YORAM RUBIN, Ph.D.

CURRICULUM VITAE

2015

- **AREAS OF ACADEMIC ACTIVITY AND TEACHING**

  Groundwater hydrology, aquifer characterization, modeling and analysis of contaminant transport in soils and in groundwater, inverse modeling, geostatistics and stochastic methods for hydrogeological site characterization, geophysical methods for subsurface characterization, environmental information management systems.
- Web site: http://www.ce.berkeley.edu/people/faculty/rubin
- Complete bibliography includes 2 books, more than 100 refereed articles in scientific journals, nearly 30 papers in conference proceedings and 7 chapters in books. H-Index as of November 2015 is 37.

- **ACADEMIC BACKGROUND**

  1988 Ph.D. Tel-Aviv University, Faculty of Mechanical Engineering, Dept. of Fluid Mechanics and Heat Transfer.

  1984 M. Sc., Technion - Israel Institute of Technology, Faculty of Civil Engineering.

  1977 B. Sc., Technion - Israel Institute of Technology, Faculty of Civil Engineering.

- **HONORS AND AWARDS:**

(1) **Sirkin Award**, 1985, by the Faculty of Civil Engineering, Technion - I.I.T.

(2) **Gutwirt Award**, 1984, by the Senate of the Technion - I.I.T.

(3) **Goldschmidt Award**, 1988, The annual award of IHS - The Israeli Hydrologic Society.

(4) Junior Faculty Research Award, 1991, U.C. Berkeley.

(5) **President**, International Commission on Ground Water, International Association of Hydrologic Science (IAHS), 2001-2005

(6) **American Geophysical Union Hydrologic Sciences Award**, 2004

(7) **Lifetime member, International Water Academy**, Oslo, Norway, 2005

(8) **Fellow of the American Geophysical Union**, 2006

(9) **Sackler Distinguished Lecturer**, Tel Aviv University, 2012

(10) **Helmholtz International Fellow Award**, Helmholtz Research Centers, Germany, 2013.

(11) **Guest Professor (Tongji University)** and High-End National Expert, China, 2014

(12) Awarded the European Geophysical Union's **Henry Darcy Medal,** 2015

- **ACADEMIC EXPERIENCE**

1998 - present Professor, Department of Civil and Environmental Engineering, University of California at Berkeley.

1993 - 1998 Assoc. Professor, Department of Civil and Environmental Engineering, University of California at Berkeley.

1989 - 1993 Assist. Professor, Department of Civil and Environmental Engineering, University of California at Berkeley.

1988 - 1989 Post-doctoral research affiliate, Stanford Center for Reservoir Forecasting, Applied Earth Sciences Department, Stanford University.

- **TEACHING EXPERIENCE**:

Taught courses in fluid mechanics, hydrology, groundwater hydrology, geostatistics and vadose zone hydrology, engineering data analysis; Taught short courses on groundwater and geostatistics in the U.S. and in Europe.

- Courses taught (selected):
  - *CE173 Groundwater, Seepage*
  - *CE202B Geostatistics and Stochastic Hydrogeology*
  - *CE93 Engineering Data Analysis*
  - *CE202A Vadose Zone Hydrology*
  - *CE301 Workshop for Future Civil and Environmental Engineering Teachers*

- **RESEARCH SUPERVSION**

Ph.D students (Graduated)

- Nadim Copty, Ph.D., 1995, Title of thesis: Stochastic Characterization of Subsurface Flow Parameters Using Geophysical and Hydrological data

- Mark Cushey, Ph.D., 1996, Title of thesis: Three-dimensional modeling of Flow and Reactive Transport in Heterogeneoous Porous Media

- Susan Hubbard, Ph.D., 1998, Title of thesis: Stochastic Characterization of Hydrogeological Properties Using Geophysical data

- Alexander Y. Sun, Ph.D., 2000, Title of thesis: Stochastic Analysis of Flow and Transport in the Vadise Zone

- Amy Wilson, Ph.D., 2001, Title of thesis: Inverse and Forward Modeling of Flow and Transport Processes in Heterogeneous Geological Media

- Jinsong Chen, Ph.D , 2002, Title of thesis: Bayesian Approaches for Subsurface Characterization Using Hydrogeological and Geophysical Data

- Katherine Grote, Ph.D , 2004, Title of thesis: Estimation of Soil Water Content for Engineering and Agricultural Applications Using Ground Penetrating Radar

- Alison Lawrence, Ph.D , 2004, Title of thesis: Kinetically Sorbing Solute Transport in Groundwater in the Saturated Zone: Stochastic Tools for Analytical and Numerical Modeling

- Mike Kowalsky, Ph.D , 2004, Title of thesis: Characterization approaches using ground-penetrating radar and hydrological measurements in variably saturated porous media

- Menachem Weiss, Ph.D., 2005, Title of thesis: Fracture and bedding plane control on groundwater flow in a chalk aquitard

- Zhangshuan Hou, Ph.D , 2006, Title of thesis: Subsurface Characterization Using Geophysical Methods

- Gretchen Miller, Ph.D., 2009, Title of thesis: Measuring and Modeling Interactions Between Groundwater, Soil Moisture and Plant Transpiration in Natural and Agricultural Ecosystems

- Xingyuan Chen, Ph.d., 2009, Title of thesis: Study of Water Dynamics in the Soil-Plant-Atmospheric Continuum in a Water-Controlled Ecosystem

- Felipe Barros, Ph.D., 2009, Title of thesis: The Concept of Comparative Information Yield Curves and its Application to Subsurface Characterization

- Haruko Murakami, Ph.D., 2010, Title of Thesis: Development of A Bayesian Geostatistical Data assimilation Method and Application to the Hanford 300 Area

- Matthew Over, Ph.D., 2013, Title of Thesis: Efficient Numerical Implementation and Vadose Zone Application of the Method of Anchored Distributions.

