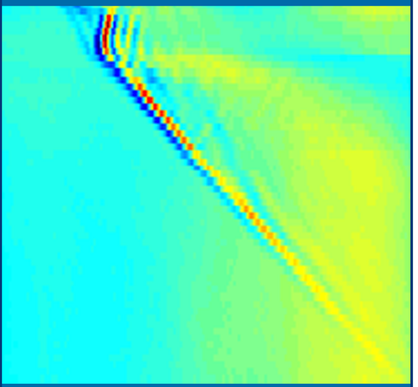
SEG-AGU Hydrogeophysics Workshop



BOISE, IDAHO USA
8-11 JULY 2012

Society of Exploration Geophysicists
The international society of applied geophysics

American Geophysical Union

SUNDAY, 8 JULY 2012

4pm ..... Registration, BSU, Lookout Room in the Student Union Building

6pm ..... Icebreaker BSU, Lookout Room in the Student Union Building

All sessions will take place in the Lookout Room in the Student Union Building

MONDAY, 9 JULY 2012

MORNING SESSION

9–9:15..... Welcome to the meeting, agenda, objectives

Characterizing Near-Surface Structure and Properties

9:15–9:45..... **On the Use of Complex Resistivity Imaging to Estimate in-situ Hydraulic Conductivity,** *Andreas Kemna (University of Bonn)*

9:45–10:45..... Introductions to posters, Group 1

- **Anisotropic 2D Modeling of Induced Polarization Data,** *Johannes Kenkel (Bonn University)*
- **Challenges of Locating Root Channels with 3D ERT from the Surface,** *Robert Heinse (University of Idaho)*
- **Geoelectric Sounding for Predicting Shallow Aquifer Properties Using Modified Archie Equations,** *Benard Ifeanyi (Nnamdi Azikiwe University Awka)*
- **Azimuthal Resistivity Survey — a Confirmatory Information on the Kinematics of Near-surface Fractures at the Enugu Area,** *Anambra Basin, Nigeria, Benard Ifeanyi (Nnamdi Azikiwe University Awka)*
- **Three-dimensional Parallel Inversion of Two Massive Surface Resistivity Datasets to Characterize Vadose Zone Contamination beneath Waste Infiltration Galleries at the Hanford Site,** *Tim Johnson (Pacific Northwest Nat'l Lab)*
- **Using Electrical Resistivity to Characterize the Unsaturated Zone and Monitor Infiltration for Improving Managed Aquifer Recharge,** *Chloe Mawer (Stanford University)*
- **Electrical Evidence for Solute Mass Transfer at the Lab-scale,** *Kamini Singha (Pennsylvania State University)*
- **Multiple-scale Integration of Hydrological and Geophysical Data through Bayesian Sequential Simulation,** *Paolo Ruggeri (University of Lausanne)*
- **Cooperative Cross-hole ERT and 2D Full-waveform GPR Inversion,** *Abderrezak Bouchedda (Ecole Polytechnique de Montreal)*
- **Estimation of Shallow Soil Water Content during Evaporation by Using Full-waveform Inversion of Off-ground Zero-offset Ground Penetrating Radar,** *Davood Moghadas (Research Center of Juelich)*
- **Recent Developments in Full-waveform Inversion of GPR Data,** *Jan van der Kruk (Research Center of Juelich)*
- **2.5D Fractional Diffusion Analysis of the Electromagnetic Field in Fractured Media,** *Jianchao Ge (Texas A&M University)*
- **New Approaches to the Application of High Sensitivity Temperature Logs for Detection of Groundwater Flow in Fracture Rock,** *Pete Pehme (University of Guelph)*
- **Micro-gravity Measurements for Permeability in Shale Hills GZO,** *Robert Jacob (Bucknell University)*

