The 2010 IRIS Workshop will celebrate the 25th anniversary of IRIS - and look ahead to an exciting future for the Earth sciences. With the recent publication of “Seismological Grand Challenges in Understanding Earth’s Dynamic Systems,” the IRIS Consortium of over 110 U.S. universities has a very special opportunity: to use these Grand Challenges to shape plans for continuing evolution of the facilities that support geophysical research.

**SCIENCE PROGRAM CHAIRS**
Mike Brudzinski - Miami University of Ohio
Ed Garnero - Arizona State University
Stéphane Rondenay - Massachusetts Institute of Technology

**AIRPORT SHUTTLE INFORMATION**
Canyon Shuttle Service from Salt Lake City International Airport to Resort is $60 roundtrip/person plus gratuity. Cancellations within 48 hours are non-refundable.

Canyon Shuttle Service has a desk at Snowbird in the Cliff Lodge on lower level one, the same level that you will arrive. You can call from any house phone at Snowbird by dialing RIDE (7433).

**INTERNET ACCESS**
Wireless Internet access is complimentary in the guest rooms and public areas. It will also be available in the Plenary Session Room (Ballroom 2-3) and Event Center (poster area).

**POSTER SESSIONS**
The poster session location for the IRIS Workshop is going to be in the Event Center, a 15,000 square-foot event tent. The Event Center is a three-minute walk from the Cliff Lodge, where the workshop meeting rooms are located. Please visit the Registration table for walking directions.

Posters will remain up throughout the meeting. You may begin to hang posters after 5:00pm on Tuesday, June 8. Posters need to be torn down by 4:00pm on Friday. Poster numbers are located in the first column of the table in the poster index of this program. Additionally, IRIS’ core programs will have tables displaying publications and posters.

**FIELD TRIPS**
You must be registered to attend the Wasatch Water Tunnel Tour or the Geology of the Central Wasatch Mountains bus tour.

Field trip attendees for the Wasatch Water Tunnel Tour should have lunch in the Conference Center Tent before meeting in the Cliff Lodge Lobby at 1:45pm. A second tour will be determined based on the number of registrants, which would begin at 3pm. Please look for more information at the Registration table.

Field trip attendees for the Geology of the Central Wasatch Mountains bus tour should grab a boxed lunch from the Registration area before meeting in the Cliff Lodge Lobby at 12:30pm.
SPECIAL INTEREST GROUP MEETINGS
ON WEDNESDAY (Open to all)

Hydrogeophysics — Beatrice Magnani, Lee Liberty
Near-surface geophysics is playing an increasingly important role in hazard studies, climate studies, and water resource issues. This SIG will explore how researchers in the near-surface geophysics community can be better integrated with and served by IRIS. Researchers in hydrogeophysics, engineering geophysics, hazards, climate, archeology and the cryosphere could all benefit from the infrastructure and support of the IRIS community, which in turn could benefit from increased input of researchers in these diverse fields. We will discuss ways to engage each community so that IRIS can improve near-surface geophysics instrumentation needs and address data archival and storage concerns.

GSN Data Quality — Tim Ahern, Rhett Butler, Kent Anderson
Recent issues related to the quality of data from GSN stations have been identified. Both the IRIS DMS and IRIS GSN share the responsibility to identify the known issues, make plans to detect and correct issues related to data quality, and communicate data quality issues to the IRIS community. The purpose of this SIG is to insure that the IRIS community understands these issues as they may affect the use of the data in individual research. Discussions are planned that will include the ASL and IDA data collection centers’ current practice, how IRIS is planning to address data quality issues, and how future systems will monitor data quality and insure correctness of time series data and the metadata that describe them. While this SIG will focus on GSN data quality issues, the techniques are intended to be extended to most data received by the IRIS DMC.

International Development Seismology — Art Lerner-Lam, Noel Barstow
Discussion of various aspects of international development from the perspective of seismology research. Topics will include scientific and technical workforce development, science impact on hazard mitigation and disaster preparedness, promotion of international scientific collaboration with and in developing countries, including non-traditional funding opportunities, and the importance of leveraging resources among diverse sectors to sustain research investments. This session will provide an opportunity for the community to become aware of ongoing IDS activities at IRIS, and to contribute to the setting of priorities for future engagement in international development.