Post-doctoral (Recent)

- Dr. Changhong Wang, 2014-2015, Geostatistical characterization of soil properties for geotechnical engineeerig applications
- Dr. Falk Hesse, 2014-2015, Analysis of spatial variability in hydrogeological applications
- Dr. Yarong Yang, 2010-2012, Optimal design of data acquisition.
- Dr. Zepu Zhang, 2007-2009, Research topic: Inverse modeling in hydrology
- Dr. Wolfgang Nowak, 2007-2007, research Topic: Optimal design of data acquisition in hydrogeology
- Federico Maggi, 2006-2007, research Topic: Soil-vegetation atmospheric interaction
- Pirjo Isosaari, 2006-2007, research Topic: Wastewater Treatment and the Effects of Land Discharge on Subsurface Contamination

- **PROFESSIONAL AFFILIATIONS:**

  - Fellow, American Geophysical Union
  - Member, International Association of Hydrologic Science (IAHS)
  - Member, International Association of Hydraulic Research (IAHR)

- **ACADEMIC SERVICE (selected)**

2001 – 2003: Head of the Environmental Engineering Group, U.C. Berkeley.
2003 - 2008: Director, Berkeley's Institute of Environmental Science and Engineering
2004 - 2007: Founding director, Berkeley Water Center
2008 - 2009: Admissions officer, Department of Civil and Environmental engineering.

2008 – 2010 Present: Member, UC Berkeley's Academic Senate Committee on Privilege and Tenure

- **PROFESSIONAL SERVICE**:

1989 -Present: Several appointments as Principal Investigator on research projects for the National Science Foundation, Los Alamos National Lab, UC Water Resources Center, UC TOXIC, US Dept. of Agriculture, US Dept. of Energy.

1993 - 1994: Principal Instructor of the International Short courses on the Fundamentals of Flow and Transport in Porous Media, Swiss Federal Institute of Technology, Zurich, and International Ground Water Modeling Center, Denver, Colorado.

1991 - 1995: Member of the advisory panel to Sandia National Laboratories (US Dept. of Energy) on contaminant transport and site characterization of the WIPP Nuclear Waste Repository in New Mexico.

1992 - 1998: Associate Editor, Journal of Stochastic Hydrology & Hydraulics.

1992 - 1998: Member of the Groundwater Committee of the American Geophysical Union.

1993 - Present: Member of the Groundwater Committee, International Association Hydro-environment Engineering and Research.

1996 - 1997: Controlling member of the American Society of Civil Engineers Task Committee on Probabilistic Methods to Subsurface Transport.

1996 - 1997: Controlling member of the American Society of Civil Engineers Task Committee on Effective Parameters in Groundwater Management.

1998 - 1999: Member of Organizing Committee, Modelcare 99, International Conference on Calibration and Reliability, Zurich, Switzerland, 20-23 September, 1999

1998 - 1999: Member of Organizing Committee, International Symposium 2000 on Groundwater, Omya, Japan, May 8-10, 2000.

1999 – Present: Board member, Stochastic Environmental Research and Risk Assessment journal.

2000 - Present: Associate editor, Transport in Porous Media.

2000 – 2004: Associate editor, Water Resources Research

1999 - 2001: President-elect, International Ground Water Commission, International Association of Hydrologic Science (IAHS).

2002 – Director, NATO Advanced Studies Institute on Hydrogeophysics

2001 - 2002: Member of Organizing Committee, ModelCARE 2002, International Conference on Calibration and Reliability, Prague, Czech Republic, 17-20 June, 2002.

2001 – 2002: Member of Organizing Committee, Berkeley Symposium on Groundwater, Berkeley, CA, March 25-28, 2002.

2001 - 2005: President, International Commission on Ground Water, International Association of Hydrologic Science (IAHS).

2008 – 2010 Member, AGU's Horton Medal Committee
2010 – Present (International Association of Hydrologic Research) IAHR Groundwater Committee

- **LIST OF SCIENTIFIC & PROFESSIONAL PUBLICATIONS**

Complete bibliography includes 2 books, 101 refereed articles in scientific journals, nearly 30 papers in conference proceedings and 7 chapters in books. H-Index as of May 2013 is 34.

Theses:

(1) M.Eng thesis: **Simulation of density stratified flows in aquifers**, submitted to the Faculty of Civil Engineering Technion, 1984.

(2) Ph.D. Thesis: **Identification of aquifer's hydraulic properties under conditions of uncertainty**, submitted to the Faculty of Mechanical Engineering, Tel-Aviv University, 1988.

Books:

(1) **Applied Stochastic Hydrogeology**, Oxford University Press, 2003

(2) **Hydrogeophysics**, with Susan Hubbard, Springer, 2005

Original papers in professional refereed journals:

(1) Rubin, H. and Rubin, Y., Simulation of density stratified flows in aquifers, Advances in Water Resour., 9(1), 2-15, 1986.

(2) Rubin, Y. and Dagan, G., Stochastic identification of transmissivity and effective recharge in steady groundwater flow: 1. Theory, Water Resour. Research., 23 (7), 1185-1192, 1987.

(3) Rubin, Y. and Dagan, G., Stochastic identification of transmissivity and effective recharge in steady groundwater flow: 2. Case study, Water Resour. Research, 23 (7), 1193-1200, 1987.

(4) Rubin, Y., A hierarchical method for the design of water allocation and water distribution networks based on Graph-Theory, Irrigation and water allocation IAHS Publ. no. 169, 1987.

(5) Rubin, Y. and Dagan, G., Stochastic analysis of the effects of boundaries on spatial variability in groundwater flows: 1. Constant head boundary, Water Resour. Research, 24(10), 1689-1697, 1988.

(6) Dagan, G. and Rubin, Y., Stochastic identification of recharge, transmissivity and storativity in aquifer unsteady flow: A quasi-steady approach, Water Resour. Research, 24(10), 1698-1710, 1988.

(7) Rubin, Y. and Dagan, G., Stochastic analysis of the effects of boundaries on spatial variability in groundwater flows: 2. Impervious boundary, Water Resour. Research, 25(4), 707-712, 1989.

(8) Rubin, Y., Stochastic analysis of macrodispersion in heterogeneous porous media, Water Resour. Research, 26(1), 133-144, 1990.

(9) Rubin, Y., and Gomez-Hernandez, J.J., A stochastic approach to the problem of upscaling of conductivity in disordered media, Water Resour. Research, 26(4), 691-701, 1990.

(10) Rubin, Y., Lobo Ferreira, J.P., Rodrigues, J.D. and Dagan, G., Estimation of the Rio-Maior aquifer in Portugal by using stochastic inverse modeling, Journal of Hydrology, 118, 257-279, 1990.

(11) Rubin, Y., Gomez-Hernandez, J.J. and Journel, A.G., Analysis of upscaling and effective properties in disordered media, in Reservoir Characterization II, eds. L. Lake, H.B. Carroll and T.C. Wesson, Academic Press, pp. 251-276, 1991.

