

CURRICULUM VITAE

Stuart Emmet Marsh

Director and Professor
School of Natural Resources and the Environment

The University of Arizona
1064 E. Lowell Street
Environment and Natural Resources 2 – N333
Tucson, AZ 85721
Phone: 520 621-8574 Fax: 520 621-8801
Email: smarsh@email.arizona.edu

EDUCATION

Ph.D. Stanford University - 1979 Department of Applied Earth Sciences
Dissertation Director: Ronald J.P. Lyon
Dissertation Title: *Quantitative Relationships of Surface Geology and Spectral Habit to Satellite Radiometric Data*

M.S. Stanford University - 1975 Department of Applied Earth Sciences
Thesis Director: Ronald J.P. Lyon
Thesis Title: *Feasibility of Satellite Thermal Infrared Remote Sensing for Geothermal Resources*

B.S. George Washington University - 1973 Department of Geology

Major Fields: Natural Resource Assessment, Mapping and Monitoring Land Use and Land Cover Change, Remote Sensing, Environmental Information Sciences.

EMPLOYMENT HISTORY

2013-Present Director and Professor School of Natural Resources and the Environment UA
Director Desert Southwest Cooperative Ecosystem Studies Unit (DSCESU)

2012 – 2013 Interim Director School of Natural Resources and the Environment UA

2011-2012 Associate Director School of Natural Resources and the Environment UA

2004-2011 Director Arizona Remote Sensing Center UA

2002-2013 Chair Arid Lands Resource Sciences Graduate Interdisciplinary Ph.D. Program

2006-2007 Acting Director Arid Lands Information Center UA

- 2001-2013 Professor Arid Lands Resource Sciences – Office of Arid Lands Studies, School of Natural Resources and the Environment and School of Geography and Development UA
- 1988-2004 Associate Director Arizona Remote Sensing Center UA
- 1988-2001 Associate Professor Arid Lands Resource Sciences – Office of Arid Lands Studies and Department of Geography and Regional Development UA
- 1986-1988 Manager, Geoscience Computer Services, Sun Exploration and Production Co., (SUNOCO), Dallas, Texas
- 1983-1986 Manager, Remote Sensing Processing and Field Systems, Sun Exploration and Production Co., (SUNOCO), Dallas, Texas
- 1981-1983 Senior Research Geologist, Sun Exploration and Production Co., Dallas, Texas
- 1980-1981 Research Geologist, Gulf Oil Corporation, Pittsburgh, Pennsylvania
- 1979-1980 National Research Council Resident Research Associate
Jet Propulsion Laboratory, California Institute of Technology
Pasadena, California
- 1974-1978 Geologist, U.S. Geological Survey, Reston, Virginia

HONORS AND AWARDS

- 2014 Named *Honored Faculty* by the UA Graduate Interdisciplinary Program
- 2012 School of Natural Resources and the Environment *Outstanding Faculty Member of the Year Award*
- 2010 Named to the UA Academic Leadership Institute
- 2008 U.S. Department of Agriculture *Certificate of Appreciation*.
- 2008 Special Team Award – School of Natural Resources University of Arizona
- 1999 *Presidential Citation* - American Society of Photogrammetry and Remote Sensing
In recognition of 8 years of service as associate editor of the Journal
Photogrammetric Engineering and Remote Sensing
- 1996 *J. William Fulbright Senior Scholar Award* for Research/Lecturing in Australia
- 1996 Elected *Fellow* – Arizona-Nevada Academy of Sciences
- 1996 *John I. Davidson President's Award* (1st Place) for practical papers by the American Society of Photogrammetry and Remote Sensing
- 1995 Elected *President*, Arizona-Nevada Academy of Sciences
- 1994 Appointed by the Governor to the Arizona Geographic Information Council
- 1983 NASA *Certification of Recognition*
- 1980 Post-Doctoral Fellowship – National Research Council (NRC)
- 1976 HEW Resource Development Fellowship – Stanford University

SERVICE

Outreach

Invited Speaker – NOAO High School Teacher Training Program – SFAz Grant (2008)
Invited Speaker – Catalina Foothills High School AP Environmental Science (2006)
Invited Speaker – Eyes in the Sky Program Keynote Address (2005)
Invited Speaker – Annual V Bar V Ranch Explorers Field Day (2004)
Invited Speaker – Eyes in the Sky Program for Teachers and Students (2004)
Invited Speaker – Arizona Geological Society (2002)
Invited Speaker – 17th Annual Arizona Agribusiness Forum (2001)
Invited Speaker – Environmental Protection Agency Office of Research & Development (2000)
Invited Speaker – Annual V Bar V Ranch Explorers Field Day (1999 and 2000)
Invited Speaker – Organ Pipe Cactus National Monument (1999)
Invited Speaker – Esperero Canyon Middle School Science Program (1999)
Invited Speaker – Green Valley Forum (1999)
Invited Speaker – Thornydale Elementary School Science Night (1997)
Invited Speaker – Arizona Science Teachers Association Annual Meeting (1995)
Invited Judge – Southern Arizona Secondary School Science and Engineering Fair (1994)
Invited Speaker – Thornydale Elementary School (1994)
Invited Speaker – TUSD, APEX School Program (1994)
Member – Arizona Geographic Information Council (1994-1996)

Intramural Service

Departmental Committees:

School of Natural Resources & Environment - Office of Arid Lands Studies

Member, SNRE Promotion and Tenure Committee (2009 - Chair 2011-12)
Member, SNRE Curriculum Committee (2009-)
Member, SNRE Strategic Planning Committee (2009-)
Chair, SNRE Information Technology Committee (2009-)
Chair, OALS Retention Review Committee (2008)
Chair, OALS Promotion and Tenure Committee (2006)
Chair, OALS Retention Review Committee (2006)
Chair, Faculty Search Committee (2005)
Chair, Post-Doctoral Research Scientist Search Committee (2001)
Member, Faculty Search Committee – Geospatial Extension Specialist (1999)
Member, OALS Faculty Annual Peer Review Committee (1994→)
Chair, OALS Faculty Annual Peer Review Committee (1997)
Chair, Annual Performance Review Guidelines Development Committee (1998/1994)

School of Geography and Development

Member, Promotion and Tenure Committee (2012-2013)
Elected Member, Annual Performance Review Committee (2009)
Elected Member, Five Year Review Committee of Department Chair (2008)
Chair, Promotion and Tenure Committee for C. Woodhouse (2008-2009)

Chair, Annual Performance Review (2004-2005)
Member, Annual Performance Review (2003-2005)
Member, Promotion and Tenure Committee (2003-2005)
Chair, Promotion and Tenure Committee (2003-2004)
Member, Graduate Committee (2001-2002)
Member, Promotion and Tenure Committee (2000-2001)
Chair, Physical Geography Committee (2001/2000/1999/1997/1994)
Chair, Faculty Search Committee – Physical Geographer (1998-1999)
Member, Annual Performance Review Committee (1997-1999)
Member, Faculty Promotion and Tenure Committee (1999/1996/1995)
Member, Graduate Committee (1997)
Chair, Committee to Develop Guidelines for Adjunct Status (1997)

College Committees:

College of Agriculture and Life Sciences

Member, College Promotion and Tenure Review Committee (2011-2012)
Reviewer, School of Natural Resources Hatch Proposal (2011)
Member, College Promotion and Tenure Review Committee (2006-2009)
Member, School of Natural Resource Promotion Review Committee (2005)
Chair, Post-Tenure Review Audit Committee (2002)
Reviewer, School of Renewable Natural Resources Hatch Proposal (2001)
Member, Post-Tenure Review Audit Committee (2000-2002)
Member, Faculty Search Committee – Assistant Professor in Geographic Information Science – School of Renewable Natural Resources (2000)
Member, Faculty Search Committee Assistant Professor SRNR (1999-2000)
Member, McGinnies Fellowship Review Committee (1997-2000) (2012-Present)
Member, 5-Year Review Committee of Director OALS (1998-1999)
Member, CRIS Project Review Committee (1995)

University Committees:

Member, University Data Management and Curation Committee (2012-present)
Member, Campus Data Management and Curation Advisory Committee (2011-2012)
Chair, Search Committee – Faculty Associate to the Dean of the Graduate College (2009-2010)
Member, ADVANCE Transformational Technologies Working Group (2008-2009)
Member, External Review Committee – Academic Program Review of the American Indian Studies Graduate Interdisciplinary Program (2006)
Member, University Committee on Ethics and Commitment (2005-2008)
Member, Institute for the Study of Planet Earth Promotion Review Committee (2005)
Member, External Review Committee – Academic Program Review of the Bureau of Applied Research in Anthropology (2004-2005)
Member, External Review Committee (Sunset Review) of the Bureau of Applied Research in Anthropology (1997-1998)
Chair, Faculty Senate Committee on Elections (1997-1998)
Member, Faculty Senate Committee on Elections (1994-1996)

Member, Faculty Review Committee Small Grants Program (1997)
Reader, Upper-Division Writing Proficiency Examinations (1994)

Interdisciplinary Committees:

Member, Graduate Interdisciplinary Programs Advisory Committee (GIDPAC) (2011-2013)
Chair, Graduate Interdisciplinary Programs Advisory Committee (GIDPAC) (2009-2010)
Member, Executive Committee Interdisciplinary Graduate Program on Remote Sensing and Spatial Analysis (2009-2014)
Elected Member, Graduate Interdisciplinary Programs Advisory Committee (GIDPAC) (2007-2010)
Chair, Interdisciplinary Graduate Program on Arid Lands Resource Sciences (2002-2012)
Member, Extra-departmental two/four year review committee of R. Merideth Udall Center for Studies in Public Policy (2001)
Member Executive Committee, Interdisciplinary Graduate Program on Arid Lands Resource Sciences (1996→)
Member, Interdisciplinary Graduate Program on Arid Lands Resource Sciences (1991→)
Member Executive Committee, Interdisciplinary Graduate Program on Global Change (1994-1999)
Member, Interdisciplinary Graduate Program on Global Change (1994→)
Member, Interdisciplinary Graduate Program on Remote Sensing and Spatial Analysis (1989→)

Extramural Service

External Reviewer (chair) – School of Natural Resources Academic Program Review – University of Nebraska (2015)
External Reviewer – School of Natural Resources Academic Program Review – Texas Tech University (2012)
External Promotion Reviewer of Faculty Member for Technion University, Israel.
Review Panel Member – USGS 2009 National Climate Change and Wildlife Science Center RFP (2009)
Panel Member – USDA NP 203/204 Air Quality and Global Change Assessment Panel – Five Year Review (2008)
External Reviewer – Tenure Review Dept. of Geosciences Idaho State University (2006)
External Reviewer – Western Regional Center – National Institute for Global Environmental Change (NIGEC) U.C. Davis – Triennial Review (2004)
Member Advisory Committee – USGS/UofA ESPRIT (2003)
External Reviewer – Tenure Review Dept. of Geography Michigan State Univ. (2003)
External Reviewer – Tenure Review Dept. of Land Resources and Environmental Sciences Montana State University (2003)
External Reviewer – Tenure Review Dept. of Geography University of Idaho (2001)
Member Fellows Committee, Arizona-Nevada Academy of Sciences (2000)
Member Organizing Committee, Arizona-Nevada Academy of Sciences Annual Meeting (2000)
External Reviewer Academic Program Review Department of Earth Sciences, California State University Dominguez Hills (1998)

