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EDUCATION

- PhD Civil Engineering, Colorado State University (May 1993).
- Master of Engineering, Auburn University (December 1988).
- Bachelor of Civil Engineering, American University of Beirut (June 1987).

AWARDS, HONORS, AND REGISTRATION

- NASA/ASEE National Faculty Fellow at Goddard Space Flight Center (Summer 2002)
- Faculty of the Year Award, Professional Engineering Societies of Tampa Bay Area (2002)
- Outstanding Undergraduate Teaching Award, University of South Florida (2001)
- Outstanding Faculty Award, American Society of Civil Engineers, USF Chapter (2001)
- National Research Initiative Award, USDA Competitive Grant Program (2001)
- Research and Creative Scholarship Award, University of South Florida (1999/2000)
- Licensed Professional Engineer (since 1996)
- Phi Kappa Phi National Honor Society (1988).

ACADEMIC AND RESEARCH EXPERIENCE

Assistant Professor, University of South Florida, 98 to present
Teaching graduate and undergraduate courses in Water Resources and Hydrology. I developed one undergraduate course and two graduate courses to enhance the graduate program in Water Resources. Currently, I am directing the research for seven graduate students funded through a research program focusing on understanding the hydrology of humid, shallow water table environments. My research is supported by the USDA National Research Initiative Competitive Program, and regional agencies such as South Florida Water Management District and Tampa Bay water.

Assistant Professor, Asian Institute of Technology, School of Civil Engineering, Water Engineering and Management Program, Bangkok, Thailand (96-97).
My main responsibility was teaching graduate level courses in Hydrologic Modeling, and Drainage Engineering. In addition, I supervised graduate students research and assisted in the design and evaluation of the monitoring network in the Bangkok aquifer to study land subsidence (results documented in the published article by my graduate student Gangapodhyay et al. (2001) in Groundwater journal, referenced in my list of publication).

Research Hydrologist, US Department of Agriculture, Agriculture Research Service, Fort Collins, CO (1995 and October 1997 to August 1998)
The objective of my work was to analyze the spatial variability of soil hydrological properties to help interpreting hydrologic and soil measurements data at varying spatial resolutions. Soil, yield of wheat, and topographic data from three fields in Eastern Colorado were analyzed in Geographic Information system (GIS). Also I helped introducing new methods for quantifying the transport of agro-chemicals in soils environment under variable rate of fertilizer application and I was responsible for developing WBCT, the Water Balance and Chemical Transport module for GPFARM, the Great Plain Framework for Agricultural Resources Management (Results published in the journal articles Nachabe and Ahuja (1996) and Nachabe et al . (1999), and Nachabe (1998) referenced in my publication list).

Research Associate, Colorado Sate University and University of Colorado at Boulder (1990 -1994).
Responsibilities included:
1) Investigating the fate and transport of Plutonium and Americium in the vadose zone, surface water, and ground water of Rocky Flats (Contaminated site in Golden, Colorado) using a comprehensive soil and ground water monitoring system. Duties included data analysis and the development of analytical and numerical tools to explain field observations (results documented in the journal article Nachabe et al. 1995 of my publication list).
2) Evaluating a new method of field tests to estimate the hydraulic properties of the vadose zone using a tension infiltrometer (Nachabe and Illangasekare 1994, 1995).
3) Cooperating with a team to construct a regional subsurface flow and geochemical transport model for the United States Geological Survey. Developing a physical/stochastic approach to evaluate the management of a stream-aquifer system under uncertain data and information (Results published in two articles by Nachabe and Morel-Seytoux 1995).

Research Assistant, Auburn University, Auburn, Alabama (1988)
Conducted a study to evaluate capture zones to contain contaminated plumes in aquifers.

AREAS OF RESEARCH INTERESTS

- Vadose Zone and Ecosystem Hydrology;
- Stochastic Applications in Hydrology; Geostatistics, and Fractals;
- Stream Aquifer Interaction; and Conjunctive Use of Surface/Ground Water Systems;
- Flow in Porous Media, and Contaminant Fate and Transport;
- Optimization, and Linear System Theory.