(12) Rubin, Y., Prediction of tracer plume migration in disordered porous media by the method of conditional probabilities, Water Resour. Research, 27(6), 1291-1308, 1991.

(13) Rubin, Y., Transport in heterogeneous porous media - prediction and uncertainty, Water Resour. Res., 27(7), 1723-1738, 1991.

(14) Rubin, Y. and Journel, A.G., Simulation of non-Gaussian space random functions for modeling transport in groundwater, Water Resour. Research, 27(7), 1711-1721, 1991.

(15) Rubin, Y., The spatial and temporal moments of tracer concentration in disordered porous media, Water Resour. Research, 27(11), 2845-2854, 1991

(16) Rubin, Y. and Dagan, G., Conditional estimation of solute travel time in heterogeneous formations: Impact of the transmissivity measurements, Water Resour. Research., 28(4), 1033-1040, 1992.

(17) Rubin, Y. and Dagan, G., A note on head and velocity covariance in three-dimensional flow through heterogeneous anisotropic porous media, Water Resour. Research., 28(5), 1463-1470, 1992.

(18) Rubin, Y., Mavko, G. and Harris, J., Mapping permeability in heterogeneous aquifers using hydrologic and seismic data, Water Resour. Research, 28(7), 1992.

(19) Rubin, Y. and Or, D., Stochastic Modeling of Unsaturated Flow in Heterogeneous Soils with Water Uptake by Plant Roots: The Parallel Columns Model, Water Resour. Research, 29(3), 619-632, 1993.

(20) Indelman, P., Or, D. and Rubin, Y., Stochastic Analysis of Unsaturated Steady-State Flow Through Bounded Heterogeneous Formations, Water Resour. Research, 29(4), 1141-1148, 1993.

(21) Copty, N., Rubin, Y. and Mavko, G., Geophysical Hydrological Identification of Field Permeabilities through Bayesian Updating, Water Resour. Research, 29(8), 2813-2826, 1993.

(22) Or, D. and Rubin, Y., Stochastic Modeling of Unsaturated Flow in Heterogeneous Media with Water Uptake by Plant Roots: Tests of the Parallel Columns Model Under Two Dimensional Flow Conditions, Water Resour. Research, 29(12), 4109-4120, 1993.

(23) Bellin A., Rinaldo, A., Bosma, W.J.P., van der Zee, S.E.A.T.M., Rubin, Y., Linear equilibrium adsorbing solute transport in physically and chemically heterogeneous porous formations; 1, Analytical solutions, Water Resour. Research, 29(12), 4109-4030, 1993.

(24) Rubin, Y., Bellin A., and Cushey, M., Modeling of transport in ground water for environmental risk assessment, Stoch. Hydrol. Hydraul., 8(1), 57-78, 1994.

(25) Rubin, Y., Bellin, A., The effects of recharge on flow nonuniformity and macrodispersion, Water Resour. Research, 30 (4), 939-948, 1994.

(26) Rubin, Y., and Seong, K., Investigation of Flow and Transport in Certain Cases of Nonstationary Conductivity Fields, Water Resour. Research, 30 (11), 2901-2912, 1994.

(27) Bellin, A., Rubin. Y., and Rinaldo, A., Eulerian-Lagrangian Approach for Modeling of Flow and Transport in Heterogeneous Geological Formations, Water Resour. Research, 30 (11), 2913-2924, 1994.

(28) Indelman, P., and Rubin, Y., Flow in Heterogeneous Media Displaying a Linear Trend in the Log-Conductivity, Water Resour. Research, 31(5), 1257 - 1266, 1995.

(29) Cushey, M.A., Bellin. A., and Rubin, Y., Generation of three dimensional flow fields for statistically anisotropic heterogeneous porous media, Stoch. Hydrology and Hydraulics, 9 (1), 89-104, 1995.

(30) Copty, N., and Rubin, Y., Stochastic approach to the characterization of lithofacies from surface seismic and well data, Water Resour. Research, 31 (7), 1673 - 1686 1995.

(31) Rubin, Y., Flow and transport in bimodal heterogeneous formations, Water Resour. Research, 31 (10), 2461 - 2468, 1995.

(32) Indelman P., and Rubin, Y., Solute transport in nonstationary velocity fields; Water Resour. Research, 32 (5), 1996.

(33) Dagan G., Bellin, A., and Rubin, Y., Lagrangian analysis of transport in Heterogeneous formations under transient flow conditions, Water Resour. Research, 32(4), 891-900, 1996.

(34) Ezzedine, S., and Rubin, Y., A geostatistical approach to the conditional simulation of spatially distributed solute concentration and notes on the use of tracer data in the inverse problem, Water Resour. Research, 32(4), 853-862, 1996.

(35) Indelman, P., Rubin, Y., Average flow in heterogeneous media of trending hydraulic conductivity, Journal of Hydrology, V.183, N1-2, 57-68, 1996.

(36) Bellin, A., and Rubin, Y., HYDRO-GEN: A spatially distributed random field generator for correlated properties, Stoch. Hydro. Hydraul., 10(4), 253-278, 1996.

(37) Bellin, A., Dagan, G., Rubin, Y., The impact of head gradient transients on transport in heterogeneous formations: Application to the Borden Site, Water Resour. Res., 32(9), 2705-2713, 1996.

(38) Ezzedine S., and Rubin, Y., Unconditional and conditional analyses of the Cape Cod tracer data., Water Resour. Res., 33(1), 1-11, 1997.

(39) Hubbard, S., and Rubin, Y., GPR assisted near surface hydrogeological site investigation, Water Resour. Res., 33(5), 971-990, 1997.

(40) Cushey, M., and Rubin, Y., Field scale transport of nonpolar organic solutes in 3-D heterogeneous aquifers, Environmental Science & Technology, 31(5), 1259-1268,1997.

(41) Rubin, Y. and Ezzedine, S., The travel times of solutes at the Cape Cod tracer experiment: Data analysis, modeling and structural parameters inference, Water Resour. Res., 33(7), 1997.

(42) Rubin, Y., Cushey, M., and Wilson, A., The moments of the breakthrough curves of instantaneously and kinetically sorbing solutes in heterogeneous geologic media: Prediction and parameter inference from field measurements, Water Resour. Res., 33 (11), 1997.