Associate Editor, *Photogrammetric Engineering and Remote Sensing* (1992-1999)
 Member, Editorial Board, *Photogrammetric Engineering and Remote Sensing* (1999→)
 Chair, American Society of Photogrammetry and Remote Sensing William A. Fischer Memorial Scholarship Committee (1994→)
 Member, Program Committee Eleventh Thematic Conference - Applied Geologic Remote Sensing (1996)
 President, Arizona-Nevada Academy of Sciences (1994-1995)
 Director, Arizona-Nevada Academy of Sciences S. Arizona Region (1990-1994)
 Member, Mapping Science Advisory Committee - Ann Arbor Press (1995-1998)
 Member, Editorial Advisory Committee Lewis Publishers (1994)
 Manuscript Reviews (average 6 per year) encompassing the following scientific journals:
 Journal of Arid Environments
 Journal of Applied Geography
 Journal of Wildlife Management
 International Journal of Remote Sensing
 International Journal of Geographic Information Science
 International Commission of Agricultural Engineering EJournal
 Remote Sensing of Environment
 Remote Sensing
 Photogrammetric Engineering and Remote Sensing
 IEEE Transactions on Geoscience and Remote Sensing
 Biological Conservation
 Environmental Geology
 Environmental Monitoring and Assessment
 Human Ecology
 Western Journal of Applied Forestry
 Proposal and Grant Reviews (average 4 per year):
 National Science Foundation (Geography)
 NASA Earth Systems Science Fellowship Program
 U.S. Environmental Protection Agency
 U.S. Department of Agriculture

Active membership: American Geophysical Union, Association of American Geographers, Arizona-Nevada Academy of Sciences, American Water Resources Association, Association of Pacific Coast Geographers, and the American Society of Photogrammetry and Remote Sensing.

PUBLICATIONS/CREATIVE ACTIVITY (*Published or Accepted*)

Chapters in Scholarly Books and Monographs:

Hartfield, K., Marsh, S.E., Schneier-Madanes, and Curley, E., 2013. Remote sensing of urban change: water in the Tucson basin of Arizona. in: Courel, M.F., Tashpolat, T., and Taleghani, M. (Editors), WATARID 3 Usages et Politiques de l'eau en zones arides et semi-arides. Hermann Editeurs, Paris, France. p. 107-118.

Rodríguez-Gallegos Hugo Benigno, Drake E. Samuel, Marsh E. Stuart, Gonzales-Márquez Luis Carlos and Trigueros-Salmerón José Angel, (2012). Mapping vegetation contiguous fields from high spatial resolution multispectral imagery. in: Sánchez Flores, E. y R. E. Díaz Caravantes (coordinadores) (2012), *Dinámicas locales del cambio ambiental global. Aplicaciones de percepción remota y análisis espacial en la evaluación del territorio*, Editorial UACJ: Ciudad Juárez. 504 pp., ISBN 978-607-9224-80-6.

Skirvin, S.M., Kepner, W.G., Marsh, S.E., Drake, S.E., Maingi, J.K., Edmonds, C.M., Watts, C.J., Williams, D.R., 2004. Assessing the Accuracy of Satellite-derived Land Cover Classification Using Historical Aerial Photography, Digital Orthophoto Quadrangles, and Airborne Video Data. In Lunetta, R.S. and Lyon, J.G. (Editors), *Remote Sensing and GIS Accuracy Assessment*, CRC Press: Boca Raton, FL.

Lee, C.T., and Marsh, S.E., 1995. The Use of Archival Landsat MSS and Ancillary Data in a GIS Environment to Map Historical Change in an Urban Riparian Habitat (Chapter 7) *Wetland and Environmental Applications of GIS*, Lyon, J.G. and McCarthy, J. editors, Lewis Publishers, p. 83-105.

Marsh, S.E., and Kowalik, W.S., 1983. Multispectral Data - Atmospheric and Radiometric Corrections; in Geological Applications (Chapter 31), *Manual of Remote Sensing*, 2nd Edition, American Society of Photogrammetry and Remote Sensing, p. 1735-1738.

Williams, R.S., and Marsh, S.E., 1983. Definition of Geological Remote Sensing; in Geological Applications (Chapter 31), *Manual of Remote Sensing*, 2nd Edition, American Society of Photogrammetry and Remote Sensing, p. 1667-1672.

Refereed Journal Articles (*Published or Accepted in Final Form*):

El-Vilaly, Mohamed Abd Salam, Didan, Kamel, Marsh, Stuart E, van Leeuwen, Willem JD, Crimmins, Michael A., and Barreto Munoz, Armando, 2017. Vegetation productivity responses to drought on tribal lands in the four corners region of the Southwest USA. *Frontiers of Earth Science*, 2017:5, p 1-15.

Adriana A Zuniga-Teran, Barron J Orr, Randy H Gimblett, Nader V Chalfoun, Stuart E Marsh, David P Guertin, Scott B Going, 2017. Designing healthy communities: Testing the walkability model. *Frontiers of Architectural Research*, 6:1, p 63-73.

Adriana A Zuniga-Teran, Barron J Orr, Randy H Gimblett, Nader V Chalfoun, David P Guertin, Stuart E Marsh, 2017. Neighborhood design, physical activity, and wellbeing: applying the walkability model. *International Journal of Environmental Research and Public Health*,

H. Czyzowska-Wisniewski, E.H., van Leeuwen, W.J.D., Hirschboeck, K.K., Marsh, S.E., Wisniewski, W.T., 2015. Fractional snow cover estimation in complex alpine-forested environments using an artificial neural network. *Remote Sensing of Environment*. 156:403-417.

