

Richard B. Schultz, Ph.D. C.P.G.

Assistant Professor of Geosciences and GIS
Department of Geography and Geosciences
Elmhurst College
190 Prospect Avenue
Elmhurst, IL 60126-3296
Phone: (630) 617-3128
FAX: (630) 617-3739
E-Mail: richs@elmhurst.edu
Web Page: www.elmhurst.edu/~richs (Academic)
Office: 316 Daniels Hall

Educational Background

Ph.D., Environmental (Low Temperature) Geochemistry/Geology, University of Cincinnati, 1991
Dissertation: "Geochemical Characteristics of Midcontinent Pennsylvanian Black Shales"
Advisor: J. Barry Maynard
Schultz, R. B., 1991, Geochemical characterization of black shale types in the
Midcontinent Pennsylvanian: Unpubl. Doctoral Dissert., Univ. of Cincinnati, Cincinnati,
OH, 489 p. (Available as Kansas Geological Survey Open-file Report no. 1991-53).

M.S., Stratigraphy/Sedimentology, Wichita State University, 1988
Thesis: "Depositional Environment of the Iowa Point Shale Member"
Advisor: Daniel F. Merriam
Schultz, R. B., 1988, Depositional Environment and Petrology of the Iowa Point Shale
Member (Topeka Limestone Formation, Shawnee Group, Upper Pennsylvanian) In
eastern Kansas: Unpubl. Masters Thesis: Wichita State University, Wichita, KS, 151 p.

B.S., Geology, Illinois State University, 1985
Field Camp: Black Hills, South Dakota; Big Horn Mts., Wyoming.

Teaching Experience

2005-present Coordinator, Elmhurst College GIS Certificate Program
2005-present Coordinator, Elmhurst College Environmental Geoscience Program
2004-present Assistant Professor, Elmhurst College, Department of Geography and
Geosciences, Responsible for organization and teaching of geography courses as
well as GIS courses. Also team-teach Intercultural Studies ICS 270
course and First-Year Seminar (FYS) course.
2000-2004 Adjunct Faculty, Elmhurst College, Department of Geography and Environmental
Planning, Responsible for organization and teaching undergraduate Physical
Landscapes and Weather and Climate courses. Also designed "January" term
course : Introduction to the Environmental Industry.
1998-2002 Adjunct Faculty, Oakton Community College, Department of Allied Health
Sciences, Skokie and Des Plaines, Illinois campuses,
Responsible for organization and teaching of introductory earth science lecture
and laboratories and geography lectures.
1998-2004 Adjunct Faculty, College of DuPage, Department of Natural Sciences, Glen Ellyn,
Illinois, Responsible for organization and teaching of introductory earth science
lecture and laboratories.
1999-2004 Adjunct Faculty, William Rainey Harper College, Department of Geology and Earth
Sciences, Palatine, Illinois,
Responsible for organization and teaching of introductory physical geology
lecture and laboratories and physical science survey lectures.
1998-2000 Instructor, Moraine Valley Community College, Department of Natural Sciences,
Palos Hills, Illinois
Responsible for organization and teaching of introductory physical geology
lecture and laboratories.

- 1988-1991 Chief Teaching Assistant, University of Cincinnati, Department of Geology, Cincinnati, Ohio
Responsible for organization and oversight of introductory geology laboratories and supervision of nine graduate assistants. Awarded Outstanding Teacher Award in 1990.
- 1986-1988 Head Teaching Assistant, Wichita State University, Department of Geology, Wichita, Kansas
Responsible for organization and oversight of introductory geology laboratories and supervision of six graduate assistants. Awarded Daniel F. Merriam Outstanding Teacher Award in 1987. Served as Lecturer for Summer Geology courses in 1987 and 1988.

Academic Record

Courses Taught at Elmhurst College:

- GEO 101: Weather and Climate and Intro. to Meteorology: both classroom and online formats
- GEO 102: Physical Landscapes and Earth's Landforms
- GEO 307 and 207: Geographic Information Systems (GIS)
- GEO 315: Geology of National Parks
- GEO 353: Global Warming: The Science Behind the Myths (January Term)
- ENV 303: Introduction to the Environmental Industry
- ENV 304: Environmental Toxicology
- ICS 270: Intercultural Studies: Intercultural Basics Seminar I
- FYS 100: First Year Seminar (Global Climate Change)
- HON 404: Honors Capstone: Global Climate Change

Courses taught at other Institutions:

- Earth Science (Includes Geology, Oceanography, Meteorology/Atmospheric Sciences, Astronomy) (College of DuPage, Moraine Valley Community College)
- Physical Geology (Lecture and Laboratory sections) (Moraine Valley Community College, Harper Community College, Wichita State University and University of Cincinnati)
- Geology for Engineers (Univ. of Cincinnati)
- Igneous and Metamorphic Petrology (Wichita State University and University of Cincinnati)
- Sedimentary Petrology (Wichita State University)
- Field Methods and Geologic Mapping Techniques (Wichita State University)
- Physical Science Survey (Harper Community College)