(43) Zimmerman D.A., de Marsily, G., Gotway, C.A., Rubin, Y., et al., A comparison of seven geostatistically based inverse approaches to estimate transmissivities for modeling advective transport by groundwater flow, Water Resour. Res., 34(6), 1998.

(44) Sun A., and Rubin, Y., Travel time analysis of tracers and reactive solutes in the unsaturated zone, Journal of Hydraulic Research, 36(6), 979-1002, 1998.

(45) Seong, K. and Rubin, Y, Field investigation of the WIPP Site (New Mexico) using a non stationary stochastic model with a trending hydraulic conductivity, Water Resour. Res., 35(4), 1999.

(46) Hubbard S., Rubin, Y., and Majer, E., Spatial correlation structure estimation using geophysical and hydrogeological data, Water Resour. Res., 35(6), 1809-1825, 1999

(47) Maxwell, R., Kastenberg, W., and Rubin, Y., Hydrogeological site characterization and its implication on human exposure risk assessment, Water Resour. Res., 35(9), 2841-2855, 1999.

(48) Ezzedine, S., Rubin, Y., and Chen, J., Hydrogeological geophysical Bayesian method for subsurface site characterization: Theory and application to the LLNL Superfund Site, Water Resour. Res, 35(9), 2671-2683, 1999.

(49) Rubin, Y., Sun, A., Maxwell, R., Bellin, A., The concept of block effective macrodispersion, J. Fluid Mech, 395, 161-180, 1999.

(50) Woodbury, A., and Rubin, Y., A full-Bayesian approach to parameter inference from tracer travel time moments and investigation of scale effects at the Cape Cod Experimental site, Water Resour. Res., 36(1), 159-171, 2000

(51) Hubbard, S., Rubin, Y., Hydrogeological parameter estimation using geophysical data: A review of selected techniques, J. Contam. Hydrology, 45, 3-34, 2000.

(52) Chen, J., Hubbard, S., and Y. Rubin, Estimating the hydraulic conductivity at the South Oyster Site based on the normal linear regression model, Water Resour. Res., 37(6), 1603-1613, 2001.

(53) Hubbard, S., Chen, J., Peterson, J., and Y. Rubin, Hydrogeological characterization of the South Oyster Bacterial transport site using geophysical data, Water Resour. Res., 37(10), 2431-2456, 2001.

(54) Kowalsky, M.B., Dietrich, P., Teutsch, G., and Y. Rubin, Forward modeling of GPR data using digitized outcrop images and multiple scenarios of water saturation, Water Resour. Res., 37(6), 1615-1625, 2001.

(55) Hubbard, S., K. Grote, and Y. Rubin, Mapping the volumetric soil water content of a California vineyard using high-frequency GPR ground wave data, Geophysics The Leading Edge, Society of Exploration Geophysics, V21(6), 552-559, 2002.

(56) Grote, K., S. Hubbard, Y. Rubin, GPR monitoring of volumetric water content in soils applied to highway construction and maintenance, Geophysics The Leading Edge, Society of Exploration Geophysics, V21(5), 482-485, 2002.

(57) Lawrence, A., X. Sanchez-Vila, and Y. Rubin, Conditional moments of the breakthrough curves of kinetically-sorbing solute in heterogeneous porous media using multirate mass transfer models for sorption and desorption, Water Resour. Res., 38(11), 2002.

(58) Wilson, A., and Y. Rubin, Characterization of aquifer heterogeneity using indicator variables for solute concentrations, Water Resour. Res., 38(12), 2002

(59) Hubbard, S. and Y. Rubin, Hydrogeophysics: State-of-the-Discipline, EOS v. 83 (51), p. 602-606, 2002.

(60) Sanchez-Vila, X., and Y. Rubin, Travel time moments for sorbing solutes in heterogeneous domains under nonuniform flow conditions, Water Resour. Res., 39(4), 2003

(61) Chen, J., and Y. Rubin, An effective Bayesian model for lithofacies estimation using geophysical data, Water Resour. Res., 39(5), 2003.

(62) Rubin, Y., A. Bellin and A. Lawrence, On the use of block-effective macrodispersion for numerical simulation of transport in heterogeneous formations, Water Resour. Res., 39(9), 1242, doi:10.1029/2002WR001727, 2003.

(63) Hubbard, S., J. Zhang, P. Monteiro, Y. Rubin, Detection of rebar corrosion using non-destructive geophysical techniques, ACI Materials Journal, 100(6), 501-510, 2003.

(64) Grote, K., S. Hubbard, Y. Rubin, Field-scale estimation of volumetric water content using ground-penetrating radar ground wave techniques, Water Resour. Res., 39(11), SBH5, 2003 (Editors' Pick for 2003)

(65) Ritzi, R.W., Z. Dai, D. Dominic, and Y. Rubin, Spatial correlation of permeability in cross-stratified sediment with hierarchical architecture, Water Res. Research, 40(3), 2004.

(66) Bellin, A., A. Lawrence, Y. Rubin, Models of sub-grid variability in numerical simulations of solute transport in heterogeneous porous formations: Three-dimensional flow and effect of pore-scale dispersion, Stoch. Env. Risk and Rel. Assessment, 18(1), 2004.

(67) Kowalsky, M., S. Finsterle, Y. Rubin, Estimating flow parameters distributions using ground-penetrating radar and hydrologic measurements during transient flow in the vadose zone, Adv. Water Resour., 27(6), 585-599, 2004.

(68) Bellin, A., and Y. Rubin, On the use of peak concentration arrival times for the inference of hydrogeologic parameters, Water Resour. Res., 40, W07401, doi:10.1029/2003WR002179, 2004.

(69) Rubin, Y., Stochastic Hydrogeology – Challenges and misconceptions, Stochastic Environmental Research and Risk Assessment, 18(4), DOI 10.1007/s00477-004-0193-5, 2004.

(70) Findikakis, A.N., R., Helmig, P. Kitanidis, Y. Rubin, Summary of a panel Discussion at the International Symposium held on March 25-28, 2002 in Berkeley, CA, USA, Journal of Hydraulic Research, 42, Special Issue: Sp. Iss. SI, pages III-IV, 2004.

(71) Chen, J., S. Hubbard, Y. Rubin, C. Murray, E. Roden, and E. Majer, Geochemical characterization using geophysical data and Markov Chain Monte Carlo methods: a case study at the Bacterial Transport Site in Virginia, Water Resour. Res., Vol. 40, W12412, doi:10.1029/2003WR002883, 2004.

