Seminars and Conferences

UCSB On-campus

2007-2008

August 20, 2007
Title: Seismology without earthquake: imaging and monitoring with ambient noise

Ambient noise and diffuse signals can be used to construct the seismic Earth response between two stations. We discuss the fundamental properties of wave fields which justifies this approach. We present examples of applications to the imaging of the crust in California and in the Alps. We demonstrate that this technique can be useful to monitor weak changes in physical properties in the Earth. We show an application to an active volcano.

Michel Campillo
Université Joseph Fourier, Grenoble, France
Fields of interest:
Seismology
Waves in complex media, scattering and attenuation.
Earthquake source imaging and dynamics

February 28, 2008
Title: Predicting expected motion in the built environment due to large earthquake.

My research in earthquake studies has been conducted in several broad areas of observational and theoretical seismology over the last three decades. The major goal of the work is to understand the physics of the earthquake preparation and faulting process, and to predict expected motion at sites of engineering interest (the built environment) due to large earthquakes. The long-term goal is to prepare the physical basis for developing the capability to predict earthquakes, in future, if possible. Current research is focused on the scaling of small to large earthquakes, study of very large submarine earthquake which cannot be studied by any other means such as GPS or SAR, and study of deep earthquakes and shapes of deep seismic zones along with its implications for mantle dynamics.

Recently, I have been working on great earthquakes in Sumatra, Antarctica, and Indonesia. I have served on the UK Government's Natural Hazards Working Group, set up by Sir David King, Chief Scientific Advisor to the UK Government.

Shamita Das
Professor in Earth Science
Exeter College
Oxford University

May 13, 2008
Title: Earthquake Source Physics: Using Ground-Motion to Image an Earthquake Rupture"
CNSI Scientific Computing Series Presentation, talks are aimed at fellow science and engineering researchers, but not assuming that you are experts in their field.

Susana Custodio, UCSB Inst. For Crustal Studies.

Off Campus-Invited Lectures

2007

2007, Southern California Earthquake Center, Annual Meeting Palm Springs, CA, "A constitutive model for fault gouge deformation in dynamic rupture simulations," Eric G. Duab, Jean M. Carlson

2007, American Geophysical Union, Fall Meeting, San Francisco, CA, "Shear strain localization in elastodynamic rupture simulations," Eric G. Duab, Lisa M. Manning, Jean M. Carlson

2007, American Geophysical Union, Fall Meeting, San Francisco, CA, "A New Approach for Combining GPS and Seismic Data in Kinematic Inversions", Susana Custodio, Morgan T. Page, Ralph J. Archuleta

2007, American Geophysical Union, Fall Meeting, San Francisco, CA, "Integrating GPS and Seismic Data in Earthquake Source Inversions," Susana Custodio, Morgan T. Page, Ralph J. Archuleta

2007, American Geophysical Union, Fall Meeting, San Francisco, CA "Using Resolution Information to Remove Artifacts from GPS Inversions," Morgan T. Page, Susana Custodio, Ralph Archuleta

2007, American Geophysical Union, Fall Meeting, San Francisco, CA, "Improving on Inversions for Kinematic Parameters of the Earthquake Source," Ralph J. Archuleta, Pengcheng Liu, Susana Custodio,

2007, American Geophysical Union, Fall Meeting, AGU Outstanding Student Presentation Tectono-physics session, "The role of transverse faults in accommodating lateral propagation of faults and folds: Evidence from geomorphic and structural analysis of active folding in the Camarillo Fold Belt, Ventura County, California," Duane DeVecchio

2007, Stanford University, "The Future of Geochronology: Monazite," Brad Hacker

2007, Stanford University, "Genesis & Re-formation of Continents," Brad Hacker

2007, Louisiana State University, "Continental reworking," Brad Hacker

2007, CSU Fresno, "Continental reworking," Brad Hacker

2007, UC Santa Cruz "Continental reworking,"

2007, Tohoku University, "Dehydration and seismicity in subducting slabs," Brad Hacker

2007, Tohoku University, "Continental relamination," Brad Hacker

2007, Tohoku University, "Global subduction of H_2O," Brad Hacker

2007, University of Washington, "Continental relamination," Brad Hacker

2007, American Geophysical Union, "The Aeolian volcanic arc; new insights from subduction zone thermal models and mineral solubility scaling relationships," Frank Spera

2007, American Geophysical Union, "The source of volcanic ash in late classic Maya pottery at El Pilar, Belize," Frank Spera

2007, International Union of Geodesy and Geophysics meeting, Perugia, Italy, "The Evolution of the Campi Flegrei Caldera: Thermodynamic modeling of the Fondo Riccio and Minopoli eruptions using melt inclusions data," Frank Spera