10:45–11:15.... BREAK

11:15–12:30.... Poster viewing and discussions

12:30–1:45..... Lunch on your own

AFTERNOON SESSION

Characterizing Near-Surface Structure and Properties

1:45–2:45..... Introduction to posters, Group 2

- **Information about Local Hydrogeologic Conditions Derived from Time-series Microgravity Monitoring in the Western USA,** *Dan Pool (USGS Arizona Water Science Center)*
- **Improvement in MRS Parameter Estimation — A Closer Step Toward Hydrogeological Interpretations,** *Ahmad Behroozmad (Aarhus University)*
- **Laboratory Measurements to Explore the Link between Surface Area, Surface Relaxivity, and NMR Relaxation Time in Partially-saturated Porous Media,** *Samuel Falzone (Rutgers University)*
- **Improving Reliability of Surface NMR Relaxation Time Measurements: Composite Pulses to Quantify Background Magnetic Field Inhomogeneity,** *Denys Grombacher (Stanford University)*
- **The Integration of Logging and Surface NMR for Mapping Spatial Variation in Hydraulic Conductivity,** *Rosemary Knight (Stanford University)*
- **MRSmatlab — a Toolbox for Modeling, Processing, and Inverting Surface-NMR Data,** *Jan Walbrecker (Stanford University)*
- **Laboratory Monitoring of P-waves in Partially Saturated Sand,** *Daniel Brito (University of Pau)*
- **Compression and Shear Wave Examples of Near-surface Seismic Methods for Hydrogeophysical Applications,** *Steve Sloan (US Army ERDC)*
- **Characterization of the Shallow Karstic Coastal Aquifer by 3D Seismic Reflection Survey: A Case Study,** *Muhammad Toqeer (UPPA)*
- **Wavelet Transform and Neural Network on Integrated Geophysical Data for Decipher the Saline and Fresh Water Aquifer,** *Upendra Singh (Indian School of Mines)*
- **Controlling the Seawater Intrusions: Coupling Groundwater Model and Geophysical Data,** *Klara Steklova (University of British Columbia)*
- **An Integrated Approach to Characterizing Spatial and Temporal Variability in Canal Leakage,** *Chris Hobza (US Geological Survey Nebraska Water Science Center)*
- **Geophysical Investigations for Groundwater Potential Assessment and Mapping Structures for Possible Connections between Lakes Langano and Shala, Main Ethiopian Rift,** *Tagel Assefa (Addis Ababa University)*
- **Geophysical Exploration of a Buried River Valley for Groundwater in Wukro, Tigray Region, Ethiopia,** *Paulos Beyene (Ministry of Science and Technology)*
- **Where Is All the Groundwater Flow Coming from into the Barton Springs Pool? A Geophysical Case Study,** *Mustafa Saribudak (Environmental Geophysics Associates)*

2:45–3:15..... BREAK

3:15–4:30..... Poster viewing and discussions

4:30–5:30..... Panel-led discussion

7 pm ..... Conference dinner for all attendees
Cottonwood Grille, 913 W River St

TUESDAY, 10 JULY 2012

MORNING SESSION

Thinking About Scaling Up: Geophysical Methods at the Watershed Scale

9–9:30..... **Groundwater Resource Assessment in Outback Australia-Going from the Local to the Regional Scale Using Airborne Hydrogeophysical Methods,** *Tim Munday (CSIRO Earth Science and Resource Engineering)*

9:30–10:15..... Introductions to Posters

- **A Geostatistical Parameterization for Model-space Reduction and Bayesian MCMC Sampling,** *Burke Minsley (US Geological Survey)*
- **Quantitative Two-layer Inversion for Multi-configuration Electromagnetic Induction Tools,** *Jan van der Kruk (Research Center of Juelich)*
- **Airborne Electromagnetics as an Effective, Data Based Tool for Large Scale Groundwater Mapping,** *Antonio Menghini (Aarhus Geophysics)*
- **Geophysical Investigations for Coal Bed Natural Gas Co-produced Water Management, Powder River Basin, Wyoming,** *Bruce Smith (US Geological Survey)*
- **Using Geophysical Data to Improve an Optimization Groundwater Model Evaluating the Effectiveness of Intentional Recharge in the North Platte River Valley, Western Nebraska, USA,** *James Cannia (US Geological Survey)*
- **NMR Logging: A Tool for Quantifying Effective Porosity and Hydraulic Conductivity within the Murray Darling Basin of Australia,** *Jared Abraham (US Geological Survey)*
- **Combing Ground-based Measurements to Enable Efficient and Exhaustive Hydrogeological Regional Characterization,** *Martin Blouin (INRS-ETE)*
- **Hydrogeophysical Modeling for Improved Understanding of Permafrost Distributions in the Yukon Flats, Alaska,** *Burke Minsley (US Geological Survey)*
- **Observation of Hydrologic Influences on Transient EM-38 Response at Local and Watershed Scales,** *Stephen Moysey (Clemson University)*
- **Coupling Shoreline Changes with Ground Water Monitoring Data to Interpret Changes of Hydrogeological Properties in Confined Aquifers on Littoral Zones in Taiwan,** *Yun-Bin Lin (Chianan University of Pharmacy and Science)*
- **Northern Hemisphere Snow Variations with Season and Elevation using GIS and AMSR-E Data,** *Mukesh Singh Boori (NOAA & UMD)*