(72) Dai, Z., R.W. Ritzi., C. Huang, Y. Rubin, D. Dominic, Transport in heterogeneous sediments with multi-modal conductivity and hierarchical organization across scales, J. of Hydrology, 294, 68-86, DOI: 10.1016, j.jhydrol, 2003.10.024, 2004.

(73) Hubbard, S., Y. Rubin, K. Grote and I. Lunt, The quest for better winegrapes using geophysics, Geotimes: Special issue on Geology and Terroir, 49(8), p. 30-34, 2004.

(74) Grote, K., S. Hubbard , John Harvey and Y. Rubin, Evaluation of infiltration in layered pavements using surface GPR reflection techniques, J. Applied Geophysics, 57(2), 129-153, 2005

(75) Lunt, I.A, S.S. Hubbard and Y. Rubin, Soil moisture content estimation using ground-penetrating radar reflection data, Journal of Hydrology, Volume 307, Issues 1-4, 9, Pages 254-269, 2005

(76) Kowalsky, M.B., S. Finsterle, J. Peterson, S. Hubbard, Y. Rubin, E. Majer, A. Ward, G.W. Gee, Estimation of field-scale soil hydraulic and dielectric parameters through joint inversion of GPR and hydrological data, Water Resources Research, 41(11), W11425, doi:10.1029/2005WR004237, 2005

(77) Hou, Z., and Y. Rubin, On minimum relative entropy concepts and prior compatibility issues in vadose zone inverse and forward modeling, Water Resour. Res., 41(12), W12425, doi:10.1029/2005WR004082, 2005

(78) Hoversten, G.M., F. Cassassuce, E. Gasperikova, G. A. Newman, Y. Rubin, Z. Hou, and D. Vasco, Direct reservoir parameter estimation using joint inversion of marine seismic AVA & CSEM data, Geophysics, Volume 71, Issue 3, pp. C1-C13, May-June, 2006.

(79) Rubin, Y., M. Hoverten, Z. Hou, J. Chen, Risk Reduction in gas reservoir exploration using joint seismic-EM inversion, GasTips, p. 5-11, Winter 2006,

(80) Hou, Z., Y. Rubin, G.M. Hoversten, D. Vasco, J. Chen, Reservoir Parameter Identification Using Minimum Relative Entropy-Based Bayesian Inversion of Seismic AVA and Marine CSEM Data, Geophysics, 71(6), P.O77-O88, Nov-Dec, 2006

(81) Rubin, Y., I. Lunt, J. Bridge, Spatial variability in river sediments and its link with river channel geometry, Water Resour. Res., 42(6), W06D16, doi:10.1029/2005WR004853, 2006.

(82) Weiss, M., Y. Rubin, E. Adar and R. Nativ, Fracture and bedding plane control on groundwater flow in a chalk aquitard, Hydrogeology Journal, 14(7), 1081-1093, 2006

(83) Lawrence, A., Y. Rubin, Block-effective macrodispersion for numerical simulations of sorbing solute transport in heterogeneous porous formations, Advances in Water Resources, 30, 1272-1285, 2007.

(84) Chen, J., G. M. Hoversten, D. Vasco, Z. Hou, and Y. Rubin, A Sampling-based Bayesian Model for Gas Saturation Estimation Using Geophysical Data, Geophysics, 72(6), P. WA85-WA95, 2007

(85) Hubbard, S, I. Lunt, K. Grote and Y, Rubin, Vineyard soil water content: mapping small scale variability using ground penetrating radar, Gesocience Canada Geology and Wine series, Eds. R.W. MacQueen and L.D. Meinert, Geoscience Canada Reprint, 2007
Series Number 9, Geological Association of Canada, St. John's, Newfoundland, 193-202, 2006.

(86) Barros, F., and Y. Rubin, A Risk-Driven Approach for Subsurface Site Characterization, Water Resources Research, 44, W01414, doi:10.1029/2007WR006081, 2008.

(87) Miller, G., Y. Rubin, U. Mayer, Modeling vadose zone processes during land Application of food-processing wastewater in California's Central Valley, in press, Journal of Environmental Quality, 37(5), S-43 to S-57, 2008.

(88) Chen, X., Y. Rubin, S. Ma and D. Baldocchi, Observations and stochastic modeling of soil moisture control on evapotranspiration in a California Oak Savanna, Water Resources Research, 44, W08409, doi:10.1029/2007WR006646, 2008.

(89) De Barros, F.P.J., Y. Rubin, R.M. Maxwell, The concept of comparative information yield curves and its application to risk-based site characterization, Water Resour. Res., 45, W06401, doi:10.1029/2008WR007324, 2009.

(90) Nowak, W., F. P. J. de Barros, and Y. Rubin, Bayesian geostatistical design: Task-driven optimal site investigation when the geostatistical model is uncertain, Water Resour. Res., 46, W03535,
doi:10.1029/2009WR008312, 2010.

(91) Isosaari P., Hermanowicz S.W. and Rubin Y., Sustainable Natural Systems for Treatment and Disposal of Food Processing Wastewater, Critical Reviews in Environmental Science and Technology, 40: 7, 662 — 697, DOI: 10.1080/10643380802359396,2010

(92) Grote, K., C. Anger, B. Kelly, S. Hubbard, and Y. Rubin, Characterization of soil water content variability and soil texture using GPR groundwave techniques, *Journal of Environmental and Engineering Geophysics*, 15(3), 93-110, 2010.

(93) Rubin, Y., X. Chen, H. Murakami, and M. Hahn, A Bayesian approach for inverse modeling, data assimilation, and conditional simulation of spatial random fields, *Water Resour. Res., 46*, W10523, doi:10.1029/2009WR008799, 2010.

(94) Murakami, H., X. Chen, M. S. Hahn, Y. Liu, M. L. Rockhold, V. R. Vermeul, J. M. Zachara, and Y. Rubin, Bayesian approach for three-dimensional aquifer characterization at the Hanford 300 Area, Hydrol. Earth Syst. Sci., 14, 1989-2001, doi:10.5194/hess-14-, 1989-2010, 2010.

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(96) Barros, F., Y. Rubin, Modelling of block-scale macrodispersion as a random function, J. Fluid Mechanics, doi:10.1017/jfm.2011.65, 2011

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(1) Goodwin, P., Florsheim, J., Rubin, Y., Sonoma County Planning Dept. Hydrologic Aspects Aggregate Resource Management Plan Update and EIR, 1992.