SPECIAL INTEREST GROUP MEETINGS
ON THURSDAY (Open to all)

MatLab — Ken Creager (U. of Washington), Darren Hart (Sandia Nat. Lab.)
MatLab is gaining popularity in the seismological community. It is timely to assemble interested MatLab users together to discuss existing MatLab tools, identify unfilled needs, summarize DMS plans for supporting information flow into MatLab, and a variety of related details. We plan to discuss include how the DMS can facilitate support of MatLab by hosting existing modules, supporting the development of needed capabilities, and organizing a MatLab users group (similar to the SAC users group) within the Earth sciences community.

Magnetotellurics — Paul Bedrosian, Dean Livelybrooks, Stéphane Rondenay
The open availability of EarthScope Magnetotelluric (MT) data, combined with recent advances in 3D inversion and innovative approaches to data integration, including joint interpretation/analysis of seismic and MT data, are producing insight into Earth processes on a range of scales. This session will provide a brief introduction to the MT method followed by a sampling of recent MT studies and their relevance to problems in Earth Science.
Resources for teaching about the Grand Challenges in Seismology — Bob Butler and E&O staff

The SIG will start with an overview of our joint CCLI project with Maggie Benoit to create undergrad labs related to the Grand Challenges, and may include presentations by faculty who have applicable exercises they are willing share. Much of the SIG will be a discussion to help us flesh out the activities that are not yet well developed. This is an important focus for E&O for the next few years, and input from the community will help us create exercises that fill their needs.

GeoPRISMS and Seismology: Opportunities for Amphibious Studies at Continental Margins — Geoff Abers, Julie Morgan, Susan Bilek

GeoPRISMS will be a new NSF science program building on the previous MARGINS program, which continues to focus on amphibious interdisciplinary science at rift and subduction margins. We will present highlights from the past MARGINS program, outline the recently approved GeoPRISMS Draft Science Plan, and describe the upcoming Implementation Workshops where scientific approaches will be refined, with emphasis on opportunities for the IRIS community. This SIG will provide an opportunity to discuss the many possible linkages between this new NSF program and other programs and facilities both onshore and offshore.

SPECIAL INTEREST GROUP MEETINGS ON FRIDAY (Open to all)

How to best access seismic data for undergraduate education: What should software be capable of? — Glenn Kroeger and E&O staff

With the development of web services at the DMC, it will become easier to access raw and processed waveform data, and now is the time to determine what functionality would be most useful for undergraduate labs and exercises.

We will provide examples of what faculty are already doing, and will ask for input on what could be done with the right interface. This is an important element in the E&O section of the IRIS proposal, and it would be valuable to get additional input from the community before the proposal is submitted.

Comprehensive Nuclear Test Ban Treaty and Seismology — Bill Walter, Keith Koper

Since underground nuclear testing began, advances in seismology have been important both for national security and for support of treaties that limit testing. Conversely, this application of seismology has motivated construction of facilities, at times generously funded programs for individual research projects, and innovation in data processing and waveform modeling - all with benefits to many aspects of seismology. This is a forum for discussing the programs, facilities, and data needed to meet evolving challenges in nuclear explosion monitoring.

PIC Kitchen — Jim Fowler

PIC (PASSCAL Instrument Center) and the DMC (Data Management Center) developed an archival processing package called "PIC KITCHEN". It is based on the HDF5 data format, and attempts to move past the limitations of the current assembled data set archival system. The PIC KITCHEN organizes data and meta-data for an experiment into PASSCAL HDF5 format (PH5). This can be quickly and easily transferred to the DMC. Future or last minute updates, corrections, or additions can be folded into small text files, sent and incorporated with the original data set at the DMC. This process allows the data to be submitted to the DMC, fresh from the field. Corrections to the meta-data can be made directly in the archive. Sometimes frequent tedious "down loading," "up loading" and "re-archiving" is eliminated. Data can also be requested from the DMC in a variety of formats. The intact, raw data and meta-data are extracted from the HDF5 file and converted to the desired format via a web form.
TUESDAY, JUNE 8

4:00PM - 7:00PM  REGISTRATION  Ballroom Lobby

7:30PM - 9:00PM  STUDENTS AND POST-DOCS RECEPTION  - INVITATION ONLY  Magpie
Hors d’oeuvres and cash bar for students and post-docs participating in the Workshop to meet with senior IRIS staff, and members of the Board of Directors.