RESEARCH FUNDING & GRADUATE STUDENT SUPPORT (Last five years)

CURRENT ACTIVE RESEARCH

(1)Impacts of Landscape Change on Variable Saturation Areas in a Humid Subtropical Environment**.** *National Research Initiative, Competitive Grant Program of the USDA.* **$165,000** August 2001-2004.
Principal Investigator (s):. **M. H. Nachabe** *(100%)*
Graduate research students supported by this grant: Donald Thompson and Manimeldura De Silva

(2)The SFWMD/SCS Method for Modeling Stormwater Runoff in Shallow Water Table Environments. *South Florida Water Management District.* **$50,000**. August 2002-2003.
Principal Investigator(s): **M. H. Nachabe** *(100%)*
Graduate research students suported by this contract: Caroline Masek and Darwiche Saba

(3)Hydrologic Data Collection at the Tampa Regional Reservoir. *Tampa Bay Water and Southwest Florida Water Management District*. **$630,000**. July 2001-2004.
Principal Investigators: M. Ross, **M. H. Nachabe**, and P. Tara *(Co-PI 30%)*
Graduate research student supported by this contract: Jeff Vomacka

*(4)*Statistical Characterization of Lake-Stage Fluctuations, West-Central Florida. *US Geological Survey, Water Resources Office, Tampa.* January 2002-2005.
Principal Investigator: **M. H. Nachabe** *(100%)*
Graduate research student supported: Jie Gao

PAST RESEARCH ACTIVITIES AT USF

(1) Impact of Rainfall Temporal Variability and Water Table Depth on Storm Water Runoff in South and Central Florida. South Florida Water Management District. $25,000. October 2000 to 2001. M. H. Nachabe, PI, and M. Ross, Co-PI. Graduate research student funded: Tatiana Hernandez (graduated summer 01)

(2) Development of Interfacial Boundary Conditions for the Southern District Ground Water Model of the Southwest Florida Water Management District. Southwest Florida Water Management District. M Ross, PI, and M. Nachabe,Co-PI January 2000 to September 2001. $163,454.

(3) Fractal Properties of Rainfall in Simulating Hortonian Runoff. Research and Creative Scholarship Award, University of South Florida Research Office. $7,500.

GRADUATE STUDENTS SUPERVISION AND THESIS DIRECTED AT USF

Master of Science Students for Dr. Nachabe at USF

(1) Tatiana Hernandez: Graduate Research Assistant from Spring 1999 till Summer 2001. Thesis title" "Rainfall-runoff modeling in humid shallow water table environment".

(2) Renee Rokicki: Graduate Research Assistant from Fall 2000 till Spring 2002. Graduated in May 2002 with a cumulative GPA of 4.0. Thesis title "Evaluating the performance of rainfall disaggregating methods for west central Florida".

(3) Caroline Masek: Graduate Research Assistant from Fall 2000 till Fall 2002. Thesis title: "Adapting the SCS method for runoff in humid shallow water table environment".

(4) Don Thompson: Graduate Research Assistant from Fall 2001 till Spring 2003. Thesis title " Specific yield variability and the evaluation of ground water evapotranspiration".

(5) Jie Gao: Research Assistant since Fall 2001. Thesis topic related to characterizing lake stage fluctuations in Central Florida.

PhD students for Dr. Nachabe at USF

(1) Manimeldura De Silva: admitted to PhD candidacy, October 2002. Supported through the National Research Initiative Competitive Grant Program of Dr. Nachabe to study impacts of landscape change on variable saturation areas.

(2) Darwiche El-Sabah: Graduate Research Assistant starting Fall 2002. Thesis topic related to remote sensing of the environment.

(3) Shayne Painter: Admitted to PhD program in Fall 2002.

TEACHING EXPERIENCE, COURSES DEVELOPMENT, TEACHING ENHANCEMENT

Undergraduate courses taught at USF

Hydraulics
Water Resources Engineering I
Water Resources Engineering II (course developed by Dr. Nachabe at USF)

Graduate courses taught at USF

Flow and Transport in Porous Media (course developed by Dr. Nachabe at USF)
Research Topics in Hydrology (course developed by Dr. Nachabe at USF)
Hydrologic Models (course taught at the Asian Institute of Technology)
Drainage Engineering (course taught at the Asian Institute of Technology)

Teaching workshops

- "Involving Students: Using Active Learning Strategies in University Classes" 19-30 July 1999. This intensive two weeks workshop included sessions on a) creating classroom climate that encourages active learning, b) skillful questioning in classroom, c) effective class discussion and discussion leading, d) technology enhanced teaching with power point, WebCT, and video conferencing, e) Co-operative learning strategies, d) improving writing across the curriculum, f) enhancing students listening skills and reducing their fears of public speaking, and g) handling diversity on campus and in classroom.