Kong, T.M., Marsh, S.E., van Rooyen, A.F., Kellner, K., Orr, B.J., 2015. Assessing Rangeland Condition in the Kalahari Duneveld through Local Ecological Knowledge of Livestock Farmers and Remotely Sensed Data. *Journal of Arid Environments*. 113:77-86.

Carriere, Y., Nolte, K., Marsh, S., Degain, B., Hartfield, K., Eilers-Kirk, C., et al. 2014. Assessing Transmission of Crop Diseases by Insect Vectors in a Landscape Context. *Journal of Economic Entomology*, 107(1), 10.

Herrmann, S.M., Wickhorst, A.J., Marsh, S.E., 2013. Estimation of Tree Cover in an Agricultural Parkland of Senegal Using Rule-Based Regression Tree Modeling. *Remote Sensing*. 5:4900-4918.

Hartfield, K., Marsh, S.E., Eilers-Kirk, C., Carriere, Y., 2013. Contemporary and Historical Classification of Crop Types in Arizona. *International Journal of Remote Sensing*. 34:6024-6036.

Olsson, A.D., Betancourt, J.L., Crimmins, M.A., Marsh, S.E., 2012. Constancy of local spread rates for buffelgrass (*Pennisetum ciliare* L.) in the Arizona Upland of the Sonoran Desert. *Journal of Arid Environments*. 87:136-143.

Villarreal, M.L., Drake, S., Marsh, S.E., and McCoy, A.L., 2012. The influence of wastewater subsidy, flood disturbance and neighboring land use on current and historical patterns of riparian vegetation in a semi-arid watershed. *River Research and Applications*, 28: 1230-1245.

Carrière, Y., Eilers-Kirk, C., Hartfield, K., Larocque, G., Degain, B., Dutilleul, P., Dennehy, T., Marsh, S.E., Crowder, D.W., Li, X., Ellsworth, P.C., Naranjo, S.E., Palumbo, J.C., Fournier, A., Antilla, L., Tabashnik, B.E., 2012. Large-scale, spatially-explicit test of the refuge strategy for delaying insecticide resistance. *Proceedings of the National Academy of Sciences PNAS*, 109(3):775-780.

Hartfield, K., Eilers-Kirk, C., Wisneski, K., Orr, B.J., Marsh, S.E., Carriere, Y., 2011. Novel Ground Truth Method for Crop Fields Combining a Global Positioning System (GPS) and Handheld Geographic Information System (HGIS). *eXtension.org*. Available online: <http://extension.org/60989>.

Olsson, A.D., Betancourt, J., McClaran, M.P., Marsh, S.E., 2011. Sonoran Desert Ecosystem Transformation by a C4 Grass Without the Grass/Fire Cycle. *Diversity and Distributions*, 2011:1-12.

Olsson, A.D., van Leeuwen, W.J.D., Marsh, S.E., 2011. Feasibility of Invasive Grass Detection in a Desertscrub Community Using Hyperspectral Field Measurements and Landsat TM Imagery. *Remote Sensing*, 3: 2283-2304.

Marsh, Stuart E., 2010. "Multitemporal Imaging." *Encyclopedia of Geography*. SAGE Publications. 4 Oct. 2010.

Casady, G.M., van Leeuwen W.J.D., Marsh, S.E., 2010. Evaluating Post-Wildfire Vegetation Regeneration as a Response to Multiple Environmental Determinants. *Environmental Monitoring and Assessment*, 15:295-307.

Casady, G.M. and Marsh, S.E. 2010. Broad-Scale Environmental Conditions Responsible for Post-Fire Vegetation Dynamics. *Remote Sensing*, 2:2643-2664.

Van Leeuwen, W.J.D., Davison, J.E., Casady, G.M., and Marsh, S.E., 2010. Phenological Characterization of Desert Sky Island Vegetation Communities with Remotely Sensed and Climate Time Series Data. *Remote Sensing*, 2010(2): 388-415.

Carrière Y., Eilers-Kirk, C., Cattaneo, M.G., Yafuso, C.M., Antilla, L., Huang, C., Rahman, M., Orr, B.J., and Marsh, S.E., 2009. Landscape Effects of Transgenic Cotton on Non-target Ants and Beetles, *Basic and Applied Ecology*, 10: 597-606.

Moran, S.M., Hutchinson, B., Marsh, S.E., McClaran, M.A., and Olsson, A., 2009. Archiving and Distributing Three Long-Term Interconnected Geospatial Data Sets, *IEEE Transactions on Geoscience and Remote Sensing*, 47(1): 59-71.

Huang, C.-Y., Geiger, E.L., van Leeuwen, W., Marsh, S.E., 2009. Discrimination of Invaded and Native Species Sites in a Semi-Desert Grassland using MODIS Multitemporal Data. *International Journal of Remote Sensing*, 30(4): 897-917.

McClaran, M.P., Moore-Kucera, J., Martens, D.A., van Haren, J., Marsh, S.E., 2008. Soil Carbon and Nitrogen in Relation to Shrub Size and Death in a Semi-arid Grassland. *Geoderma*, 145(1-2): 60-68.

Huang, C.-Y., Marsh, S.E., McClaran, M.P., and Archer, S.R., 2007. Post-fire Stand Structure in a Semi-arid Savanna: Cross-Scale Challenges Estimating Biomass. *Ecological Applications*. 17(7):1899-1910.

Maingi, J.K. and Marsh, S.E., 2006. Composition, Structure, and Regeneration Patterns in a Gallery Forest Along the Tana River Near Bura, Kenya. *Forest Ecology and Management*, 236:211-228.