Curriculum Development at Elmhurst College:

- GEO 315 "A Visual Tour of America's National Parks: Focus on Geology and the Environment" (J-Term 2007)
- GEO 353 Global Warming: The Science Behind the Myths (J-Term 2006)
- ENV 302 Environmental Problems in the Urban Setting
- ENV 303 Introduction to the Environmental Industry (J-Term 2003)
- ENV 304 Fundamentals of Environmental Toxicology
- GIS 100 Fundamentals of GIS (GIS Certificate Program)
- GIS 200 Remote Sensing and the Global Positioning System (GPS) (GIS Certificate Program)
- GIS 300 Capstone: GIS Applications (GIS Certificate Program)
- GEO 390 Geography and Geosciences Cultural Study and Off-Campus Experience (cross-listed with ICS 390)
- FYS 100 First Year Seminar (Global Climate Change)
- HON 404: Honors Capstone – Global Climate Change

Grant Support

Associated Colleges of Illinois, joint grant with Elmhurst College Departments of Education, Kinesiology and the Honors Program. "Collaboration for Multicultural Literacy", 2006.
ESRI Educational Grant: two (2) software grants for GIS Certificate Program, 2006-2007.
Elmhurst College Summer Faculty Research Grant: 2005, 2006, 2007
Kansas Geological Survey, "Geochemical Aspects of Midcontinent Pennsylvanian Black Shales"; 1990 (Sponsors: Dr. C. Maples and Dr. Lynn Watney)
Sigma Xi, The Scientific Research Society, "A Chromium Reduction Method for Speciation of Sulfur In Reducing Environments"; 1990
Geological Society of America, "The Stratigraphic Interpretation of Midcontinent Pennsylvanian Black Shales"; 1990
University of Cincinnati Research Council Fellowship, "The Degree of Pyritization (DOP) as an Indication of Bottom-Water Oxygenation Conditions of Midcontinent Pennsylvanian Black Shales"; 1990

Honors and Awards

2008 Awarded the "*Distinguished Teaching Award for Colleges and Universities*" by the National Council of Geography Education (NCGE)
2007 Nominated for "*Excellence in Teaching Award*" by Elmhurst College students
2006 Elmhurst College GIS Certificate Program nominated for Illinois Council on Continuing Higher Education's (ICCHE) Innovative Initiative Award
2005 American Biographical Institute (ABI), Research Board of Advisors
2005 Inducted into "Who's Who Among America's Teachers"
2002 Inducted into "Who's Who Among America's Teachers"
2001 Oakton Community College, Finalist, Ray Hartsfield Outstanding Teaching Award
1996 Inclusion in Distinguished Business Leader's Association
1992 Outstanding Employee Award for Midwest Region, Roy F. Weston, Inc.
1991 Inclusion in "Who's Who in American Universities and Colleges"
1990 Outstanding Teaching Award, University of Cincinnati, Dept. of Geology
1987 Daniel F. Merriam Award for Outstanding Teaching and Research, Wichita State University,

Service Activities

Elmhurst College:

LeaderShape Organizing Committee, Spring 2008
Search Committee, Student Affairs, Assistant to the Dean for Student Success, selected by Dean Eileen Sullivan, Fall 2007.
Search Committee, School for Advanced Learning, Executive Director, selected by Dean Alzada Tipton, Spring/Summer 2007.
First Year Seminar Pilot Study, Spring 2007-present
One-Semester Sabbatical Replacement, Elmhurst College Director of Intercultural Education (DICE) for Dr. Kathleen Rust: Spring 2007
Advanced Learning Committee, Chair, elected, Class of 2008
Alternate Delivery Committee: Fall 2007-Spring 2008
Intercultural Education Action Committee, Ad Hoc Committee, 2004-present
Intercultural Task Force, 2006-present

External:

2008 Member of Fall Conference Planning Committee for Illinois GIS Association (ILGISA)
2008 Named to the Association of American Geographers (AAG) Membership Committee for a two-year term
2008 Organizer and Chair, Association of Amer. Geographers Annual Meeting, Oral Session, "Geography Education Specialty Group Student Paper Competition", Boston, MA, April, 2008.

