal
California Strong-Motion Instrumentation
Program
California Geological Survey
801 K Street, MS 13-35
Sacramento, CA 95814-3531
Email: tshakal@consvr.ca.gov

Melinda Squibb
Institute for Crustal Studies
Mail Code 1100
University of California
Santa Barbara, CA 93106-1100
Email: mindy@crustal.ucsb.edu or
webmaster@cosmos-eq.org

Jamison H. Steidl
Institute for Crustal Studies
University of California
Santa Barbara, CA 93106-1100
Email: steidl@crustal.ucsb.edu

J. Carl Stepp
COSMOS
1301 South 46th Street
Richmond, CA 94804-4698
Email: cstepp@moment.net

Mourad Zeghal
Department of Civil & Environmental Engineering
Rensselaer Polytechnic Institute
110 8th Street
Troy, NY 12180
Email: zeghal@rpi.edu

Jennifer N. Swift
Department of Civil Engineering
University of Southern California
Los Angeles, CA 90089
Email: jswift@usc.edu

Loren Turner
Caltrans
5900 Folsom Blvd MS-5
Sacramento, CA 95819
Email: loren_turner@dot.ca.gov

Yael “Lelli” Van Den Einde
Assistant Director for NEESit Operations
San Diego Supercomputer Center
9500 Gilman Drive
La Jolla, CA 92093-0505
Email: lellivde@sdsc.edu

Jerry Wright
Bureau of Reclamation
Bldg 67, D-8330
6th & Kipling
Denver, CO 80225-0007
Email: jwright@do.usbr.gov

T. Leslie Youd
Department of Civil Engineering
Brigham Young University
368 Clyde Building
Provo, UT 84602-4081
Email: tyoud@byu.edu

***Workshop 2: Guidelines for Installation, Operation,
and Data Archiving and Dissemination***

Contents

Acknowledgments	iii
Agenda	v
List of Contributors and Attendees	viv
Table of Contents	xiii

Introduction ♦ Pedro de Alba, Jamison Steidl, Robert L. Nigbor & J. Carl Stepp

Session 1: Guidelines for Geotechnical Strong-Motion Array Site Selection

Site Selection and Installation of Geotechnical Arrays: Gaps in Our Knowledge ♦ Pedro de Alba

Inventory of Existing Strong-Motion Geotechnical Arrays ♦ Jamison H. Steidl

Spatial Variation of Ground Motion Models for Use in Calculating Seismically Induced Ground Strains ♦ Timonty D. Ancheta, Jonathan P. Stewart & Robert L. Nigbor

Engineering and Science Needs for GSMA Sites: An Invited Opinion Paper ♦ Steven Kramer

Session 2: Guidelines for Installation and Long-term Operation of Geotechnical Strong-Motion Arrays

Guidance Needs for GSMA Installation and Operation ♦ R. L. Nigbor

Case Histories: Lessons Learned ♦ Jamison H. Steidl

Instrument Testing and Evaluation for the Taiwan Strong-Motion Instrumentation Program ♦ C.-C. Liu, W. H. K. Lee & C. F. Wu

Strategies for Coordinated Long-Term Operation of Geotechnical Strong-Motion Arrays ♦ J. Carl Stepp

Session 3: Archiving and Dissemination of Geotechnical Strong-Motion Array Recordings and Associated Metadata

COSMOS Strong-Motion Virtual Data Center ♦ Melinda Squibb, Ralph Archuleta & Jamison H. Steidl

DIGGS: An XML-Based Interchange Standard for Geotechnical and Geoenvironmental Data ♦ Daniel Ponti, Marc Hoit, Mike McVay, Mark Styler, Jean Benoit, John Bobbitt, Salvatore Caronna, Roger Chandler, Paul Quinn & Tim Spink

Summary and Recommendations ♦ Pedro de Alba, John Bobbitt, Robert L. Nigbor, Jamison H. Steidl & J. Carl Stepp