Cattaneo, M.G., Yafuso, C., Schmidt, C., Huang C., Rahman, M., Olson, C., Eilers-Kirk, C., Orr, B.J., Marsh, S.E., Antilla, L., Dutilleul, P., and Carriere, Y., 2006. Farm-scale Evaluation of the Impacts of Transgenic Cotton on Biodiversity, Pesticide Use, and Yield. *Proceedings National Academy of Sciences*, 103(20):7571-7576, May 16, 2006.

Farid, A., Rautenkranz, D., Goodrich, D.C., Marsh, S.E., and Sorooshian, S., 2006. Riparian Vegetation Classification from Airborne Laser Scanning Data with an Emphasis on Cottonwood Trees. *Canadian Journal of Remote Sensing*, 32(1):15-18.

Heydlauff, A.L., Krausman, P.R., Shaw, W.W., and Marsh, S.E., 2006. Perceptions Regarding Elk and Elk Management in Arizona. *The Wildlife Society Bulletin*, 34(1):27-35.

van Leeuwen, W.J.D., Orr, B. Marsh, S.E., Herrmann, S., 2006. Multi-Sensor NDVI Data Continuity: Uncertainties and Implications for Vegetation Monitoring Applications. *Remote Sensing of Environment*, 100(1):67-81.

Wallace, C.S.A. and Marsh, S.E., 2005. Characterizing the Spatial Structure of Endangered Species Habitat Using Geostatistical Analysis of IKONOS Imagery. *International Journal of Remote Sensing*, 26(12):2607-2629.

Fang, H., Liang, S., McClaran, M.P., van Leeuwen W.J.D., Drake, S., Marsh, S.E., Thomson, A., Izaurrealde, R.C., Rosenberg, N.J., 2005. Biophysical Characterization and Management Effects on Semi-Arid Rangeland Observed from Landsat ETM+ Data. *IEEE Transactions on Geoscience and Remote Sensing*, 43(1):125-134.

Shupe, S. and Marsh, S.E., 2004. Cover and Density Based Vegetation Classifications of the Sonoran Desert Using Landsat TM and ERS-1 SAR Imagery. *Remote Sensing of Environment*, 93(1-2):131-149.

Skirvin, S.M., Marsh, S.E., McClaran, M.P., Meko, D.M., 2003. Climate Spatial Variability and Data Resolution in a Semi-Arid Watershed, Southeastern Arizona. *Journal of Arid Environments*, 54(4):667-686.

Marsh, S.E., Park, T.K, Eiswerth, B.A., Farah, M.H., Rautenkranz, D.S., and Orr, B.J., 2003. Development of Sampling Procedures Based Upon Satellite Derived Land Cover Histories for the NSF African Cities Project. *Journal of Political Ecology: Case Studies in History and Society*. 10(2): 63-68. On-line at: http://dizzy.library.arizona.edu/ej/jpe/Volume10/Volume_10_2.html.

Park, T., Greenberg, J., Nell, E., Marsh, S.E., Baro, M., and Mjahed, M., 2003. Research on Urbanization in the Developing World: New Directions. *Journal of Political Ecology: Case Studies in History and Society*. 10(2): 69-94. On-line: http://dizzy.library.arizona.edu/ej/jpe/Volume10/Volume_10_2.html

Maingi, J.K. and Marsh, S.E., 2002. Quantifying Hydrologic Impacts Following Dam Construction along the Tana River, Kenya. *Journal of Arid Environments*, 50(1): 53-79.

Maingi, J.K. and Marsh, S.E., 2001. Assessment of Environmental Impacts of River Basin Development on the Riverine Forests of Eastern Kenya Using Multi-temporal Satellite Data. *International Journal of Remote Sensing*, 22(14): 2701-2729.

Weiss, E., Marsh, S.E., and Pfirman, E.S., 2001. Application of NOAA-AVHRR NDVI Time-Series Data to Assess Changes in Saudi Arabia's Rangelands. *International Journal of Remote Sensing*, 22(6): 1005-1027.

Clay, G.R., and Marsh, S.E., 2001. Monitoring of Forest Transitions Using Scanned Ground Photographs as a Primary Data Source. *Photogrammetric Engineering and Remote Sensing*, 67(3): 319-330.