- 2008 Co-Organizer and Chair, Association of Amer. Geographers Annual Meeting, Oral and Panel Discussion, "Geographic Literacy and GIS Education", co-chair with Dr. Lynn Songer, Lane Community College, Boston, MA, April, 2008.
- 2007 Member of Fall Conference Planning Committee for Illinois GIS Association (ILGISA)
- 2007 Elected as National Chairperson of College Geography and Careers Committee: Association of American Geographers: 3-year term
- 2007 Organizer and Chair, Association of Amer. Geographers Annual Meeting, Oral Session, "Geography Education Specialty Group Student Paper Competition", San Francisco, CA, April, 2007.
- 2007 Co-Organizer and Chair, Association of Amer. Geographers Annual Meeting, Oral and Panel Discussion, "Active and Problem-Based Learning (PBL): GIS and the Educator", co-chair with Dr. Art Samel, Bowling Green State Univ., San Francisco, CA, April, 2007.
- 2006, Co-Organizer and Chair, National Council of Geographic Education (NCGE) Workshop, "Best Practices of Online Instruction Leading to Deeper Learning", also co-presenter with Drs. Bronwyn Owen, Gail Hobbs, Buck Buchanan, and Jim Brey, Lake Tahoe, NV, Oct. 2006.
- 2006 Elected to three-year term as member of Board of Directors of Association of American Geographers (AAG) Geography Education Specialty Group (GESG).
- 2006 Co-Organizer and Chair, Association of Amer. Geographers Annual Meeting, Panel Discussion, "Integration of GIS into the K-12 Curriculum", co-chair with Dr. Art Samel, Bowling Green State Univ., Chicago, IL, March 2006.
- 2006 Co-Organizer and Chair, Association of Amer. Geographers Annual Meeting, Technical Session, "The Infusion of GIS into Various Disciplines: Spatial Education at its Most Useful", Co-organizer with Dr. Rich Greene (Northern Illinois Univ.) Chicago, IL, March 2006.
- 2005-2006 Local Planning Committee for Annual Meeting, Chicago, Spring 2006, Association of American Geographers (AAG) National Meeting.
- 2005 Elected as member of College Geography National Committee: Association of American Geographers: 3-year term
- 2005 Chair/Co-Convener (with Drs. Mark Hafen, Univ. of South Florida and Christopher Haley, Virginia Wesleyan College, Geological Society of America Annual Meeting, Salt Lake City, UT, Oct. 2005, Technical Symposium, "Interdisciplinary Education: Applications of GIS and the Infusion of Spatial Concepts Across the Curriculum"
- 2003 Chair/Co-Convener (with Dr. Tim Lyons, Univ. of Missouri-Columbia): Geological Society of America Annual Meeting; Seattle, WA, Nov. 2003; Technical Symposium "Revisiting the Biogeochemistry of Black Shales and Oxygen-Deficient Marine Environments"
- 2003 Co-Guest Editor (with Dr. Sue Rimmer, Univ. of Kentucky) of Special Issue Journal of *Chemical Geology*; included twelve international papers on black shale geochemistry.
- 2002 Chair/Co-Convener (with Dr. Sue Rimmer, Univ. of Kentucky): Geological Society of America Annual Meeting; Denver, CO, Oct. 2002; Technical Symposium: "Black Shales and Chemostratigraphy"
- 2002 AAPG, Division of Environmental Geosciences 15-year service
- 2001 American Association of Petroleum Geologists, 20-year service
- 2000 Board of Directors, Illinois Association of Environmental Professionals
- 1996-present GSA Partners for Education Voluntary Mentorship/Teaching Program (Current)

Professional Memberships

- National Council for Geographic Education, 2004-present
- Association of American Geographers, 2004-present
- Geological Society of America (GSA) 1992-Present
- National Association of Geoscience Teachers (NAGT) 1997-Present
- American Academy for the Advancement of Science (AAAS) 1987-Present
- American Geological Institute 1996-Present
- Sigma Xi Research Society 1988-Present
- Illinois Association of Environmental Professionals, Board of Directors, 2000-2001

American Institute of Professional Geologists (AIPG #10188) 1997-Present
GSA Partners for Education Volunteer Teaching Program 1996-Present
American Association of Petroleum Geologists (AAPG) 1986-2006
AAPG Division of Geosciences (DEG) Charter Member 1993-Present
Sigma Gamma Epsilon (SGE) Honorary Geology Organization 1986-Present

Professional Certifications

American Institute of Professional Geologists (AIPG) C.P.G. # 10188;1997-Present
Certified Severe Weather Spotter, National Weather Service, National Oceanographic and Atmospheric Administration (NOAA), 2005-present
Certified Professional Geologist (C.P.G. #229)-State of Illinois 1997-Present
Certified Professional Geologist (C.P.G. #1552)-State of Indiana 1994-2005
Certified Professional Geologist (C.P.G. #1540)-Pennsylvania 1995-Present
Hazardous Waste Operations (HAZWOPER) OSHA 40-Hour 1991-1998
OSHA Confined Space Entry Certification 1993-1998
OSHA Hazardous Waste Supervisors Certification 1993-1998
National Safety Council/American Red Cross First Aid/CPR 1991-1998
OSHA Bloodborne Pathogens Certification 1991-1998