- "Ethics across the curriculum" 19 February 1999.

- " Total Quality Management in classroom" 8 October 1999.

- "Writing across the curriculum" November 98

PROFESSIONAL SERVICE

Selected Extramural activity

- Reviewer for 12 major water resource and hydrology research journals including Water Resources Research, Journal of Hydrology, Journal of Hydrological Sciences, ASCE Journal of Hydrologic Engineering, Ground Water, and Soil Science Society of America Journal.
- NSF panelist for SBIR/STTR Phase I, Ecology and Monitoring, 4 April 2003, Washington DC.
- NASA national faculty fellow, Goddard Space Flight Center, MD, Summer 2002.
- Serving on AGU vadose zone technical committees (2000 to date).
- Organized and co-chaired a session on "Geo-spatial technology applications in hydrology" in the Nineteenth Annual American Geophysical Union meeting, "Hydrology Days", August 16-20, 1999, Fort Collins, Colorado.
- Served as member of judging committee for students presentation awards at AGU Hydrology Days Meetings, 95 and 96.
- Coordinated a workshop on Remediation of Contaminated Groundwater for the Department of Mineral Resources, Bangkok, Thailand, 1997.
- Member, organizing committee of the International Conference on Infrastructure in Asian Cities (Bangkok, Thailand, 1997).
- Member of the American Society of Civil Engineers, the American Geophysical Union, the National Ground Water Association, and the Soil Science Society of America.

Selected intramural activity

- Chair of the department faculty search committee, USF 2003.
- Teacher review sessions for the PE exam, USF 1998, 99, 00, 02, 02.
- Teaching review sessions for the FE exam, USF 99.
- USF committees service: USF Research Globalization Committee (2000), College of Engineering Computer Committee(1999), College of Engineering curriculum review committee (1998).

REFEREED JOURNAL PUBLICATIONS (reverse chronological order)

(1) Nachabe, M. H., L. Ahuja, and R. Rokicki 2003. Field Capacity of Water in Soils: Concepts, Measurement, and Approximation. *Encyclopedia of Water Science*, Marcell-Dekker, NY (in press).

(2) Hernandez, T., M. Nachabe, M. Ross, and J. Obeysekera 2003. Runoff from Variable Source Areas in Humid, Shallow Water Table Environments. *Journal of the American Water Resource Association,* vol. 39, no. 1, pp.75-85.

(3) Nachabe, M. H. 2002. Analytical Expressions for Transient Specific Yield and Shallow Water Table Drainage. *Water Resources Research*, vol. 38, no. 10, 1193.

(4) Gangapodhyay, S.,A. Das Gupta, and M. Nachabe 2001. Evaluation of Bangkok Ground Water Monitoring Network using Principal Component Analysis. *Ground Water*, vol 39, no. 2**.** pp. 181-191

(5) Nachabe, M. H. , L. Ahuja, and G. Butters 1999. Modeling Bromide Transport under Sprinkler and Flood Irrigation for No-Till Soil Condition. *Journal of Hydrology*, vol. 214, pp. 8-17

(6) Nachabe, M. H., 1998. Refining the interpretation of Field Capacity in the Literature. *American Society of Civil Engineers, Journal of Irrigation and Drainage Engineering*, vol 124, no. 4, pp. 230-232.

(7) Nachabe, M. H., T. H. Illangasekare, H. J. Morel-Seytoux, L. R. Ahuja, and H. Ruan 1997. Infiltration over a Heterogeneous Watershed: Influence of Rainfall Excess. *American Society of Civil Engineers, Journal of Hydrologic Engineering,*vol. 2, no. 3 pp. 140-144.

(8) Morel-Seytoux, H., Myer, P., Nachabe, M. H., Touma, J. , Van Genuchten, M. Th. and R. Lenhard, 1996. Parameters Equivalence between the Brooks-Corey and Van Genuchten Soil Properties, Preserving the Effective Capillary Drive. *Water Resources Research,* vol. 32, pp.1251-1258.

