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### Education

- Ph.D. (1996) Geography, University of Iowa, Iowa City, Iowa  
Dissertation Title: Cost-effective spatial characterization of volatile organic compounds in landfill gas.
- M.A. (1993) Geography, University of Iowa, Iowa City, Iowa  
Thesis Title: Evaluation of colorimetric detector tubes as screening tools in landfill gas monitoring
- B.S. (1982) Physical Geography, University of Georgia, Athens, Georgia

### Academic and Professional Employment

- 6-03 to present Associate Professor, Department of Geography, Western Michigan University
- 8-99 to 6-03 Assistant Professor, Department of Geography, Western Michigan University
- 8-96 to 8-99 Assistant Professor, Department of Geography, Geology and Planning Southwest Missouri State University
- 10-88 to 08-91 Air Pollution Specialist, Stationary Source Division, Toxics Program Support Section, California Air Resources Board, Sacramento, CA
- 03-87 to 09-88 Naval Flight Officer, Navigation Instructor, Naval Air Training Unit, Mather AFB, CA
- 07-82 to 02-87 Naval Flight Officer, Senior Electronic Warfare Evaluator, Fleet Air Reconnaissance Squadron Two, Naval Station Rota, Spain

### Refereed Publications

- 2009, Reicherts, J.D. and Emerson, C.W., Monitoring Bathing Beach Water Quality Using Composite Sampling, *Environmental Monitoring and Assessment*, DOI 10.1007/s10661-009-1089-0.
- 2007, Emerson, C.W., Chinniah, S., Lam, N.S.-N., and Quattrochi, D.A., Spatial and Grayscale Metadata for Similarity Searches of Image Databases, *GIScience and Remote Sensing*, 44(2); 182-201.

- 2006, Veeck, G. Li, Z., Yu, F., "Develop the West" Assessed: Economic and Environmental Change in the Inner Mongolia Autonomous Region, People's Republic of China 2000 – 2005. *Asian Geographer*, 25(1-2): 61-83.
- 2005, Emerson, C.W., Lam, N.S.-N., and Quattrochi, D.A., A comparison of local variance, fractal dimension, and Moran's I as aids to multispectral image classification, *International Journal of Remote Sensing*, 26(8): 1575-1588.
- 2004, Emerson, C.W. and Rajagopal, R. Measuring Toxic Emissions from Landfills Using Sequential Screening, *Computers, Environment, and Urban Systems*, 28:265-284.
- 2004, Kupfer, J.A. and Emerson, C.W. Remote sensing. In: *Encyclopedia of Social Measurement*. Kempf-Leonard, K. (ed.). Academic Press, San Diego, pp. 377-383.
- 2003, Lam, N.S.-N., Emerson, C.W., and Quattrochi, D.A. Fractal and Spatial Methods for Mining Remote Sensing Imagery. *WorldMinds: Geographical Perspectives on 100 Problems*. Washington, D.C.: Association of American Geographers, pp. 559-564.
- 2002, Lam, N.S.-N, Qiu, H.L, Quattrochi, D.A., Emerson, C.W. An Evaluation of Fractal Methods for Characterizing Image Complexity, *Cartography and Geographic Information Science*, 29(12): 25-35.
- 2001, Quattrochi, D.A., Emerson, C.W., and Lam, N.S.-N. Fractal Characterization of Multitemporal Imagery, *Scale Issues in Geographical Analysis and GIS*, N. Tate and P. Atkinson, eds., Chichester, U.K: John Wiley and Sons.
- 1999, Emerson, C.W. Laboratory and Field Screening Strategies for Measuring Volatile Organic Compounds in Landfill Gas. *Journal of Environmental Management*, 57:155-164.
- 1998, Emerson, C.W., Lam, N.S.N, and Quattrochi, D.A. Multi-Scale Fractal Analysis of Image Texture and Pattern. *Photogrammetric Engineering and Remote Sensing*, 65:51-61.