Invited Presentations

- “*The Real Science Behind the Global Climate Change Controversy*”: Glenside Library, April 2007; Elmhurst College Speakers Bureau.
- “*Using GIS in Health Professions*”, NRS 412, Terry Johnson, Instructor, March 1, 2007.
- “*Using GIS in Various Disciplines*”, HON 207 (GEO 111), Dr. Michael Lindberg, Instructor, February 23, 2007.
- “*Teaching Spatial Concepts with Google Earth®: A Virtual Scavenger Hunt*”, Concordia University, River Forest, IL, The Herbert Gross Teaching Geography Workshop, Jan., 2007.
- “*Theology and Geology: Controversies and Progress*”: invited presentation for THL 350 “God and Science: Religion and the Universe”, Mladen Turk, Fall 2006
- Associated Colleges of Illinois, joint grant with Elmhurst College Departments of Education, Kinesiology, and the Honors Program. “*Collaboration for Multicultural Literacy*”, Des Plaines, IL, Sept. 29, 2006.
- “*Teaching Spatial Concepts with Google Earth®: A Virtual Scavenger Hunt*”, Concordia University, River Forest, IL, The Herbert Gross Teaching Geography Workshop, Jan. 21, 2006.
- “*Using GIS for Diverse Applications*” Elmhurst College, Math Science Seminar, Summer 2005
- “*The Implementation of a Geographic Information Systems (GIS) Certificate Program at a Liberal Arts College: Case Study of Elmhurst College*”, Geological Society of America Annual Meeting, October 2005, Salt Lake City, UT
- “*Chemostratigraphic relationships of black shale deposits in Midcontinent, U.S.A.: evidence for fluctuating geochemical conditions*”. Department of Earth and Environmental Sciences at the University of Illinois at Chicago; Departmental Seminar, Sept. 2005
- “*Using GIS for Diverse Applications*” Elmhurst College, Math Science Seminar, Summer 2005
- “*Using Geographic Information Systems (GIS) for Geochemical Applications*” Elmhurst College Faculty Forum, Spring 2005

Professional Development/Continuing Education

- National Center for Atmospheric Research (NCAR) Online Short Courses in Global Climate Change (2008)
- Council on Undergraduate Research (CUR) Conference, Alexandria, VA, March 2007.
- Lilly Conference: Miami, OH, Nov. 16-19, 2006

- “*Healthy Departments*” Initiative, sponsored by the Association of American Geographers (AAG), Athens, GA, June 9-11, 2006.
- “*Developing Effective and Innovative Courses in the Geosciences*”, National Science Foundation, sponsored by the National Association of Geoscience Teachers “On the Cutting Edge” Program, Weed, CA, May 31-June 4, 2006.
- Lilly Conference: Miami, OH, Nov. 17-20, 2005
- Illinois GIS Association (ILGISA) Conference: Oak Brook, IL, Nov. 15, 2005.
“Using GIS for Spatial Analysis with Application Examples from Local Government, Business, And Urban Planning - Full Day at NIU-Naperville Computer Lab, Presented by Dr. Rich Greene, NIU Geography, Nov. 14, 2005
- “*Global Warming: A Threat to Biodiversity*”, Northwestern University, Oct. 22, 2005.
- Geography Faculty Development Alliance (GFDA): Boulder, CO, June 18-25, 2005.
- “*Using Geographic Information Systems for Community Development*” Short Course, Chicago, IL, May 2005
- “*Mapping Chicago Communities: An Introduction to GIS and Community Analysis*”, GIS Short Course by New Urban Research, Inc., Chicago, May 2005
- Midwest Faculty Seminar, “*Global Warming*” University of Chicago, April 28-30, 2005.
- The Teaching Professor Conference, May 20-22, 2005, Schaumburg, IL
- Tornado and Severe Storms Conference: Fermilab, Batavia, IL, April 9, 2005 and April 8, 2006.
- Process Education Conference, Elmhurst College, Research-Based Practitioners, June 2004
- 21 ESRI GIS Online Short Courses: Geographic Information Systems
- Short Course: “*How to Obtain a Full-Time Teaching Position and Secure Tenure*”, Geological Society of America, Boston, MA, 2001
- “Certified Hazardous Materials Management” Training, Madison, WI, 1995
- Short Course: “Technical Writing”, Roy F. Weston, Inc., 1993
- Continuing Education Course: “Treatment Technology for Hazardous Soils and Groundwater”, National Groundwater Association, 1992

Selected Publications(Refereed and/or Peer-Reviewed)

- Schultz, R. B., 2008, Companion Website for *The Atmosphere*, 11th ed. by Tarbuck and Lutgens, Prentice Hall Publishers, http://wps.prenhall.com/esm_lutgens_atmosphere_11, June 2008.
- Schultz, R. B., 2008, Critical Thinking Skills and Information Literacy: Tools Future Geoscientists Must Possess: The Professional Geologist, March/April issue, 2008.
- Schultz, R. B., Kerski, J. J., and Patterson, T. C., 2008, The Use of Virtual Globes as a Spatial Teaching Tool with Suggestions for Metadata Standards: *Journal of Geography*, v. 107, no. 1, pp. 27-34.
- Sinton, D. S., and Schultz, R. B., 2008, GIS and Mapping Technologies – Applications for Reasoning and Critical Thinking, Chapter 9, *in* Solem, M., and Foote, K., eds., *Teaching College Geography*, Pearson Publishers, Upper Saddle, NJ, pp. 69-80.
- Schultz, R. B., and Bock, J., 2007, *GEOS: Lab Manual for Earth’s Landforms*: Prentice Hall Publishers, 261 p., ISBN: 978-0-536-24854-1
- Schultz, R. B., 2006, Companion Website for *The Atmosphere*, 10th ed. by Tarbuck and Lutgens, Prentice Hall Publishers, http://wps.prenhall.com/esm_lutgens_atmosphere_10, June 2006.
- Schultz, R. B., 2006, A decade of progress: the history of geographic education development from 1995 to 2005 with special emphasis on Chicagoland are colleges and universities *in* “Chicago’s Geographies: A 21st Century Metropolis”, Bouman, M. J., Greene, R. P., and Grammenos, D., Assoc. of Americ. Geographers Publication.
- Schultz, R. B. 2006, The importance of spatial concepts in the geosciences: *The Professional Geologist*, Jan./Feb., p. 71.
- Schultz, R. B., 2005, Preparing students for the real world, *The Professional Geologist*, Jan./Feb., pp. 56-58.
- Schultz, R. B., and Rimmer, S. M., 2004, Geochemistry of organic-rich shales: new perspectives:

- (Guest Eds. Schultz, R. B., and Rimmer, S. M.) *Chemical Geology*, v. 206, pp. 163-165.
- Schultz, R. B., 2004, Geochemical relationships of Late Paleozoic carbon-rich shales of the Midcontinent, U.S.A.: A compendium of results advocating changeable geochemical conditions: (Guest Eds. Schultz, R. B., and Rimmer, S. M., *Chemical Geology*, v. 206, pp. 347-372.
- Schultz, R. B., and Coveney, R. M., Jr., 1992, Time-dependent changes for Midcontinent Pennsylvanian black shales, U.S.A.: *Chemical Geology*, v. 99, pp. 83-100.
- Schultz, R. B., and Coveney, R. M., Jr., 1992, Time-dependent changes for Midcontinent Pennsylvanian black shales, U.S.A.: Roy F. Weston, Inc. Corporate Publ. 2095 repr. from *Chemical Geology*, v. 99., pp. 83-100.
- Schultz, R. B., 1991, Metalliferous black shales: accumulation of carbon and metals in cratonic basins: evidence based on geochemical parameters: in E. R. Force, J. J. Eidel, and J. B. Maynard, eds., *Sedimentary and Diagenetic Mineral Deposits: A basin analysis approach to exploration*. Book Crafters, Chelsea, Mich., pp.171-175.
- Schultz, R. B., 1991, Geochemical characterization of black shale types in the Midcontinent Pennsylvanian: Unpubl. Doctoral Dissert., Univ. of Cincinnati, Cincinnati, OH, 489 p. (Available as KGS Open-file Report no. 1991-53).
- Schultz, R. B., and Maynard, J. B., 1990, Midcontinent Virgilian (Upper Pennsylvanian) Black shales in eastern Kansas: in *Metalliferous black shales and related ore deposits*: Huyck, H. L. O., U. S. Geol. Surv. Circular 1058, pp. 68-78.
- Schultz, R. B., 1989, Geochemical characteristics and inferred depositional environments of Upper Pennsylvanian (Virgilian) black shales in eastern Kansas: *The Compass*, v. 67, No. 1, pp. 47-54.
- Schultz, R. B., Development and classification of fossil soils in the Shawnee Group (Upper Pennsylvanian) in eastern Kansas: an indication of subaerial exposure: *The Compass*, v. 65, no. 2, p. 80-99.
- Schultz, R. B., 1987, Mineral determination of the Heebner Shale Member (Shawnee Group, Upper Pennsylvanian) in southeastern Kansas using X-ray diffraction techniques: *The Compass*: v. 64, no. 3, pp. 149-159.

Peer-Reviewed Abstracts and Presentations

- Schultz, R. B., and Panfil, T., 2008, Case Study: The Development and Implementation of a GIS Certificate Program at a Liberal Arts College: ESRI Educator's User Conference: San Diego, CA: August 5, 2008.
- Schultz, R. B., and Simmons, B., 2007, Habits of Highly Effective Online Teachers: A Compendium of Best Practice Traits Offering an Online Springboard and Reference Guide: Lilly Conference of Teaching and Scholarship: Oxford, Ohio, November 3, 2007.
- Schultz, R. B., and Bock., J., 2007, "The Development of a Track System for GIS Certificate Programs": ESRI Educator's User Conference: San Diego, CA: June 19, 2007.
- Schultz, R. B., 2006, "The Introduction of Spatial Concepts to Undergraduate Geoscience Students: Creating Future Employees": Illinois GIS Association Annual Meeting, Oak Brook, IL, Nov. 2006.
- Schultz, R. B., 2006, "Active Learning: An Integrated GIS and GPS Approach" Workshop presentation at National Council for Geographic Education (NCGE), Lake Tahoe, NV, Oct. 2006.
- Schultz, R. B., 2006, "Best practices of online instruction leading to deeper learning", Workshop presentation at National Council for Geographic Education (NCGE), Lake Tahoe, NV, Oct. 2006.
- Schultz, R. B., 2005, Virtual geography education: are we too fuzzy in our approach to teaching spatial concepts? Annual Geological Society of America Meeting, Fall 2005, Salt Lake City, UT.
- Schultz, R. B., and Krause, L., 2005, The implementation of a geographic information systems (GIS) certificate program at a liberal arts college: case study Elmhurst College: Annual Geological Society of America Meeting, Fall 2005, Salt Lake City, UT.