- Kepner, W.G., Watts, C.J., Edmonds, C.M., Maingi, J.K., Marsh, S.E., and Luna, G., 2000. A Landscape Approach for Detecting and Evaluating Change in a Semi-Arid Environment. *Journal of Environmental Monitoring and Assessment*, 64: 179-195.
- Clay, G.R. and Marsh, S.E., 1997. Spectral Analysis for Articulating Scenic Color Changes in a Coniferous Landscape. *Photogrammetric Engineering and Remote Sensing*, 63(12), 1353-1362.
- Hirosawa, Y., Marsh, S.E., and Kliman, D.H., 1996. Application of Standardized Principal Components Analysis to Land Cover Characterization Using Multitemporal AVHRR Data. *Remote Sensing of Environment*, 58(3), 267-281.
- Hirosawa, Y. and Marsh, S.E., 1995. Evaluation of Multitemporal Techniques to Map and Monitor Land-Cover Change in Arid and Semi-Arid Environments. *Journal of Arid Land Studies (Japan)*, 5S, 183-186.
- Gilruth, P.T., Marsh, S.E., and Itami, R., 1995. A Dynamic Spatial Model of Shifting Cultivation in the Highlands of Guinea, West Africa. *Ecological Modelling*, 79, 179-197.
- Lee, C.T. and Marsh, S.E., 1995. The Use of Archival Landsat MSS and Ancillary Data in a GIS Environment to Map Historical Change in an Urban Riparian Habitat. *Photogrammetric Engineering and Remote Sensing*, 61(8), 999-1008.
- Mack, C., Marsh, S.E., and Hutchinson, C.F., 1995. Application of Aerial Photography and GIS Techniques in the Development of an Historical Perspective of Environmental Hazards at the Rural-Urban Fringe. *Photogrammetric Engineering and Remote Sensing*, 61(8), 1015-1020.
- Marsh, S.E., Hutchinson, C.F., Pfirman, E.S., Des Rosiers, S.A., and van der Harten, C., 1994. Development of a Computer Workstation for Famine Early Warning and Food Security. *Disasters, The Journal of Disaster Studies and Management*, 18(2), 117-129.
- Marsh, S.E., Walsh, J.L., and Sobrevilla, C., 1994. Evaluation of Airborne Video Data for Land-Cover Classification Accuracy Assessment in an Isolated Brazilian Forest. *Remote Sensing of Environment*, 48, 61-69.
- Filiberti, D., Marsh, S.E., and Schowengerdt, R.A., 1994. Synthesis of High Spatial and Spectral Resolution Imagery from Multiple Images Sources. *Optical Engineering*, 33(8), 2520-2528.
- Marsh, S.E. and Hirosawa, Y., 1994. Remote Sensing of Desert Environments. *Journal of the Society of Instrument and Control Engineers (Japan)*, 33(10), 875-879.
- Marsh, S.E., Walsh, J.L., Lee, C.T., Beck, L., and Hutchinson, C.F., 1992. Comparison of Multitemporal NOAA-AVHRR and SPOT-XS Data for Mapping Land Cover Dynamics in the West African Sahel. *International Journal of Remote Sensing*, 13(16), 2997-3016.
- Marsh, S.E., Walsh, J.L., Lee C.T., and Graham, L.A., 1991. Multitemporal Analysis of Hazardous Waste Sites Through the Use of a New Bi-Spectral Video Remote Sensing System

and Standard Color-IR Photography. *Photogrammetric Engineering and Remote Sensing*, 57(9), 1221-1226.

Marsh, S.E., Walsh, J.L., and Hutchinson, C.F., 1990. Development of an Agricultural Land Use GIS for Senegal Derived from Multispectral Video and Photographic Data. *Photogrammetric Engineering and Remote Sensing*, 56(3), 351-357.

Marsh, S.E., and McKeon, J.B., 1983. Integrated Analysis of High Resolution Field and Airborne Spectroradiometer Data for Alteration Mapping. *Economic Geology*, 78(4), 618-632.

Marsh, S.E., Schieldge, J.P., and Kahle, A.B., 1982. In situ Measurement of Thermal Inertia for Remote Sensing Studies. *Photogrammetric Engineering and Remote Sensing*, 48(4), 605-607.

Kowalik, W.S., Marsh, S.E., and Lyon, R.J.P., 1982. Relationship between Landsat Digital Numbers, Surface reflectance, and the Cosine of the Solar Zenith Angle. *Remote Sensing of Environment*, 12, 39-55.

Marsh, S.E., Switzer, P., Kowalik, W.S., and Lyon, R.J.P., 1980. Resolving the Percentage of Component Terrains within Single Resolution Elements. *Photogrammetric Engineering and Remote Sensing*, 46 (8), 1079-1086.

Marsh, S.E., and Lyon, R.J.P. 1980. Quantitative Relationships of Ground and Near-surface Spectra to Landsat Radiometric Data. *Remote Sensing of Environment*, 10(4), 241-261.

Electronic Publications (Peer Reviewed):

Maingi, J.K., S. E. Marsh, W.G. Kepner, and C.M. Edmonds. 2002. An Accuracy Assessment of 1992 Landsat-MSS Derived Land Cover for the Upper San Pedro Watershed (U.S./Mexico). Environmental Protection Agency Publication EPA/600/R-02/040 online at: <http://www.epa.gov/nerlesd1/land-sci/accuracy1992.htm>.

Skirvin, S.M., S.E. Drake, M.P. McClaran, S.E. Marsh, and D. Meko. 2001. Potential Effects of Climate Change on the Vegetation in the San Pedro River Watershed, Southeastern Arizona. *U.S.G.S. Conference on Predicting Hydrologic, Geologic, and Biologic Responses to a Drier and Warmer Climate in the Desert Southwest*. Tucson, Arizona, April 23-25, 2001. Abstract may be found on-line at <http://geology.wr.usgs.gov/sw-workshop/all-abstracts.pdf>.

Skirvin, S.M., Drake, S.E., Maingi, J.K., Kepner, W.G., Marsh, S.E., 2000. An Accuracy Assessment of 1997 Landsat Thematic Mapper Derived Land Cover for the Upper San Pedro Watershed (U.S./Mexico). *U.S. Environmental Protection Agency, Office of Research and Development Publication: EPA/600/R-00/097*, 15pp. at (<http://www.epa.gov/crdlvweb/land-sci/>).

Skirvin, S.M., Drake, S.E., McClaran, M.P., Marsh, S.E., Meko, D.M., 2000. Climate Change and Land Tenure – Potential Impacts on Vegetation and Development in the San Pedro River Watershed, Southeastern Arizona. In Proceedings 4th International Conference on Integrating

GIS and Environmental Modeling (GIS/EM4), September 2-8, 2000, Banff, Canada, 13 pp., at (<http://www.Colorado.edu/research/cires/banff/upload/249/>). [Invited Presentation]

Maingi, J.K., Marsh, S.E., and Kepner, W.G., 1999. Accuracy Assessment of 1992 Landsat-MSS Derived Land Cover for the Upper San Pedro Watershed (U.S./Mexico). Online Publication: United States Environmental Protection Agency, Environmental Sciences Division, A Landscape Approach for Detecting and Evaluating Change in a Semi-arid Environment, <http://www.epa.gov/crdlvweb/land-sci/accuracy.htm>, PDF version may be accessed at <http://www.epa.gov/crdlvweb/pdf/353leb99.pdf>, October 28, 1999.