#### Peer-Reviewed Conference Proceedings

- 2007, Veeck, G. and Emerson, C.W. Agro-economic and environmental influences on grassland quality in Daerhanmaomingan Union Banner in Inner Mongolia: 1980 – 2005. 2<sup>ND</sup> Global Conference on Economic Geography, Beijing.
- 2006, Emerson, C.W. and Chinniah, S. Content-based image retrieval using Daubechies wavelet energy signatures, Proceedings of the Annual Meeting of the American Society for Photogrammetry and Remote Sensing, Reno, NV.
- 2005, Emerson, C.W., Chinniah, S., Lam, N.S.-N, Quattrochi, D.A. A Region Quadtree-Based Framework for Similarity Searches of Image Databases. *GeoComputation 2005*, Ann Arbor, Michigan.
- 2004, Lam, N.S.-N., Emerson, C.W. and Quattrochi, D.A. From Fractals and Wavelets to Homeland Security: Use of Spatial Techniques for Change Detection. *GIScience 2004*, College Park, Maryland.
- 2003, Arumugam, M., Emerson, C.W., Lam, N.S.-N. and Quattrochi, D.A. Classifying Urban Land Covers Using Local Indices of Spatial Complexity. *American Society for Photogrammetry and Remote Sensing Annual Conference*, Anchorage, Alaska.

- 2002, Emerson, C.W., Quattrochi, D.A., and Lam, N.S.-N. Image Segmentation and Classification Using Local Fractal Dimension and Spatial Autocorrelation. *American Geophysical Union Fall Meeting*, San Francisco, California.
- 2002, Emerson, C.W., Quattrochi, D.A., and Lam, N.S.-N. Spatial Metadata for Global Change Investigations Using Remote Sensing. *GIScience 2002 2<sup>nd</sup> International Conference on Geographic Information Science*, Boulder, Colorado.
- 2000, Emerson, C.W. and Quattrochi, D.A. Application of Fractal Analytical Techniques in the Estimation of Operational Scale. *International Archives of Photogrammetry and Remote Sensing*, 33:402-407.
- 1999, Emerson, C.W. Characteristic Spatial Statistics of Urban Land Cover Types. *Proceedings of the American Society for Photogrammetry and Remote Sensing Annual Conference*, Portland, Oregon.
- 1998, Emerson, C.W. Screening Strategies for Measuring Toxic Compounds in Landfill Gas. *Proceedings of the International Conference on Modeling Geographical and Environmental Systems with Geographical Information Systems*, Hong Kong.

#### Poster Presentations

- 2002, Emerson, C.W., Quattrochi, D.A., and Lam, N.S.-N. Image segmentation and classification using local fractal dimension and spatial autocorrelation. *American Geophysical Union Fall Meeting*, San Francisco, California.
- 2002, Emerson, C.W., Quattrochi, D.A., and Lam, N.S.-N. Spatial metadata for global change investigations using remote sensing. *GIScience 2002 2<sup>nd</sup> International Conference on Geographic Information Science*, Boulder, Colorado.
- 2000, Emerson, C.W. and Quattrochi, D.A., 2000, Application of fractal analytical techniques in the estimation of operational scale. XIXth Congress of the International Society for Photogrammetry and Remote Sensing, Amsterdam.

#### Grants Received

- 2006, Veeck, G., (Principal Investigator), Emerson, C. (Co-Principal Investigator), Modeling Agricultural Land Use Changes in Inner Mongolia. National Science Foundation. Project period 1 August 2006 – 31 January 2009; Budget \$49,960.
- 2001, Emerson, C.W. (Principal Investigator), Quattrochi, D.A., Lam, N.S.-N. Fractal and Geostatistical Metadata for Monitoring Global Change Using Remote Sensing Imagery. NASA- Research in Intelligent Systems. Project period: 1 June 2001 – 31 August 2004; Budget: \$497,011.
- 1999, Emerson, C.W., (Principal Investigator). Surveying the Transportation Infrastructure of Greene County Missouri. Greene County, Missouri Highway Department, Project period: Summer/Fall 1998, Spring 1999, Budget: \$24,000 annually, \$48,000 total.

1997, Emerson, C.W., (Principal Investigator), Baseline Environmental Investigation of the Fulbright Spring Watershed, Missouri. U.S.EPA Environmental Education Grant, Project Period: Fall/Spring, 1997, 1998, Budget: \$24,945.

#### Professional Awards and Recognition

2000, Western Michigan University, Merit Pay, \$500.

1999, 2000, Western Michigan University Research Development Award

1998, National Aeronautics and Space Administration/American Society for Engineering Education Summer Faculty Fellowship—Marshall Space Flight Center, \$12,000.

1997, National Aeronautics and Space Administration/American Society for Engineering Education Summer Faculty Fellowship—Marshall Space Flight Center, \$11,000.

#### Professional Talks, Colloquia, Papers

2008, Emerson, C.W. A longitudinal analysis of pastureland management strategies in Inner Mongolia, China, 104<sup>th</sup> Meeting of the Association of American Geographers, Boston, MA.