(2) Andrews, B., Goodwin, P., Rubin, Y., Recommended Groundwater monitoring and Analysis Requirements, prepared for Sonoma County Permit and Resource Management Dept., 1995.

(3) Coats, B., Mead, A., Rubin, Y., Potential Water Quality Impacts of Treated Wastewater Discharge at Healdsburg, Prepared for City of Healdsburg, 1996.

- **PARTICIPATION IN CONFERENCES AND SEMINARS:**

(1) A simplified method for the simulation of mineralization processes in aquifers, presented at the ITCC International Congress, 1983, Tel-Aviv, Israel.

(2) The development and use of a simplified numerical method for the simulation of mineralization processes in aquifers, presented at the IAHR Conference HYDROSOFT 84, Yugoslavia, 1984.

(3) Two case histories of stochastic identification of aquifer hydraulic parameters and natural recharge, invited paper, Hydraulic Engineering, 1989 National Conference on Hydraulic Engineering, New Orleans, Louisiana, August 14-18, 1989.

(4) Spatial averaging of statistically anisotropic point conductivities, in Optimizing the Resour. for Water Management, presented at the 17th Annual National Conference, ASCE, Fort Worth, Texas, April 17-21.

(5) A stochastic Bayesian approach to modeling of macrodispersion in heterogeneous porous media, presented at the International Conference and Workshop held in Ottawa, Canada, October 4, 1990.

(6) Key notes lecture presented on new techniques for modeling groundwater flow, in GQ93, Groundwater Quality Tallin, Estonia, 1993.

(7) Incorporation of Geophysical data into the identification of field permeabilities, AGU Fall Meeting, San Francisco, Dec 1993.

(8) A Bayesian approach for the identification of lithological variations in multi-phase heterogeneousmedia using geophysical and hydrogeological data, AGU Fall Meeting, San Francisco,Dec 1993.

(9) Predicting cumulative distribution functions of concentration for non-reactive solute transport in heterogeneous porous media, AGU Fall Meeting, San Francisco, Dec 1993.

(10) A new method for stochastic modeling of flow and transport in heterogeneous formations, presented at the IAHR Symposium on Transport and Reactive Processes in Aquifers, Zürich, 11-15 April, 1994.

(11) Conditional probability method for predicting transport of reactive solutes in heterogeneous porous media, AGU Fall Meeting, San Francisco, December, 1994.

(12) Investigation of flow and transport in certain cases of nonstationary conductivity fields, AGU Fall Meeting, San Francisco, December, 1994.

(13) Investigation of flow and transport in certain cases of nonstationary conductivity fields with application to the WIPP Site , talk presented at Sandia National Lab,Albuquerque, NM, 1994

(14) Transport of passive solutes in groundwater: Recent developments and current issues, talk presented at the Dept. of Land, Air and Water Resources, UC Davis,1995.

(15) Transport of passive solutes in groundwater: Recent developments and current issues, talk presented at the Dept. of Geology and Environmental Sciences, Stanford University, 1995.

(16) Three dimensional modeling of flow and reactive transport in heterogeneous porous media, presented at the GQ95, Prague, 15-18 May, 1995.

(17) Transport of inert soluts by groundwater: recent developments and current issues, keynote lecture presented at the UNESCO conference "Subsurface Flow and Transport: A Stochastic Approach, Paris, 1995.

(18) Using Modeling to Establish Aggregate Mining Standards for Groundwater Protection, presented at the Annual Meeting of the American Institute of Hydrology, Denver, May 14-18, 1995.

(19) Geophysical methods for contaminated site characterization, talk given at the National Water Research Institute, UC Irvine, 1995.

(20) Flow and Transport in Heterogeneous Media, paper presented at the Porous Media Conference, Mathematisches Forschungs Institut, Oberwolfach, Germany, February 1996.

(21) Hydrogeological investigation of failure scenarios at the Dept. of Energy's WIPP Site, talk presented at the Industrial Liaison Program of the College of Engineering, March 1996.

(22) Geophysical methods in hydrogeology, invited lecture presented at Doll Schlumberger Research Center, Connecticut, August, 1996.

(23) Su Una Nuova Metodologia per la generazione di campi aleatori, (in Italian) paper presented at the XXV Congress di Idraulica & costruzioni Idrauliche, Torino, September, 1996.

(24) On the conditional generation of evolving scales geological formations, talk given at the AGU, Fall mtg, San Francisco, December, 1996.

(25) Analysis of travel times of tracer and reactive solutes for hydrogeological and geochemical site characterization, talk given at the AGU Fall mtg, San Francisco, December, 1996.

(26) Three-dimensional modeling of the field-scale transport of nonpolar organic compounds: Methodology and comparison with site data, talk given at the AGU Fall mtg, San Francisco, December, 1996.

(27) Geophysical imaging for contaminated site characterization, talk given to the Coordinating Board and Advisory Council, Water Resources Center of University of California, December, 1996.

(28) Enhanced hydrogeological site characterization using tracer data and geophysical techniques, invited talk given at La Sorbonne, Paris, February, 1997.

(29) Determination of model structure and model parameters for groundwater resources management, Invited lecture given at the 24th Annual Water resources Planning and Management, ASCE, Houston, April 1997.

(30) Ground penetrating radar assisted saturation and permeability estimation, talk given at AGU Spring Meeting, Baltimore, May, 1997.

(31) New Challenges in hydrogeological Site Characterization: integration of remote sensing and tracer data, invited lecture given at SIAM (Society of Industrial and Applied Mathematics), Conference, Albuquerque, NM, June, 1997.

(32) Hydrological and rock mass properties from geophysical inversion, Invited talk presented to the Earth Resources Council of the US Dept of Energy, Bodega Bay, California,September, 1997.

(33) Upscaling of dispersivities in heterogeneous, non-stationary porous media (abstract only), IAMG (International Association of Mathematical Geology) 1997, Barcelona, Spain, September 22-27, 1997.

(34) On the use of remote sensing geophysical data and tracer data for site characterization, Invited talk, Los Alamos National Lab, new Mexico, Oct 15, 1997.

(35) Inverse modeling with the breakthrough curve moments of tracers and sorbing solutes in heterogeneous aquifers, AGU Fall Conference, San-Francisco, December ,1997.

(36) Interpretation of breakthrough curves for aquifer characterization, AGU Fall Conference, San-Francisco, December ,1997.