Ram, S., Venkatsubramanian, S., Yool, S., Marsh, S.E., and Park, J., 1998. SAGE: An Intelligent Agent Based Toolkit for Discovering and Accessing Distributed Earth Observing Data. In J. Strobl and C. Best (eds.), *Proceedings of the Earth Observation and Geo-Spatial Web and Internet Workshop 98*, Salzburger Geographische Materialien, Volume 27. Instituts fur Geographie der Universitat Salzburg, <http://www.sbg.ac.at/geo/eogeo/authors/ram/ram.html>.

RECENT SCHOLARLY PRESENTATIONS (2000-2017)

Seminars:

Accruing Assets for Promotion and Tenure Through Service – University of Arizona ADVANCE program seminar 2009. (Invited)

RangeView – A New Web Based Tool for Natural Resource Managers, Idaho State University – Identifying Challenges Workshop 2002. (Invited)

Accuracy Assessment of Land Cover Classifications - Environmental Protection Agency, Office of Research and Development – National Exposure Research Laboratory – Las Vegas, Nevada, December 2000. (Invited)

Research Activities at the Office of Arid Lands Studies – SRNR Brown Bag Series, Tucson, Arizona, April 2000. (Invited)

Symposia and Conferences:

Hartfield, K., van Leeuwen, W., Crimmins, M., Marsh, S., Torrey, Y., Rahr, M., & Orr, B., 2014, December. DroughtView: Satellite Based Drought Monitoring and Assessment. Annual Meeting of the American Geophysical Union. San Francisco, CA: AGU. *Invited*
<https://agu.confex.com/agu/fm14/meetingapp.cgi#Paper/17076>

Characterization of Urban Growth and Water Demand in a Desert City – Tucson, Arizona. 2012 4th Conference on Drylands, Deserts and Desertification Conference, Ben-Gurion University of the Negev, Israel. November 12-15, 2012. [Marsh, S.E., Mott LaCroix, Wander, M. Hartfield, K.Schneier-Madan, G., Villedy, F.X.] *Invited*.

Flash Flood Causing Mechanisms of the North American Monsoon System in the Sonoran

Desert Region, Paper Session, Climate Special Group. *Association of American Geographers Annual Meeting 2012*, 5467: Severe Weather Meteorology and Climatology, New York, NY - Feb 24-28. [Bieda, S.W. III, A.C. Comrie, M.A. Crimmins, L.A. Byerle, S. Marsh, and D.P. Guertin]

Remote Sensing of Water and Urban Sprawl in the Arizona Growth Corridor – The Tucson Basin. *Institut de Géographie and CNRS*. Paris, France. June 6, 2011. [Marsh, S.E., Schneier-Madanes, G., Hartfield, K., Curley, E.] *Invited*

Remote Sensing Of Urban Change to Inform Water Policy: The Tucson Basin In Arizona. *WATARID 3 Conference*, Paris, France. May 31, 2011. [Marsh, S.E., Schneier-Madanes, G., Hartfield, K., Curley, E.] *Invited*

Remote Sensing of Rangelands – Matching Capabilities with the Need for Information in a Changing World. *AGRI-Sensing 2011*. International Symposium on Sensing in Agriculture, Technion University, Haifa Israel, February 21-25, 2011. *Invited Keynote Address*

Long-term Cross-scale Assessment of Woody Cover Stability in Drylands. Presented at the 34th *International Symposium for Remote Sensing of Environment*. Sydney, Australia. April 10-15, 2011. [Hung, C., Archer, S., McClaran, M., Marsh, S.E.]

Fractional Snow Cover Estimation in Complex Alpine-Forested Environments Using Ikonos/Quickbird, Landsat and MODIS. Presented at the *American Geophysical Union Annual Meeting*, San Francisco, USA. December 14-18, 2009. [Czyzowska, E.H., Hirschboeck, K.K., van Leeuwen, W.J.D., Marsh, S.E., Wisniewski, W.T.]

Satellite derived vegetation phenology for a sky island in Arizona. Presented at the *Association of American Geographers (AAG)*, San Francisco, USA. April 17-21, 2007. [van Leeuwen, W.J.D., Davison, J., Casady, G., Marsh, S.E.]

Vegetation phenology and climate variability in a sky island in Arizona. *22nd Annual Meeting of the US Regional Association of the International Association for Landscape Ecology*. Tucson, Arizona, April 9-13, 2007. [Davison, J., van Leeuwen W.J.D., Casady, G., Marsh, S.E.]

Investigating local scale variability in post wildfire vegetation dynamics for a burned area in Central Arizona. *22nd Annual Meeting of the US Regional Association of the International Association for Landscape Ecology*. Tucson, Arizona, April 9-13, 2007. [Casady, G., van Leeuwen, W.J.D., Neary, D., Orr, B.J., Marsh, S.E.]

Phenological characterization of a sky island: insights into vegetation patterns across space and time. *Proceeding of the 32nd International Symposium on Remote Sensing of Environment*, San José, Costa Rica June 25-29, 2007. [Davison J., van Leeuwen, W.J.D., Casady, G., Marsh, S.E.]

Characterizing the phenology of semi-desert grassland dominated by non-native *Eragrostis lehmanniana* or native grasses using MODIS NDVI and brightness data. *The American Geophysical Union Fall Meeting*. San Francisco, CA. December 11-15, 2006. [Huang, C.,

Geiger, E., van Leeuwen, W., and Marsh, S.E.]