2007, State of the Arc meeting, Osorno, Chile, "Trace Element Partitioning During Fluid-Present Melting and Crystallization," Frank Spera

2007, American Geophysical Union, Fall Meeting, San Francisco, CA, "On the probability law governing ground motion metrics: A Case Study the 2004 Parkfield Earthquake," Daniel Lavallee

2007, American Geophysical Union, Fall Meeting, San Francisco, CA, "Study of the Probability Law Governing Ground Motion Metrics Recorded During the 2004 Parkfield Earthquake," Daniel Lavallee

2007, American Geophysical Union, Fall Meeting, San Francisco, CA, "Effective Friction Resulting from the Presence of Heterogeneous Strength for Rupture Dynamics," Jan Schmedes

2007, American Geophysical Union, Fall Meeting, San Francisco, CA, "On the spatial correlation of earthquake source parameters," Jan Schmedes

2007, Southern California Earthquake Center, Annual Meeting, "The giant low-angle fault system beneath the Palos Verdes anticlinorium, California," Christopher Sorlien and L. Seeber

July 2007

July, 2007, Workshop on Vesuvius and Volcanism of Campania Plain, Palazzo Doria D'angri, Naples, Italy, "Open-System Processes Associated with the Campanian Ignimbrite," Frank Spera

July 13, 2007, International Union of Geodesy and Geophysics, Perugia, Italy, "Rayleigh Wave ZH ratio Inversion," Toshiro Tanimoto

August 2007

August 1, 2, 6-9, 2007, SCEC CVM/USR Workshop, Palm Springs, California, "Surface Wave Tomography," Toshiro Tanimoto

August 3, 2007, Shimizu Corporation research laboratory, Tokyo, "Earth structure from the analysis of seismic noise," Toshiro Tanimoto

August 10, 2007, Earthquake Research Institute, University of Tokyo, "Shallow lunar process – analysis of Apollo 17 data by the new cross-correlation method," Toshiro Tanimoto

September 2007

September, 2007, University of Melbourne, "Origin of stream chemistry in alpine watersheds: The importance of groundwater," Jordan Clark

September, 2007, Department of Energy Workshop, Las Vegas, Nevada, "Final Report: Eruption Hazards and Probabilities in the greater Yucca Mountain Region, Basin and Range Province, North America," Frank Spera

September, 2007, Southern California Earthquake Center, Annual Meeting, Palm Springs, CA, "Modeling uncertainty of nonlinear site response in the Los Angeles basin," Assimaki, D., W. Li, J.H. Steidl, J.

September 10, 2007, Southern California Earthquake Center, Annual Meeting, "Resolution of GPS Data from the 2004 Mw6.0 Parkfield Earthquake," Morgan T. Page, Susana Custodio, Ralph J. Archuleta, Jean M. Carlson

September 10, 2007, Southern California Earthquake Center, Annual Meeting, Lithospheric Architecture and Dynamics group, "Anisotropy and Tectonics," Toshiro Tanimoto

September 10-12, 2007, Southern California Earthquake Center, Annual Meeting
"Z/H Rayleigh wave analysis on broadband seismic data in Southern California," Tomoko Yano, Shunsuke Shikato, Toshiro Tanimoto
"A new velocity model for Southern California, CVM-H 5.0," Andreas Plesch, Peter Suess, Jason Munster, John H. Shaw, Egill Hauksson, Toshiro Tanimoto and members of the USR Working Group

October 2007

October, 2007, 6th International Symposium on Managed aquifer Recharge, "Tracing Recharge Water from Spreading Ponds: Insights from a Decade for Studies," Jordan Clark

October, 2007, State of the Arc Meeting, Osorno, Chile, "Magma Evolution by Recharge, Fractional Crystallization and Assimilation," Frank Spera

October 16, 2007, University of Southern California, "Using Resolution Infor-mation to Eliminate Artifacts in Earthquake Source Inversions," Morgan T. Page, Susana Custodio, Ralph J. Archuleta, Jean M. Carlson

October 24, 2007, University of California, Davis, "Monsoons and Mountain Building in the Himalaya," Douglas Burbank

October 20, 2007, UCSB Affiliates, "What is the role of Antarctica in Earth's Climate?" Bruce Luyendyk

November 2007

November, 2007, Harvard University, Solid Earth Seminar, "Strain localization in amorphous solids," Lisa Manning

November 8, 2007, Ohio State University, "Monsoons and Mountain Building in the Himalaya," Douglas Burbank