WEDNESDAY, JUNE 9

7:00AM - 8:30AM  BREAKFAST  Conference Center Tent

7:00AM  REGISTRATION  Ballroom Lobby

8:30AM - 11:00AM  WELCOME AND PLENARY SESSION: THE SCIENCE AND POLICY OF DEADLY EARTHQUAKES  Ballroom 2 - 3
Paul Earle, Wayne Pennington – Session Organizers
Reducing the Impact of Devastating Earthquakes: How USAID/OFDA Uses the Science of Seismology  USAID
Laura Powers, USAID

A Surge of Great and Deadly Earthquakes  Thorne Lay, University of California Santa Cruz

NEIC: Earthquake Loss and Epidemiology  Emily So, USGS

Lessons From Catastrophic Disasters  Rob Olshansky, University of Illinois

11:00AM - 12:30PM  POSTERS - SESSION I  Event Center
Refreshments available

12:30PM - 2:00PM  LUNCH  Conference Center Tent
2:00PM - 2:15PM  GROUP PHOTO  Cliff Lodge Patio

2:30PM - 4:30PM  PLENARY SESSION: EXPLORATION AND NEAR-SURFACE SEISMOLOGY  Ballroom 2 - 3
Beatrice Magnani, Felix Herrmann – Session Organizers
Recent Advances in Regularization and De-noising of Large Data Sets for Exploration Seismology
M.D. Sacchi, University of Alberta
Sub-Nyquist Sampling and Sparsity: Getting More Information From Fewer Samples
Felix Herrmann, University of British Columbia
Paleoclimate and Underway Geophysics Studies at High Latitude Using a Small Research Vessel: Results from Lago Fagnano, Tierra del Fuego
Jamie Austin, University of Texas Austin
Some Stupid Shallow Seismic Experiments I Have Done
Don Steeples, University of Kansas

4:30PM - 6:00PM  SIG MEETINGS, SESSION 1  Wasatch A
Hydrogeophysics  Magpie A
GSN Data Quality  Magpie B
International Development Seismology

6:30PM - 8:30PM  DINNER  Conference Center Tent

THURSDAY, JUNE 10

7:00AM - 8:30AM  BREAKFAST  Conference Center Tent

7:00AM - 8:30AM  “EARLY CAREER” BREAKFAST FOR JUNIOR FACULTY, RESEARCHERS AND POST DOCS  Magpie B
Please sign up when you register at Snowbird

8:30AM - 9:00AM  IRIS CORE PROGRAMS PROPOSAL  Ballroom 2 - 3

9:00AM - 11:00AM  PLENARY SESSION: MANTLE DYNAMICS: FROM TOP TO BOTTOM  Ballroom 2 - 3
Brian Kennett, Maureen Long – Session Organizers
The Development of Seismic Arrays and Array Methods
Brian Kennett, Australian National University
Lithosphere-Asthenosphere Interactions Beneath the Western US
Richard Allen, University of California Berkeley
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<td>Resources for Teaching about the Grand Challenges Magpie B</td>
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<td>GeoPRISMS Superior A</td>
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<td>12:30PM - 2:00PM</td>
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<td>Wasatch Bus Tour Cliff Lodge Lobby/Entrance</td>
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<td>Pick up boxed lunches at Registration table</td>
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<td>2:00PM - 3:00PM</td>
<td>Water Tunnel Tour</td>
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<td>Other times TBD</td>
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<td>1:30PM - 2:30PM</td>
<td>FACILITY MEETINGS</td>
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<td>4:30PM - 6:00PM</td>
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<td>6:30PM - 9:00PM</td>
<td>DINNER AND CELEBRATION OF</td>
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<td>TWENTY-FIVE YEARS OF IRIS</td>
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<td>FRIDAY, JUNE 11</td>
<td>BREAKFAST</td>
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<td>7:30AM - 9:00AM</td>
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</table>
9:00AM - 11:00AM  PLENARY SESSION: EARTHQUAKE SCIENCE:  Ballroom 2 - 3
TRIGGERING, TREMOR, AND TRANSIENT SLIP
Greg Beroza, Zhigang Peng – Session Organizers