- Schultz, R. B., 2004, A comparison of undergraduate geoscience course offerings: online versus on-ground: Abstracts with Programs: Geological Society of America Annual Meeting, Denver, CO, Nov., 2004.
- Schultz, R. B., 2002, Qualitative evidence for black shale types: justification from geochemistry and diagenetic relationships, GSA North-Central/Southeast Meeting, Abstracts with Programs Vol. 34, No. 6, April 2002.
- Schultz, R. B., 2001, A statistical treatment of geochemical parameters in black shales: an amalgamation of studies, GSA Abstracts with Programs Vol. 33, No. 6, October 2001. Boston, MA.
- Schultz, R. B., 1990, A characterization of Midcontinent Pennsylvanian black shales: Evidence Based on geochemical parameters: Geol. Soc. Am. Abstr. With Progr., v. 22, (7), p. 341.
- Schultz, R. B., 1988, Depositional Environment and Petrology of the Iowa Point Shale Member (Virgilian Stage, Upper Pennsylvanian) In eastern Kansas: Kansas Academy of Science, Abstracts vol. 7, p. 38.
- Schultz, R. B., 1987, Mineral determination of the Heebner Shale Member (Shawnee Group, Upper Pennsylvanian) in southeastern Kansas using X-ray diffraction techniques: Kansas Academy of Science, Abstracts vol. 6, p. 45-46.

Other Abstracts and Presentations (Non-Reviewed)

- Schultz, R. B., 2007, *Demonstrating a Problem-Based Learning (PBL) Approach to Teaching Spatial Concepts*: Assoc. of American Geographers Annual Mtg., San Francisco, CA, April, 2007.
- Schultz, R. B., 2006, *Suggestions for Incorporating Spatial Awareness into the Lesson Plan*: Assoc. of American Geographers Annual Mtg., Chicago, IL, March, 2006.
- Schultz, R. B., 2006, Integration of GIS into the K-12 Curriculum: Panelist: Assoc. of American Geographers Annual Mtg., Chicago, IL, March, 2006.
- Schultz, R. B., 2006, Mentoring Early Career Faculty: Issues and Strategies: Assoc. of American Geographers Annual Mtg., Chicago, IL, March, 2006.
- Schultz, R. B., 2006, Virtual learning communities in geographic higher education: Assoc. of American Geographers Annual Mtg., Chicago, IL, March, 2006.
- Schultz, R. B., 2000, A simplified method for constructing an educational web site; Two-Year College Geography/Earth Science Teachers Conference, Normal, IL, 2000.

Reviews of Manuscripts/Book Chapters, Websites, etc.

- *Research in Geographic Education, Spring 2008*, "Conceptions of Geography Teaching and Learning: A Qualitative Study with Nine Hong Kong Geography Teachers".
- *Geography Compass*, Spring 2008, "Application of virtual globes in education." (Manuscript ID GECCO-0209)
- *Living with Earth*: by Travis Hudson, NAGT, Pearson Publishers, 2008.
- *Our Changing Planet: An Introduction to Earth System Science and Global Environmental Change*, by Fred T. MacKenzie, Prentice-Hall Publishers/Pearson Education, 4th edition, ISBN: 0130651729.
- Schultz, R. B., 2006, Companion Website for *The Atmosphere*, 10th ed. by Tarbuck and Lutgens, Prentice Hall Publishers, http://wps.prenhall.com/esm_lutgens_atmosphere_10, June 2006.
- *Visualizing Environmental Science*, by Berg, Prentice Hall Publishers, 2006.
- *Chemical Geology*, Elsevier Publications, "Extreme enrichment of polymetallic Ni-Mo-PGE-Au in lower Cambrian black shales of South China: a geochemical investigation for their origin and paleo-oceanographic significance", Jiang, et al, March 2005.
- *Geology*, by Chernicoff and Whitney, chapters 14-17, Prentice Hall Publishers
- *Lab Manual for the Geosciences*, by Thomas Freeman, John Wiley & Sons, Publ., 2006.