November 8-9, 2007, Earthquake Research Institute, University of Tokyo, 2nd International Workshop on Long-Period Ground Motion Simulation and Velocity Structures, "Using Seismic Noise for Constraining Shallow S-wave Velocity Structure," Toshiro Tanimoto

November 11, 2007, California Institute of Technology, Dix Seismo Lab Seminar, "GPS Inversions: What Can They Resolve?" Morgan T. Page, Susana Custodio, Ralph J. Archuleta, Jean M. Carlson

November 14, 2007, U.S. Geological Survey, Menlo Park, "Constraining Earthquake Source Inversions with GPS Data: Resolution Based Removal of Artifacts," Morgan T. Page, Susana Custodio, Ralph J. Archuleta, Jean M. Carlson

December 2007

December 10-14, 2007, American Geophysical Union, Fall Meeting, San Francisco
S23A-1103, "A Year of Microseisms in Southern California," P. Gerstoft, Toshiro Tanimoto
S41A-0250, "The ZH ratio Analysis of Rayleigh Waves using Broadband Seismograms in Southern California, S. Shikato, Tomoko Yano, Toshiro Tanimoto
S41A-0251, "The ZH ratio Analysis of Global Seismic Data," Tamoko Yano, S. Shikato, L. Rivera, T. Tanimoto
T13E-1635, "S-wave velocity structure in the Kanto basin from inverting the HZ ratios of Rayleigh waves," Y. Tanaka, K. Koketsu, H. Miyake, Toshiro Tanimoto
P51B-0484, "Periodic changes in shallow lunar crust caused by Sun's heating and thermal diffusivity near the surface," Toshiro Tanimoto, M. Eitzel, Tomoko Yano

December 11, 2007, American Geophysical Union, Annual Meeting, "Detrital record of Himalayan orogenesis: insights and caveats", Douglas Burbank

December 14, 2007, American Geophysical Union, Fall Meeting, "Using Resolution Information to Remove Artifacts from GPS Inversions," Morgan T. Page, Susana Custodio, Ralph J. Archuleta, Jean M. Carlson

December 17, 2007, Gilbert Club, Lawrence Hall of Science, Berkeley, "Climate-Tectonic interactions: a Himalayan perspective," Douglas Burbank

2008

2008, University of Basel, "Continental refinery," Brad Hacker

2008, University of Geneva, 3-day short course, "Ultrahigh-pressure tectonics," Brad Hacker

2008, Central Washington University, "Continental refinery," Brad Hacker

2008, Columbia University/LDEO, "Continental refinery," Brad Hacker

2008, Woods Hole Oceanographic Institution, "Continental refinery," Brad Hacker

2008, Seismological Society of America, Annual Meeting, "Shear strain localization in elastodynamic rupture simulations," Eric G. Duab, Lisa M. Manning, Jean M. Carlson

January 2008

January, 2008, UC Irvine, "Partitioning of Methane Emissions between the Atmosphere and Ocean above Shallow Hydrocarbon Seeps," Jordan Clark

January 22, 2008, University of Southern California, "A two-step approach for combining GPS and seismic data in kinematic inversions," Susana Custodio

January 23, 2008, Disaster Prevention Research Institute, Kyoto University, "The Noise Cross-Correlation Approach for Apollo Data," Toshiro Tanimoto

February 2008

February, 2008, University of Hawaii, "Partitioning of Methane Emissions between the Atmosphere and Ocean above Shallow Hydrocarbon Seeps," Jordan Clark

March 2008

March 2008, University of Southern California, "Origin of stream chemistry in alpine watersheds: The importance of groundwater," Jordan Clark

March 2008, American Physical Society, March Meeting, New Orleans, "Shear banding in amorphous solids," Lisa Manning

March 19-21, 2008, Cordilleran Section (104th Annual) and Rocky Mountain Section (60th Annual) Joint Meeting, University of Nevada, Las Vegas, Nevada, "An Early Paleogene Paleobotanical Paleoclimatic Analysis of the Northern Sierra Nevada Lovelock," Elizabeth Cliar, and Bruce H. Tiffney

March 28, 2008, Université Joseph Fourier, Grenoble, France, “De la nature aléatoire des tremblements de terre," Daniel Lavallee

March 31, Université de Savoie, Le Bourget du Lac, France, “De la nature aléatoire des tremblements de terre," Daniel Lavalle

April 2008

April 07, 2008, Institut de Physique du Globe de Paris, France, “De la nature aléatoire des tremblements de terre," Daniel Lavallee

April 09, 2008, Seismology Society, UCLA, " The Noise Cross-Correlation Approach for Apollo Data,” Toshiro Tanimoto