Deep Slow Earthquake Activities in Nankai Subduction Zone, Southwest Japan
Kazushige Obara, NIED

PNSN Tremor Observations
Aaron Wech, University of Washington

Low Frequency Earthquakes
Justin Brown, Stanford University

Numerical Modeling and Observation of Tremor in Southern California and Peru
Jean-Paul Ampuero, Caltech

11:00AM - 12:30PM  POSTERS - SESSION 3  Event Center
Refreshments available

12:30PM - 2:00PM  LUNCH  Conference Center Tent

12:30PM - 2:00PM  INSTRUMENTATION COMMITTEE MEETING  Superior A
Members Only

12:30PM - 2:00PM  DATA PRODUCTS WORKING GROUP  Superior B
Members Only

2:00PM - 3:30PM  SIG MEETINGS - SESSION 3  Magpie A
Seismic Data for Undergraduate Education
Comprehensive Nuclear Test Ban Treaty and Seismology
PIC Kitchen
Magpie B
Wasatch A

3:30PM - 5:30PM  COMMUNITY DISCUSSION: BEYOND EARTHSCOPE AND THE FIRST 25 YEARS OF IRIS  Ballroom 2 - 3
Ed Garnero, Stéphane Rondenay, Mike Brudzinski
Seismologists at a variety of stages in their careers (Brian Kennett, Greg Beroza, Barbara Romanowicz, Richard Allen, Susan Bilek, Miaki Ishii) will make brief remarks, primarily to simulate discussion among all of the Workshop participants.

6:00PM - 8:00PM  BARBEQUE  Conference Center Tent
### The Science and Policy of Earthquakes and Volcanoes

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<td>Parameter Calculation from Volcanic Seismic Data</td>
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<td>2</td>
<td>Pamela Moyer - New Mexico Institute of Mining and Technology</td>
<td>Apparent Stress Variations at the Osa Peninsula Costa Rica and the Role of Subducting Topography</td>
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<td>3</td>
<td>Melissa Moore Driskell - CERI-University of Memphis</td>
<td>Large-Scale Integration of Arrival Time Datasets for Consistent Tomography Quality Control: A Case Study of Onshore/Offshore Experiments Along The Middle America Trench</td>
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<td>4</td>
<td>Hanan Mahdi - UALR</td>
<td>Earthquake Monitoring in the State of Arkansas</td>
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<td>Alena Leeds - USGS</td>
<td>From the USNSN to the ANSS Backbone Network - The Evolution of USGS National Monitoring Capabilities</td>
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<td>Ashley Shuler - Lamont-Doherty Earth Observatory</td>
<td>Global Observation of Vertical-CLVD Earthquakes Associated with Active Volcanoes</td>
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<td>Danielle Sumy - Lamont-Doherty Earth Observatory</td>
<td>Seismicity and Faulting in the Southern Gulf of California</td>
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<td>Heather DeShon - University of Memphis</td>
<td>Automated Identification of Teleseismically Recorded Depth Phases</td>
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<td>9</td>
<td>Deborah Kane - University of California San Diego</td>
<td>Quantifying Rupture Directivity of Small Earthquakes at Parkfield</td>
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<td>Wen-che Yu - IES, Academic Sinica, Taiwan</td>
<td>Modeling Temporal Velocity Changes Associated with Great Sumatra Earthquakes</td>
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<td>Joshua Calkins - Lamont-Doherty Earth Observatory, Columbia University</td>
<td>Linked Structural and Geodetic Effects Revealed by Seismic Imaging of the Source Zone of the 1964 Great Alaska Earthquake</td>
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<td>Jeffrey Lockridge - Arizona State University</td>
<td>Analysis of Spatial and Temporal Seismicity Patterns Within Arizona During the Deployment of the EarthScope Transportable Array (March 2006 to April 2009)</td>
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<td>Frederick Massin - University of Utah Seismology Research Group</td>
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<td>Eric Kiser - Harvard University</td>
<td>A Study of Intermediate-Depth Earthquakes using the Back-Projection Technique</td>
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<td>Guo-chin (Dino) Huang - Rutgers University</td>
<td>Earthquake Source Parameters in Western Tibet</td>
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<td>16</td>
<td>Douglas Dreger - UCB</td>
<td>Finite-Source Parameters and Scaling of Micro-Repeating Earthquakes at Parkfield</td>
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<td>Angela Chung - Stanford University</td>
<td>Results from Quake-Catcher Network Rapid Aftershock Mobilization Program (QCN-RAMP) Following the M8.8 Maule Chile Earthquake</td>
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<td>Jamie Farrell - University of Utah</td>
<td>Evidence of Rapid Volcanic Fluid Migration Modeled for the Intense 2008-2009 Yellowstone Lake Earthquake Swarm and Related GPS-Derived Crustal Extension</td>
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<td>Zhongwen Zhan - California Institute of Technology</td>
<td>Expanding the Cut-and-Paste (CAP) Methodology to Include Core Phases</td>
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**Exploration and Near-Surface Seismology**