- *The Atmosphere*, by Tarbuck and Lutgens, 10th ed, companion website author, Prentice-Hall Publishers , http://wps.prenhall.com/esm_lutgens_atmosphere_10

Professional and Industry Experience

- 1997-1998 Private Environmental Consultant, Round Lake Beach, Illinois
Provide consulting services for clients in areas of environmental remediation, site assessment, UST removal, waste disposal services, and soil/groundwater cleanup.
- 1996-1997 Project Manager/Hydrogeochemist, Environmental Science & Engineering, Inc., Chicago, Illinois
Managed high-profile environmental contracts for confidential federal clients, provided services as office specialist in environmental risk assessment, and acted as office liaison between clientele and analytical laboratory.
- 1996 (Fall) Computer Programmer, Allstate Insurance Company, Northbrook, Illinois (Temporary position) Assisted in the organization of large client database of insurance details.
- 1995-1997 Owner and Operator of *Dr. Desktop, Inc.*, Round Lake Beach, IL private desktop publishing company. Specialized in logo design, database compilation, business card design, and other miscellaneous computer-oriented desktop services.
- 1995-1996, Corporate Health and Safety Director/Hydrogeochemist, Advent Environmental Services, Inc., Mequon, Wisconsin
Responsible for initial development of company's corporate health and safety program, managed approximately 45 small environmental cleanup programs for local clientele and petroleum marketing industry.
- 1991-1995 Geochemist/Associate Project Geologist, Roy F. Weston, Inc. Vernon Hills, Illinois
Conducted environmental field assessments and sampling at over 200 environmental sites including 10 CERCLA (Superfund) sites. Served as team leader for U.S. EPA Region V Site Screening Investigation (SSI) Team.
- 1982 Computer Inventory (Summer Internship), Allstate Insurance Company, South Barrington, Illinois
In charge of computer furniture inventory database for new corporate office. Assisted employees in acclimating to new working environment.

Selected Environmental Industry Project and Consulting Experience

Moss-American Wood Treatment Facility, CERCLA (Superfund) site, Kerr-McGee Corp., Menomonee Falls, WI, Task Manager/Lead Geologist. Responsible for all site activities and implementation/organization of seven phases of investigation and remediation. Aided in design/installation of DNAPL product recovery system. Supervised installation of over sixty soil borings and thirty on-site monitoring wells. Responsible for all budgetary aspects of project and management of all site personnel.

U.S. Army Corps of Engineers (USACE) Multi-site Contract, Chicago District, Illinois and Indiana, Project Manager. In charge of proposal preparation, negotiations with USACE, organization of Work Plans and Sampling/Analysis Plans for ten work orders totaling approximately \$500,000 in budget. Work orders varied from sump investigation at chemical company, analysis of deep well contamination in municipal water system to UST Phase I/II investigations, and Brownfields sites. Very close contact with client and task managers.

Groundwater Investigation, U. S. EPA CERCLA (Superfund) site, Rock Creek, OH, Geochemist. Sampled 24 compliance monitoring wells and prepared quarterly and annual sampling evaluation reports for a period of three years on a carcinogenic solvent release site.

U. S. Department of Energy (DOE) Mixed Waste CERCLA (Superfund) site, Miamisburg, OH, Geochemist. EG&G Mound site in Miamisburg, Ohio. Responsibilities included sampling surface and subsurface soils and groundwater, installation of soil borings and monitoring wells,

strict EPA sampling protocol (CLP; Contract Laboratories Program), and screening radioactive samples with instrumentation. Involved in operating units (OU-1 and OU-9) with offsite access negotiations. Granted security clearance for government projects.

Remedial Investigation (RI), ARCO Pipeline Company, Toledo, OH, Geochemist.

Responsibilities included surveying of sampling grid for reconnaissance investigation, implementation of soil borings program and monitoring well installation, monitoring well development and sampling, hydraulic conductivity testing, and preparation of RI final report to Federal and State EPA. Soil and groundwater samples were collected to assess plume migration of petroleum hydrocarbons and aid in aquifer characterization. Additional responsibilities included oversight of drilling contractor and sampling operations as well as screening of samples. Compiled information for ARCO database. Close contact with client.

RCRA Facility Assessment, Aztec-Catalyst Co., Grafton, OH, Geologist. Responsibilities included investigation of geologic setting of site and region, compilation and organization of geochemical data, presence of contaminants, and groundwater flow direction. Principal author of RCRA Facility Investigation (RFI) Final report.

RCRA Facility Investigation (RFI), Moen Faucet Company, Elyria, OH, Geochemist.

Responsible for data organization and implementation of remedial measures. Wrote multi-volume RFI Final report for client and regulatory agency.

Remedial Investigation (RI), ARCO Pipeline Company, Goshen, IN, Geochemist.

Responsibilities included surveying of sampling grid for reconnaissance investigation, implementation of Geoprobe soil borings program and monitoring well installation, monitoring well development and sampling, hydraulic conductivity testing, surveying of monitoring wells, and preparation of RI final report to Federal and State EPA. Soil and groundwater samples were collected to assess plume migration of petroleum hydrocarbons and aid in aquifer definition. Close contact with client.

Mixed Waste site, U.S. EPA, ARCS site, Velsicol Chemical Co., St. Louis, MI, Geochemist/Sample Management Administrator (SMA). Responsible for Contract Laboratories Program (CLP) sample management paperwork on groundwater collected from site. Development/sampling of monitoring wells, measurement of groundwater levels, and CLP protocol adherence.

Remedial Investigation (RI), ARCO Pipeline Company, LaPorte, IN, Geochemist.