April 18, 2008, Caltech, "Proposed ANDRILL sites at the Front of the Ross Ice Shelf,” Bruce Luyendyk

April 18, 2008, Seismological Society of America, Annual Meeting, “Using Resolution Information to Improve Earthquake Source Inversions,” Morgan T. Page, Susana Custodio, Ralph J. Archuleta, Jean M. Carlson

May 2008

May, 2008, American Geophysical Union, Joint Assembly, “Investigation of groundwater flow variations near a spreading pond with deliberate tracer experiments,” Jordan Clark

May, 2008, American Geophysical Union, Joint Assembly, “Climate proxy data as groundwater tracers in regional flow systems,” Jordan Clark

May 2008, American Geophysical Union, Joint Assembly, “Effects of sea level rise on groundwater flow paths in a coastal aquifer system,” Jordan Clark

May 13, 2008, California NanoSystems Institute, UCSB, “Earthquake source physics: Using ground-motion to image earthquake ruptures,” Susana Custodio

May 22, 2008, Harvard University, “A two-step approach for combining GPS and seismic data in kinematic inversions,” Susana Custodio

May 30, 2008, SB Museum of Natural History, “Coal Oil Point Marine Hydrocarbon Seep Field, Santa Barbara, California,” Bruce Luyendyk

June 2008

June, 2008, Network for Earthquake Engineering Simulation, Annual Meeting, Portland, Oregon, “Instrumented field sites: Geotechnical Earthquake Engineering,” Jamison Steidl

June 14, 2008, The Dave Yuen 60th Birthday Symposium, Elm, Switzerland, “Noise Cross-correlation Approach for Apollo Data,” Toshiro Tanimoto

June 23, 2008, The Joint Japanese/French workshop novel seismological Methods for imagining and monitoring of the Earth interiors, ERI, University of Tokyo, "Some practical issues in the noise cross-correlation method," Toshiro Tanimoto

Workshops

Earth Education Collaboration
August 8, 9,and 10, 2007 EarthEd Advisory Group Meeting

The goals are to introduce a faculty team from a variety of institutions to the EarthEd Online software system. A primary goal is to test determine how this resource fits the team's needs, and to specify what modifications and additions are needed to proceed to the beta test stage. A strategy for moving the software system from beta test to possible adoption will be developed. Also, because the team has extensive experience with online learning, another goal is to summarize "best practices" and other related issues to this learning modality.
Funding from National Science Foundation, Division of Undergraduate Education, and UCSB Office of Instructional Development. Funded by the National Science Foundation, Division of Undergraduate Education.
http://earthednet.org/Collab/Wkshop_2007/

Advisory Board

Stuart Birnbaum, Univ. Texas, San Antonio
http://www.utsa.edu/eps/Programs/Geology/Birnbaum.htm
Sean Chamberlain, Fullerton Community College (CA) http://www.oceansonline.com
Keith Dungan, Faulkner Press http://www.faulknerpress.com/
Gregory Kelly, Penn State, PA http://www.personal.psu.edu/faculty/g/j/gjk13/
Frank Kinnaman, UCSB Earth Science Dept.
Russanne Low, University of Colorado
Robert MacKay, Clark Community College, Vancouver, WA
Jeff Myers, Western Oregon University, OR.
William Prothero, UCSB Earth Sciences Dept (now Emeritus)
Don Reed, San Jose State http://oceansjsu.com
Douglas Segar,
Robert Stewart,Texas A & Mhttp://oceanworld.tamu.edu/
Sabina Thomas, Baldwin Wallace College
Robert West, East Los Angeles College

Notes of EarthEd Workshop August 2007

The EarthEd Advisory committee met on 8, 9, 10 August 2007 in Hood River Oregon to review, evaluate, and suggest directions for future work related to EarthEd. There are ten (10) Advisory committee members, plus Wm. Prothero, the Project's PI. Report of advisory committee not yet available.

Participants, affiliation, email:
Sean Chamberlain, Fullerton Community College (CA) http://www.oceansonline.com
Keith Dungan, Faulkner Press http://www.faulknerpress.com/

Emily Diefendorf, Penn State, PA
Michelle Kinzel, Oregon State College
Shelley Olds, Education and Outreach Program, UNAVCO, Boulder CO
Robert MacKay, Clark Community College, Vancouver, WA
William Prothero, UCSB Earth Sciences Dept (now Emeritus)
Douglas Segar, Oceanography Textbook Author, El Cerrito
Robert West, East Los Angeles College

International Symposium on Antarctic Earth Sciences University of California, Santa Barbara Aug. 26- Aug. 31, 2007 Antarctica: A Keystone in a Changing World ISAES X -2007

The 10th International Symposium on Antarctic Earth Sciences was convened at the University of California, Santa Barbara in August 2007 where 350 researchers (**group photo**) presented talks and posters on topics including climate change, biotic evolution, magmatic processes, surface processes, tectonics, geodynamics, and the cryosphere. The symposium resulted in 108 peer reviewed papers and 217 extended abstracts that are published online (**http://pubs.usgs.gov/of/2007/1047/**). A proceedings book has also been published by The National Academies Press. See **Publications** for details.