10:15–10:30.... BREAK

10:30–11:30.... Poster viewing and discussions

11:30–12:15.... Panel-led discussion

12:15–1:30..... Lunch on your own

1:30–4:30..... *Boise Hydrogeophysics Research Site*
Afternoon tour of the facilities with demonstration of hydrologic and geophysical methods

4:30–7..... Free time/Dinner on your own

EVENING SESSION

Homework Session: Tomography Bake-Off

7–7:15..... Introduction to the homework

7:15–8:15..... Poster viewing and discussions, with refreshments

8:15–9..... Panel-led discussion

WEDNESDAY, 11 JULY 2012

MORNING SESSION

Session: Advances in Time-Lapse Monitoring

9–9:30..... **Coupled Hydrogeophysical Inversion of Time-lapse Geophysical Data,** *Johan Huisman (IBG-3 Agrosphere Forschunqszentrum Julich)*

9:30–10:30..... Introductions to Posters

- **Evaluation of ERT Data Acquisition Geometrics for Robust Monitoring and Time-lapse Studies,** *Bernd Milkereit (University of Toronto)*
- **Optimized Geoelectric Monitoring for 3D Arrays,** *Dale Rucker (Hydrogeophysics, Inc.)*
- **Inversion of Multi-temporal Geoelectrical Field Data Sets: Insights on Noise Characterization and Regularization,** *Frederic Nguyen (University of Liege)*
- **Improved Imaging of Electrically Conductive Solute Plumes Using a New Strategy for Physics-based Regularization of Resistivity Imaging Problems,** *Erasmus Oware (Clemson University)*
- **Analysis of Lab-scale Infiltration Experiments with ERT and High Resolution CCD Imaging,** *Stephen Breen (University of California-Irvine)*
- **Time-lapse GPR WARR Surveying During a Lab-scale Infiltration Experiment,** *Adam Mangel (Clemson University)*
- **Time-Lapse Resistivity Monitoring of the Hyporheic Zone: The Water Layer Problem,** *Jonathan Nyquist (Temple University)*
- **Time-lapse Imaging of River-water Intrusion into a Contaminated Aquifer Using Time-lapse Electrical Resistivity Tomography,** *Erin Wallin (Pacific Northwest Nat'l Lab)*
- **Long-term Monitoring of Hydrological Changes in the Near Surface Via Surface NMR and Borehole NMR,** *David Walsh (Vista Clara, Inc)*
- **Monitoring Groundwater Contamination Using Surface Electrical Resistivity and Geochemical Methods,** *Magnus Igboekwe (Michael Okpara University of Agriculture)*
- **SP and Hydrologic Monitoring of Shallow Groundwater Flow in Covered Karst Terrain,** *Sarah Kruse (University of South Florida)*
- **Advancing Field Methods for GPR Monitoring of Flow Channeling in Fractured Rock,** *George Tsoflias (University of Kansas)*
- **Time-lapse Seismic Imaging for Carbon Capture, Utilization and Storage (CCUS) in Thin, Stacked Coals,** *Ellen Gilliland (VCCER, Virginia Tech)*
- **Full Coupled Hydrogeophysical Inversion of CO_2 Migration Data in a Deep Saline Aquifer,** *Joseph Doetsch (Lawrence Berkeley Nat'l Lab)*

10:30–11..... BREAK

11–12:30..... Poster viewing and discussions

12:30–2..... Lunch on your own

AFTERNOON SESSION

2–3..... Panel-led discussion

Workshop Wrap-Up: State of the Practice/State of the Science Whitepaper

3–3:15..... Introduction to Whitepaper (with an invitation to all attendees to participate)

3:15–3:45..... BREAK

3:45–4:45..... Panel-led discussion to outline paper

4:45–5:30..... Writing assignments, proposed timeline for preparation

ORGANIZING COMMITTEE

Rosemary Knight, General Chair; James Irving; Rob Jacob; Lee Liberty; Kamini Singha; Jan van der Kruk

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