(37) Hydrological-Geophysical methods for subsurface site characterization: the case of the LLNL Superfund Site, AGU Fall Conference, San Francisco, December ,1997.

(38) Estimation of hydrological model parameters using spectral analysis of high resolution geophysical data, AGU Fall Conference, San Francisco, December, 1997.

(39) On the Potential of non- or lightly invasive subsurface surveying techniques for enhanced subsurface characterization, Invited talk in the session Twenty Years of Stochastic Subsurface Hydrology, AGU Spring Conference, Boston, MA, May 1998.

(40) Mapping the spatial distribution of hydrogeological properties using geophysical methods, in GQ98 Groundwater Quality: Remediation and Protection, Tubingen, 21-23 September, 1998

(41) A full-Bayesian approach to parameter inference from tracer travel time moments, talk presented (with A. Woodbury and S. Ezzedine) at the 50th National Convention, NGWA, Las-Vegas, Nevada, 13-16 December, 1998.

(42) Indicator variables for mass detection in tracer tests - inference of structural parameters in heterogeneous geological media, poster presented with Wilson, A., in AGU Fall Meeting, San Francisco, December, 1998.

(43) Log-permeability estimation using multiple geophysical data sets within a Bayesian framework, with Hubbard, S.S., Majer, E., Peterson, J.E., and Chen, J., poster presented at the AGU Spring mtg, Boston, May 1999.

(44) Seeing into the earth (and through the asphalt too): Noninvasive characterization of the shallow subsurface for environmental and engineering applications, lecture inaugurating the departmental faculty research seminar series, U.C. Berkeley, 1999.

(45) On the concept of block effective macrodispersivity, in Mutiscale modeling and simulation of flow and transport in Porous Media, Los-Alamos, 11-13, August, 1999

(46) A unified approach to the problem of plume scale and block scale dependent transport in heterogeneous geologic media, keynote and opening lecture, in ModelCare 99: Calibration and Reliability in Groundwater Modeling - Coping with Uncertainty, Zurich, 20-23 September, 1999.

(47) Characterization and monitoring of the Oyster, VA bacterial transport site using geophysical data, with S, Hubbard, J. Chen, K. Williams, E.L. Majer, Geological Society of America Conference, Boston, October 30 - November, 1, 2001

(48) Temporal moments for kinetically sorbing solute transport in radial flow, with A.E., Lawrence, and X. Sanchez-Vila, AGU Fall Meeting, San Francisco, December 2001.

(49) Soil water content spatial correlation estimation using GPR, with K. Grote, S. Hubbard, AGU Fall Meeting, San Francisco, December 2001.

(50) Improved characterization of the vadose zone with time-lapsed ground-penetrating radar, with M. Kowalsky, AGU Fall Meeting, San Francisco, December 2001.

(51) Investigating temporal and spatial variations in near surface water content using GPR, Invited lecture, with S. Hubbard, K. Grote, M. Kowalsky, AGU Fall Meeting, San Francisco, December 2001.

(52) Geochemical heterogeneity, Keynote lecture, Workshop on water flow and contaminant transport in fractured aquitards, Jerusalem, May 22-24, 2001.

(53) Analysis of reactive transport in geologic media under the influence of geological and On the use of geophysics for hydrogeological site characterization: Theory and field applications, invited lecture, ModelCARE 2002, Prague, 17-20 June, 2002.

(54) A structured approach to Bayesian data fusion, invited talk, with J. Chen, S. Hubbard, M. Kowalsky, A. Woodbury, AGU Fall Meeting, San Francisco, December 2002.

(55) Inversion of hydrogeological and time-lapsed GPR data for flow parameters, with M. Kowalsky, and S. Finsterle, AGU Fall Meeting, San Francisco, December 2002.

(56) Numerical simulation of soil water content in the unsaturated zone using constraints provided by geophysical measurements, with Z. Hou and S. Hubbard, AGU Fall Meeting, San Francisco, December 2002.

(57) Geochemical characterization using geophysical data and Markov Chain Monte Carlo methods, with J. Chen, S. Hubbard. C. Murray, E. Roden, E. Majer, AGU Fall Meeting, San Francisco, December 2002.

(58) Bayes, Zadeh and Shannon, and the development of a structured approach to the hydrogeophysical data fusion problem, Keynote lecture, EGS-AGU conference, April 7-11, Nice, France.

(59) Future directions in hydrogeological subsurface characterization, invited lecture in the Symposium on “Sustainable Groundwater and Environmental Development: Recent Advances and Future Insights”, Barbados, May 14-17, 2003.

(60) Estimation of flow parameters using crosshole GPR travel times and hydrological data collected during transient flow experiments, with Kowalsky, M.B., J. Peterson, and S. Finsterle, AGU Fall Mtg, San Francisco, December 2003.

(61) Soil moisture content estimation using GPR reflection travel time, with Lunt, I.A., S.S. Hubbard, AGU Fall Mtg, San Francisco, December 2003.

(62) Experimental design considerations for estimating flow parameters with GPR and Hydrologic Measurements, with Majone, B., Kowalsky, M.B., AGU Fall Mtg, San Francisco, December 2003.

(63) Non-linear, Bayesian hydrogeophysical inversion in the vadose zone, with Z. Hou and S. Hubbard, AGU Fall Mtg, San Francisco, December 2003.

(64) Block-effective macrodispersion for numerical modeling of reactive solute transport in heterogeneous porous media, with Lawrence, A., AGU Fall Mtg, San Francisco, December 2003.

(65) Assessing the importance of incorporating spatial and temporal variability of soil and plant parameters into local water balance models for precision agriculture: Investigations within a California vineyard, With Hubbard, S., L. Pierce, K. Grote, AGU Fall Mtg, San Francisco, December 2003.

(66) MRE-based Bayesian inverse modeling with applications t the shallow and deep earth, with Z. Hou, M. Hoversten, J. Chen and D. Vasco, invited lecture, EOS Trans. 85(28), AGU Western Geophysics, July 2004.

(67) The concept of block-effective macrodispersion for numerical modeling of contaminant transport, invited lecture, Geological Society of America Annual Meeting, Denver, November 2004.

(68) Estimating field-scale soil hydraulic properties through joint inversion of cross-borehole GPR travel times and hydrological measurements, with Mike Kowalsky, S. Finsterle, S. Hubbard, J. Peterson, E. majer, A. Ward, G. Gee, Geological Society of American Annual Meeting, Denver, November, 2004.