Advances in our understanding of Antarctic tectonics were many, often involving techniques that provide information under ice sheets or from proxies such as glacial till to provide clues on provenance. Goodge and coworkers reported a 1440 Ma A-type granite boulder from glacial till from the Nimrod Glacier that can be matched to granites from the North American Laurentian province, supporting the postulated (SWEAT hypothesis) fit of East Antarctica and North America over 1 billion years ago. Considerable debate concerned the formation of the Transantarctic Mountains and the role of plateau collapse. It was proposed that collapse of a plateau during Cretaceous East-West Antarctic extension left a remnant edge forming the proto-mountains, since enhanced by Cenozoic rift-flank uplift. Bialas and colleagues presented the concept and numerical model, Fitzgerald and colleagues the geological evidence, and Huerta some geomorphic evidence.

Definitive new findings emerged on the evolution of life on Antarctica. Insights into Gondwana ecosystem dynamics are being gleaned from tracks of animals in Devonian deserts, the climate records in Permian, Triassic and Jurassic floras and the Triassic and Jurassic reptiles and dinosaurs of the Transantarctic Mountains. The newly identified fossil plant record shows that, even during the Antarctic icehouse, the continent supported a diverse ecosystem. Recent discoveries of fossil plants and insects by Francis, Ashworth and coworkers showed that small *Nothofagus* bushes, mosses and beetles persisted in Antarctica during the mid-Miocene. Kirschvinck examined the biochemical role of early ice sheets and the development of earth's atmosphere linking intense global glaciations and atmospheric oxygen generation suggesting that ice sheets serve as an inorganic mechanism driving the evolution of oxygen-mediating enzymes.

Significant progress has been made regarding Antarctica's Neogene-Pleistocene climate and its role in the global climate system. Studies of geologic proxies at various times-scales are underway to resolve the paleoclimatic events. Several different initiatives are on-going including ANDRILL (ANTarctic geological DRILLing), SHALDRIL (SHALlow DRILling) and a Wilkes Land margin IODP cruise. Naish, Powell and the ANDRILL scientists presented the results of first drilling season, a novel record of at least 60 ice sheet fluctuations in the past 13

Ma, with indications of both warmer-than-present climate and ice sheets in the pre-Pleistocene period.

New discoveries on subglacial lakes were presented at the symposium, including outlining tectonic controls for formation of the lakes, documenting the interconnection of lakes, and describing the recent discovery that subglacial lakes and ice streams lake-water discharge into the oceans. Leitchenkov presented the first dates from the interior of East Antarctica, a detrital zircon recovered from the Vostok ice core that clustered between 0.8-1.2 Ga and between 1.6-1.8 Ga.

The ISAES X ended September 1, 2007. Some details of the event including resulting **Publications** are on this web site.

Publications of the 10th ISAES include 108 peer-reviewed short research papers (SRP), 217 extended abstracts (EA) and 11 keynote summary papers contributed by ~ 975 coauthors from 34 countries. SRPs and EAs are 3-6 page manuscripts about symposium talks and posters. The keynote and summary papers are full-length, and based on keynote and summary presentations. All manuscripts except the keynote and summary papers were published and online before the end of the symposium – a first for any symposium, including ISAES. All manuscripts were submitted to the National Academies Press by two months after the symposium. To see the 10th ISAES Online Proceedings go to: **http://pubs.usgs.gov/of/2007/1047/**Publications are included in the book: "Antarctica: A Keystone in a Changing World -- Proceedings of the 10th ISAES. The book has eleven printed papers with a symposium summary paper and ten keynote papers. A DVD is also included and contains PDF files for all 340+ publications. The DVD replicates the Online Proceedings of the 10th ISAES.The book is published by The National Academies Press (NAP), and copies can be purchased from their website (**http://www.nap.edu/catalog.php?record_id=12168#orgs**) or by phone (1-800-624-6242). Purchases made online will receive a 10% discount from the $38.00 list price of the book. The DVD is available only with the book.