Responsibilities included surveying of sampling grid for reconnaissance investigation, implementation of soil borings program and monitoring well installation, monitoring well development and sampling, hydraulic conductivity testing, surveying of monitoring wells, and preparation of RI final report to Federal and State EPA. Soil and groundwater samples were collected to assess plume migration of petroleum hydrocarbons and aid in aquifer definition. Close contact with client.

Soil Investigation, Confidential Pipeline Company, East Chicago Heights, IL, Geochemist.

Responsibilities included reconnaissance investigation near pipeline break location, assessment of release of petroleum hydrocarbons, and analysis of detailed geochemical data to assess both upstream and downstream impact of fuel oil constituents. Prepared final report for client prior to submission to state agency and followed up with excavation and removal of impacted soil.

Subsurface Soil and Groundwater Investigation of UST Removal site, Texas Eastern Pipeline Company, Ringling, OK, Geochemist. Responsibilities included oversight of drilling contractors, installation/sampling of soil borings and monitoring wells.

Underground Storage Tank (UST) Removals, U.S. Postal Service, Suburban Chicago, IL, Project Geologist. Supervised UST removal contractors during all aspects of UST removal, cleaning, dismantling, and destruction. Documentation of all site activities, screening of soil/groundwater samples, and wrote 45- and 60-day reports. Close contact with client and preparation of financial documents.

Soil Investigation, Allied-Signal, Danville, IL, Geochemist. Responsible for the organization and preparation of report including geological, geochemical, and other technical aspects of report, as well as sampling of monitoring wells and installation of soil boring/monitoring wells. Environmental sampling conducted to assess plume migration of organic solvent.

Soil Investigation, Illinois Department of Transportation (IDOT), Franklin Street Bridge site, East Peoria, IL, Geochemist. Soil boring and monitoring well installation, sampling of soils and oversight of drilling activities. Aided in compilation of report. Close contact with client, prepared drilling logs, screened soils, and implementation of aquifer characterization activities.

Landfill Remediation Investigation, U.S. EPA, Region V, ARCS site, Mason County, MI, Geochemist. Organization and writing of technical memorandum for rounds 4, 5, and 6 of Phase III sampling during a period of two years.

Phase II Environmental Real Estate Assessment, Leighton Industries/Potts Welding Co., Cicero, IL, Geochemist. Directed field members to perform sampling activities and installed soil borings. Collection of sludge samples and prepared technical report and data interpretation.

Field Investigation Team (FIT) Site Screening Investigations (SSI), U. S. EPA, ARCS sites, Indiana, Field Team Leader/Geochemist. Directed field team members to perform soil sampling, groundwater sampling, sediments sampling, and residential well sampling. In charge of sample preparation and relinquishment of environmental samples to sample management officer (SMO). Utilized strict protocols of U.S. EPA Contract Laboratories Program (CLP) for environmental sampling analysis.

Mixed Waste Investigation, Sherex Chemical Company, Mapleton, IL, Geochemist. Organized and wrote inorganic sampling and analysis plan (SAP), specifically designed for cadmium contamination.

Mixed Waste site, Corning, Inc., Bluffton, IN, Geochemist. Responsible for conducting hydraulic conductivity testing and packer testing for purposes of aquifer characterization. Also sampled soil/groundwater and installed soil borings and monitoring wells.

Computer Skills and Technical Experience

*Proficient with ESRI ArcGIS 9.x (ArcInfo) and associated extensions

*Proficient with handheld Magellan and Garmin Global Positioning System (GPS) and associated mapping software: such as **City Select** by MapSource®

*Experience with Microsoft Office (Word, Excel, Access, Publisher, PowerPoint) and various Internet applications, including *Front Page* and *Fireworks*.

*Fluent in Windows 2000, Windows XP, Windows Vista troubleshooting. Working abilities in computer hardware maintenance (i.e., installation of hardware cards, hard drives, CD-ROM drives, memory addition, printer spooling, and network organization (servers)) and routine utility scans.

*Experience with techniques and hardware associated with X-ray powder diffraction (XRD), X-ray fluorescence (XRF), scanning electron microscopy (SEM), spectrophotometer, sulfide-sulfur partitioning, organic carbon measurement, acid-soluble iron determination, and other miscellaneous geochemical apparatus.

*Experience in the development of undergraduate geology teaching aids and the development of expert systems for computer-aided instruction (CAI).

Research Interests

- Global climate change
- Cognitive aspects of spatial concept processing
- Computer Applications as Effective Teaching Tools in the Geosciences
- Online Teaching/Distance Learning: Geoscience Teaching Methods
- GIS Applications in the Geosciences
- The Development of Interactive Modules for Geospatial Education
- Geochemical Aspects of Midcontinent Pennsylvanian Black Shales
- A Chromium Reduction Method for Speciation of Sulfur In Reducing Environments
- The Stratigraphic Interpretation of Midcontinent Pennsylvanian Black Shales
- The Degree of Pyritization (DOP) as an Indication of Bottom-Water Oxygenation Conditions