2007, Emerson, C.W. Remote Sensing Analysis of Agricultural Land Use Changes in Inner Mongolia 103<sup>rd</sup> Meeting of the Association of American Geographers, San Francisco, CA.

2005, Emerson, C.W. A region quadtree framework for content-based image retrieval. 101<sup>st</sup> Meeting of the Association of American Geographers, Denver, Colorado.

2004, Emerson, C.W. Spatial metadata for remote sensing imagery, NASA Earth Science and Technology Conference, Mountain View, California.

2004, Emerson, C.W. Fractal An analysis of texture-based urban land cover classification, 100<sup>th</sup> Meeting of the Association of American Geographers, Philadelphia, Pennsylvania.

2003, Arumugam, M., Emerson, C.W., Lam, N.S.-N. and Quattrochi, D.A. Classifying Urban Land Covers Using Local Indices of Spatial Complexity. American Society for Photogrammetry and Remote Sensing Annual Conference, Anchorage, Alaska.

2002, Emerson, C.W. Fractal Metadata for Urban Change Investigations, 98<sup>th</sup> Meeting of the Association of American Geographers, Los Angeles, California.

2001, Emerson, C.W. Fractal Simulation of Volatile Organic Compound Emissions from Landfills, 97<sup>th</sup> Meeting of the Association of American Geographers, New York, New York.

2000, Emerson, C.W., Textural measures of urban land covers. 96<sup>th</sup> Meeting of the Association of American Geographers, Pittsburgh, PA.

1999, Emerson, C.W., Evaluating Field Screening Methods Using Stochastic Simulation. EcoInnovations Forum, Western Michigan University Environmental Institute.

- 1999, Emerson, C.W., Characteristic Spatial Statistics of Urban Land Cover Types. American Society for Photogrammetry and Remote Sensing Annual Conference, Portland, Oregon.
- 1998, Emerson, C.W., Screening Strategies for Measuring Toxic Compounds in Landfill Gas. International Conference on Modeling Geographical and Environmental Systems with Geographical Information Systems, Hong Kong.
- 1998, Emerson, C.W., Quattrochi, D.A., and Luvall, J.C., Multi-Scale Fractal Analysis of Image Texture and Pattern. 94<sup>th</sup> Meeting of the Association of American Geographers, Boston, Mass.
- 1997, Emerson, C.W., A Comparison of Nominal and Ordinal Screening Strategies. 93<sup>rd</sup> Meeting of the Association of American Geographers, Fort Worth, Texas.

#### Editing, Refereeing, Reviewing Activities

- 2008, Manuscript review, *Applied Geography*
- 2005, 2007, 2008 Manuscript review, *International Journal of Remote Sensing*
- 2004, Manuscript review, *Research in Geographic Education*
- 2004, Manuscript review, *Photogrammetric Engineering and Remote Sensing*
- 2004, 2005 Manuscript review, *Remote Sensing of Environment*
- 2003, Manuscript review, *Journal of Arid Environments*
- 2001, Guest editor, special issue of *Geocarto International*, on geographical applications of satellite remote sensing, 16:4, December.
- 2001, 2004, Manuscript review, *Landscape Ecology*.
- 2001, Grant proposal review, U.S. Civilian Research and Development Foundation.
- 2000, Grant proposal review, National Science Foundation, Geography and Regional Science.
- 2000, Grant proposal review, National Science Foundation, International Cooperative Science Activities.

#### Supervision of Student Research and Thesis Projects

- 2008, Reicherts, J. Using Composite Sampling Techniques to Monitor Bathing Beach Water Quality in Kalamazoo County, Michigan, M.A. Geography, Western Michigan University
- 2008, Delisio, J. M.A. Geography, Western Michigan University
- 2005, Chinniah, S. Effectiveness of wavelet transforms, fractals, lacunarity, and spatial indices in content-based image retrieval, M.A. Geography, Western Michigan University
- 2003, Wahid, F.L., Classifying forest composition using fractal dimension as an index of image texture, M.A. Geography, Western Michigan University.

- 2001, Caird, C.P., Development of an Arcview<sup>tm</sup> extension to measure local fractal dimension, M.A. Geography, Western Michigan University.
- 2001, Makido, Y.K., A geostatistical screening strategy for assessing contaminated sediment, M.A. Geography, Western Michigan University.
- 1998, Miner, M., Evaluating satellite image classification for bottomland surveys in Ozark National Scenic Riverways, M.A. Geography, Southwest Missouri State University.