(69) Markov Chain Monte Carlo based approaches for inverse problem, with J. Chen, M. Hoversten, Z. Hou, AGU Fall Mtg, San Francisco, December 2005.

(70) Bayesian inversion of Soil-Plant-Atmospheric Interactions for an Oak-Savannah Ecosystem Using Markov-Chain Monte Carlo Methods, with X. Chen and D. Baldocchi, AGU Fall Mtg, San Francisco, December 2005.

(71) On application of ground-penetrating radar tomography in shallow subsurface hydrological parameter estimation, with Z. Hou, AGU Fall Mtg, San Francisco, December 2005.

(72) From vineyards to the deep ocean natural gas reservoirs: Geological characterization using geophysical methods, Seminar presented at The Dept. of Mechanical and Aerospace Engineering, UC San Diego, April 7, 2006.

(73) Geophysics and deep and shallow earth exploration; Bayesian and Geostatistical Perspectives, Seminar presented at USGS Menlo Park, April 26, 2006.

(74) On application of ray-tracing methods when using tomographic GPR in vadose zone hydrology, AGU Fall Meeting, San-Francisco, December 2006.

(75) A Stochastic Approach To Human Health Risk Assessment Due To Groundwater Contamination, AGU Fall Meeting, San-Francisco, December 2006.

(76) Designing a Stand-scale Network of Plant-level Water Flux Measurement Stations using Cluster Analysis and Geostatistical Techniques, AGU Fall Meeting, San-Francisco, December 2006.

(77) Observations and Stochastic Modeling of Soil Moisture Control on Evapotranspiration in an Oak-Savannah Ecosystem, AGU Fall Meeting, San-Francisco, December 2006.

(78) A Hierarchical Transition Probability Model and Its Application for Solute Transport in Heterogeneous Sediments, AGU Fall Meeting, San-Francisco, December 2006.

(79) Stochastic Hydrology and the Art of Wine- and Cheese-Making in California, invited lecture, AGU Joint Assembly, Acapulco, May 22-27, 2007.

(80) An Assessment of Current Concepts for Hydrogeological Site Characterization, and Alternatives, invited lecture, AGU Joint Assembly, Acapulco, May 22-27, 2007.

(81) Regulation of Soil Moisture on Water Transport in an Oak Savanna Ecosystem at Plant and Stand Scales, AGU Joint Assembly, Acapulco, May 22-27, 2007.

(82) Modeling Land Application of Food-Processing Wastewater in the Central Valley, California, AGU Fall Meeting, San-Francisco, December 2006.

(83) Estimating hydrogeological parameters in the vadose zone using tomographic GPR first- arrival traveltime data – applications of the eikonal solver within an MCMC-Bayesian inversion framework, AGU Fall Meeting, San-Francisco, December 2006.

(84) A New Technique for Up-scaling Sap Flow Transpiration Measurements to Stand or Landscape Scale Fluxes, AGU Fall Meeting, San-Francisco, December 2006.

(85) On the significance of contaminant plume-scale and dose-response models in defining hydrogeological characterization needs, AGU Fall Meeting, San-Francisco, December 2006.

(86) Modeling Plant-Scale Root Zone Water Dynamics in an Oak Savanna, AGU Fall Meeting, San-Francisco, December 2006.

(87) A Change in Paradigm: 25 Years After Kitanidis and Vomvoris (1983), Invited seminar, Stanford University, December 2008.

(88) Representing the biosphere in a reactive transport model of wastewater reuse, presented in Computational Methods in water Resources, July 2008, San Francisco.

(89) Analysis of the interplay between contaminant transport scales, aquifer heterogeneity and health related parameters in a risk-driven approach for site characterization, presented in Computational Methods in water Resources, July 2008, San Francisco.

(90) Evaluating The Role Of Flow Data On Concentration Fluctuations Through The Use Of The Comparative Information Yield Curves, AGU Fall Meeting, San-Francisco, December 2007.

(91) MAD: a new method for inverse modeling of spatial random fields with applications in hydrogeology, AGU Fall Meeting, San-Francisco, December 2007.

(92) Estimating the Contribution of Plant Groundwater Uptake to Total Evapotranspiration in a Semi-arid Oak Savanna, AGU Fall Meeting, San-Francisco, December 2007.

(93) Research at Hanford's 300 Area Integrated Field Challenge Site, AGU Fall Meeting, San-Francisco, December 2007.

(94) Bayesian Geostatistical Design: Optimal Site Investigation When the Geostatistical Model is Uncertain, European Geophysical Union General Assembly, Vienna, April 2009.

(95) Bayesian geostatistical inversion method for hydrogeological data integration in probabilistic risk assessments", Waste Management Symposium 2009, March 1-5, Phoenix, Arizona

(96) Integrating scale-dependent hydrogeological data using a Bayesian geostatistical framework, DOE-ERSP 4th Annual PI Meeting 2009, National Conference Center, Lansdowne, Virginia, April 20-23, 2009.

(97) Method of Anchored Distributions (MAD) for Integration and inversion of IFRC hydrogeological data and for establishing a geostatistical site model, invited lecture, 4th Annual PI Meeting 2009, April 20-23, 2009.

(98) On the evolution of spatial variability and uncertainty modeling concepts in hydrogeology, invited talk, AGU Fall Mtg, San Francisco, December 2009.

(99)Elements of a Comprehensive Approach for Modeling Uncertainty, *invited talk*, AGU Fall Mtg, San Francisco, December 2009

(100) Uncertainty of human health risk predictions under different site exploration strategies, with F. Barros and W. Nowak, AGU Fall Mtg, San Francisco, December 2009.

(101) Integrating Tracer Test Data into Geostatistical Aquifer Characterization at the Hanford 300 Area, with X. Chen, H. Murakami, et al., AGU Fall Mtg, San Francisco, December 2009.

(102) Towards Creating a Stand-Scale Ecohydrological Measurement Suite: Observations from Integrating Multiple Hydrological and Biophysical Approaches in a California Oak Savanna, *Invited talk*, with G. Miller et al., AGU Fall Mtg, San Francisco, December 2009.

(103) Three-dimensional Characterization of A High-K Aquifer at the Hanford 300 Area and Retrospective Analysis of Experimental Designs, with H. Murakami et al., AGU Fall Mtg, San Francisco, December 2009