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<td>Probing the Atmosphere and Atmospheric Sources with the USArray</td>
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<td>Chunquuan Wu - Georgia Institute of Technology</td>
<td>Refined Thresholds for Nonlinear Ground Motion and Temporal Changes of Site Response Associated with Medium Size Earthquakes</td>
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<td>An Introduction to a Field QC Tool, Its Algorithm and Application</td>
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<td>Complementary Shallow seismic Study of a Low-Angle Failure Plane Mt. Rose Fan Nevada</td>
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<td>Can High-Frequency Active-Source Seismology Assist Cave Mapping?</td>
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### THURSDAY, JUNE 10TH

**Imaging Mantle Dynamics: From Top to Bottom**

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<td>Gabi Laske - Scripps Institution of Oceanography/UCSD</td>
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<td>Evidence of a Miocene Collision Between the Yucatan Block and Mexico</td>
<td>YoungHee Kim - California Institute of Technology</td>
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<td>Upper Mantle Structures Beneath USArray Derived from Waveform Complexity</td>
<td>Daoyuan Sun - Carnegie Institution of Washington</td>
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<td>Testing Mantle Dynamics Models Beneath Southeastern North America with Shear Wave Splitting and Receiver Function Analysis</td>
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<td>Observation of a Mid-mantle Discontinuity Beneath Northeast China from S to P Converted Waves Recorded by the USArray Stations</td>
<td>Fenglin Niu - Rice University</td>
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<td>Sanne Cottaar - UC Berkeley</td>
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<td>Two Birds One Stone -- Simultaneously Invert 3-D Velocity and 3-D Anelasticity (Q) Structure Using Surface Waves</td>
<td>Youyi Ruan - Virginia Tech</td>
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<td>Seismic Evidence of a Deep Origin of the Mérida Andes Western Venezuela</td>
<td>Jeniffer Masy - Rice University</td>
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<td>Adam Dzwowski - Harvard University</td>
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<td>EMERALD: Managing the Explosion in Seismic Data</td>
<td>John West - Arizona State University</td>
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<td>Seismic Anisotropy in the Northeastern Tibetan Plateau</td>
<td>Gerardo Leon Soto - New Mexico State University</td>
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<td>Causes and Corrections for STS-I Gain Changes in the Global Seismographic Network</td>
<td>Charles Hutt - USGS Albuquerque Seismological Laboratory</td>
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<td>Adam Ringler - USGS</td>
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<td>Brandon Schmandt - University of Oregon</td>
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