(9) Nachabe, M. H., 1996. Macroscopic Capillary Length, Sorptivity, and Shape Factor in Scaling Infiltration. *Soil Science Society of America Journal,* vol. 60, no. 4 pp. 957-962.

(10) Nachabe, M. H., and L. R. Ahuja, 1996. Quasi-Analytical Solution for Predicting the Redistribution of Surface Applied Agro-Chemicals. *Transactions of the American Society of Agricultural Engineers,* vol. 39/5, pp. 1659-1664.

(11) Nachabe, M. H., 1995. Estimating Hydraulic Conductivity for Soils with Macropores. *American Society of Civil Engineers, Journal of Irrigation and Drainage Engineering*, vol. 121, no. 1, pp. 95-102.

(12) Nachabe, M. H., and H. J. Morel-Seytoux, 1995. Scaling the Ground Water Flow Equation. *Journal of Hydrology*, vol 164, no. 1-4, pp. 345-361.

(13) Nachabe, M. H., and H. J. Morel-Seytoux, 1995. Perturbation and Gaussian Methods for Stochastic Flow Models. *Advances in Water Resources*, vol. 18, no. 1, pp. 1-8.

(14) Nachabe, M. H., and H. J. Morel-Seytoux. 1995. Modeling Solute Transport during Infiltration. *Soil Science*, vol. 160, no.4, pp. 243-249.

(15) Nachabe, M. H., Litaor, M., Barth, G., and T. H. Illangasekare, 1995. Assessment of Free Flowing Soil Solution using Zero Tension Samplers. *International Association of Hydrological Sciences,* Publication no. 227, pp. 67-74.

(16) Nachabe, M. H., Islas, A.L., and T.H. Illangasekare, 1995. Analytical Solutions for Water Flow and Solute Transport in the Unsaturated Zone. *Ground Water,* vol 33, no 2, pp.. 304-310.

(17) Nachabe, M.H., and T.H. Illangasekare, 1994. Use of Tension Infiltrometer Data with Unsaturated Hydraulic Conductivity Models. *Ground Water*, vol. 32, no. 6, pp. 1017-1021.

(18) Morel-Seytoux, H.J., and M. H. Nachabe, 1992. An Effective Scale-Dependent Dispersivity Deduced From a Purely Convective Flow Field. *Hydrological Sciences Journal* vol 37, no.2., pp 93-102.

SELECTED CONFERENCE ABSTRACTS, PAPERS IN CONFERENCE PROCEEDINGS, AND PRESENTATIONS IN LAST FIVE YEARS

Nachabe, M. H. 2003. Role of Soil Moisture Variability in the Performance of Agricultural and Natural Ecosystems, USF Geology Colloquium, 31 March.

DeSilva, M. S. *, and M. H. Nachabe 2003. Application of a Two Dimensional Variable Saturation Flow Model to Simulate Evapotranspiration from Shallow Water Table Environments. Abstract and presentation in the Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay, Palm Harbor, FL 13-18 April 2003.

Nachabe, M. H. 2002.. Spatial Variability and Precision Agriculture In Dryland Systems, Invited seminar at the Institute for Food and Agricultural Systems, Lake Alfred, FL, 19 February 2002.

Hernandez, T. * and M. Nachabe, 2002. Simulating Saturation Excess Runoff from Variable Source Areas, Proc. of the 21st Annual AGU Hydrology Days, April 1-4, 2002, Fort Collins, CO., J. Ramirez, editor, pp. 142-151.

Masek, C. *, and M. Nachabe, 2001. The Impact of Varying Horizontal and Vertical Resolutions on Terrain Attributes in Small, Low-Relief Watersheds. Abstract in Eos, Transactions of the Fall Meeting of the American Geophysical Union, San Francisco, CA, December.

Rokicki, R. * , and M. Nachabe, 2001. Variable Time Scale Rainfall Disaggregation Using Artificial Neural Networks. Abstract in Eos, Transactions of the Fall Meeting of the American Geophysical Union, San Francisco, Ca. December.

Vomacka, J. *, P. Tara, M. Nachabe, M. Ross, J. Geurink, and R. Basso, 2001. Monitoring the Shallow Water Table and Vadose Zone of a Humid Subtropical Environment. Abstract in Eos, Transactions of the Fall Meeting of the American Geophysical Union, San Francisco, Ca., December.

Hernandez, T. * , and M. Nachabe, 2001. Impacts of Geomorphologic and Rainfall Variations on Wetlands Ecosystems. Society of Professional Hispanic Engineers 23rd Annual National Conference, Fresno, California (Invited Paper selected to enter the national technical competition).

Hernandez, T. * , and M. Nachabe, 2000. Infiltration-Runoff for Complex Rainfall Sequences. Proc. of the American Water Resources Association Annual Conference, Miami, FL, November, pp 263-266

Green, T.R., M.H. Nachabe, L.R. Ahuja, M.R. Murphy, J.C. Ascough II and M.J. Shaffer, 1999. Preliminary Fractal Analysis of Crop Yield and Experimental Design for Modeling Space-Time Variability Under Dryland Agriculture, Proc. of the Nineteen Annual AGU Hydrology Days, August16-20, 1999, Fort Collins, CO, H.J. Morel-Seytoux, ed., pp. 187-198.

Nachabe, M. and L. R. Ahuja, 1998. Modeling Macropore Flow in the Root Zone. Invited abstract. Eos, Transactions, Amer. Geophys. Union, 76 (43):176 (Invited abstract)

Nachabe, M., Ahuja, L., Shaffer, M., Ascough, J., Flynn, B. and Cipra, J. , 1998. Precision Agriculture in Dryland: Spatial Variability of Crop Yield and Roles of Soil Surveys, Areal Photos, and Digital Elevation Models. Part of EUROPTA Conference on Remote Sensing for Agriculture, Ecosystems, and Hydrology. Barcelona, Spain, September SPIE Vol. 3499.

Nachabe, M. , L. Ahuja, B. Flynn, and J. Cipra, 1998. Fractals and the Spatial Variability of Winter Wheat in Eastern Colorado. Proc. of the Annual ASAE Meeting, Orlando Florida pp205.

Nachabe, M. H., 1997. Can Asian Countries Afford Ground Water Contamination?.Published in Water & Environment, Newsletter of the Regional Environmental Management Center, Asian Institute of Technology, Bangkok, Thailand pp.16-17.

Gangapodhyay, S.*, M. Nachabe, and A. Das Gupta 1997. Assessment of Bangkok Monitoring Network using Principal Component Analysis. Proc. of the Seventeen Annual AGU Hydrology Days, August16-20, 1996, Fort Collins, CO, H.J. Morel-Seytoux, ed., pp. 180-188.

Logsdon, S., M. Nachabe, and L. Ahuja, 1996. Macropore Modeling: State of the Science. Proc. of the USDA-ARS Workshop on "Real World Infiltration", July 22-25, 1996. Colorado Water Resources Research Institute, Information Series No. 86, pp.217-227.

* Indicates my graduate student.

SELECTED TECHNICAL REPORTS IN LAST FIVE YEARS.

Nachabe, M. and M. Boufadel. Challenges to Water Resource Development in Lebanon, *in* the newsletter of the American Lebanese Engineering Society 2002. (3 pages).

Nachabe M. Impact of Shallow Water Table Fluctuation on Runoff Generation, *South Florida Water Management District*, October 2001, 48 pages.

Geurink, J. M. Nachabe, M. Ross and P. Tara. Development of Interfacial Boundary Conditions for the Southern District Ground Water Model, *South West Florida Water Management District*, December 2000. 215 pages.

Nachabe, M. Modeling Runoff for Complex Rainfall Sequences, *South Florida Water Management District*, December 2000. 28 pages.

Nachabe, M. Ground Water Contamination by Volatile Organic Carbons, *Department of Mineral Resources*, Bangkok, Thailand 1997.

Nachabe, M. H. Can Asian Countries Afford Ground Water Contamination?. *Regional Environmental Management Center*, Asian Institute of Technology, 1997, 2 pages.

Shaffer, M. J., P.N.S. Bartling, M.K. Brodahl, L.R. Ahuja, M.H. Nachabe, J.A. Ascough, B. Vandenberg, J.D. Hanson, and D. Edmunds. Development of GPFARM Science Simulation Modules, *Agriculture Research Service, Great Plains Research Systems, USDA*1996.

Nachabe, M., L. R. Ahuja, M.J. Shaffer, G. Butters. Testing WBCT, the Water Balance and Chemical Transport Module for GPFARM. *Agriculture Research Service, Great Plains Research Systems, USDA*, 1996..