Farm-scale evaluation of the impacts of Bt cotton on nontarget insects, pesticide use, and yield. *The Entomological Society of America Annual Meeting and Exhibition*. Indianapolis, IN. December 10-13, 2006. [Cattaneo, M., Yafuso, C., Schmidt, C., Olson, C., Huang, C., Rahman, M., Ellers-Kirk, C., Orr, B., Marsh S., Antilla, L., Dutilleul, P., and Carrière, Y.]

A top-down approach to understanding the biotic and abiotic characteristics of stable semi-arid savanna ecosystems. *Third Annual Research Insights in Semiarid Ecosystems (RISE) Symposium*. Tucson, AZ. October 7, 2006. Poster [Huang, C., Archer, S., McClaran, M., and Marsh, S.E.]

A top-down approach to understanding the biotic and abiotic characteristics of stable tree-grass ratios in dryland ecosystems. *Fourth Annual the Institute for the Study of Planet Earth (ISPE)-Fest*. Tucson, AZ. Oct. 5, 2006. Poster [Huang, C., Archer, S., McClaran, M., and Marsh, S.E.]

Vegetation phenology of a sky island: The Santa Rita Mountains. *Global Vegetation Workshop 2006*. Missoula, MT. August 8-10, 2006. Poster [van Leeuwen, W., Huang, C., Casady, G., Marsh, S., and Davidson, J.]

Post-fire stand structure of woody plants: Implications for remote sensing of biomass. *The Ecological Society of America 91st Annual Meeting*. Memphis, TN. August 6-11, 2006. [Huang, C., Marsh, S., McClaran, M., and Archer, S.]

Cover-biomass relationships in woody plants: Effects of fire and implications for remote sensing. *50th Annual Meeting of the Arizona-Nevada Academy of Science*. Tucson, AZ. April 8, 2006. [Huang, C., Marsh, S., McClaran, M., and Archer, S.]

Satellite derived phenology: Vegetation changes in Arizona. *50th Annual Meeting of the Arizona-Nevada Academy of Science*. Tucson, AZ. April 8, 2006. [van Leeuwen, W., Huang, C., and Marsh, S.E.]

Satellite derived vegetation phenology: Changes in the southwestern U.S. *The 2006 Meeting of the Association of American Geographers*. Chicago, IL. March 7-11, 2006. [van Leeuwen, W., Huang, C., Casady, G., and Marsh, S.E.]

New Tools for Providing EOS Science Results and Data to Natural Resource Managers in the Western States. Presented at: *Ninth Biennial Forest Service Remote Sensing Applications Conference*, San Diego, California, April 8-12, 2006. [Marsh, S.E., Orr, B.J., White, A.M., Oldham, G., Wallace, C., Hutchinson, C.F., Thwaites, A., Hutchinson, B., Ruyle, G., Howery, L., Heydlauff, A., Krausman, P., and Enns, R.M.]. (Invited)

Cover-biomass Relationships in Woody Plants: Effects of Fire and Implications for Remote Sensing. *2nd Research Insights in Semiarid Ecosystems (RISE) Symposium*, 8 October 2005. Tucson, AZ. [Huang, C., Marsh, S.E., McClaran, M., Archer, S.]

Organic Carbon Stocks in Relation to Grass, Mesquite, and Land Use in the Desert Grassland. *2nd Research Insights in Semiarid Ecosystems (RISE) Symposium*, 8 October 2005. Tucson, AZ. [McClaran, M., Martens, D., and Marsh, S.E.]

The use of MODIS products in a geospatial decision support tool for rangeland monitoring. *Tenth Biennial USDA Forest Service Remote Sensing Applications Conference*, April 5-9, 2004 Salt Lake City, UT. Published Proceedings. [van Leeuwen, W.J.D., Orr, B., Marsh, S.E., Casady, G., Tuttle, D., Baker, L., vander Leeuw, E., Grunberg, G., Hutchinson, C.F.]

Phenology and trend indicators derived from spatially dynamic bi-weekly satellite imagery to support ecosystem monitoring. *Proceedings of the 5th Conference on Research and Resource Management in Southwestern Deserts – Biodiversity and Management of the Madrean Archipelago II: Connecting Mountain Islands and Desert Sea*. May 11-15, 2004, Tucson, AZ. Peer-Reviewed Proceedings. [Orr, B.J., Casady, G., Tuttle, D., van Leeuwen, W.J.D., Baker, L.E., McDonald, C.L., Marsh S.E.]

Airborne and Ground-based Hyperspectral Methods to Identify Nematode-induced Vegetation Stress in Cotton and Table Grapes. *Fall 2004 Conference of the American Society for Photogrammetry and Remote Sensing*, September 2004, Kansas City, MO. Poster Presentation. [Rautenkranz, D., McClure, M., Orr, B., van Leeuwen, W., and Marsh, S.E.]

Deriving land surface biophysical parameters from satellite data for soil carbon sequestration. *Proceedings of the 2004 International Geoscience and Remote Sensing Symposium (IGARSS)*, Anchorage, Alaska, September 20-24, 2004. Published Proceedings. Vol. VI:4277-4280. [Fang, H., Liang, S., McClaran, M.P., van Leeuwen W.J.D., Drake, S., Marsh, S.E., Thomson, A., Izaurralde, R.C., Rosenberg, N.J.]

Supporting Rangeland Management: Integration of Satellite Spectral Data and Rainfall to Estimate and Project Vegetation Cover in Semi-desert Grasslands. *30th International Symposium on Remote Sensing of Environment*, Honolulu, Hawaii, November 10-14, 2003. Published Proceedings. [Huang, C., Backer, D., Marsh, S.E., van Leeuwen, W., Rodriguez-Gallegos H.]

Effects of Climate and Land Use Change on Soil Erosion and Land Cover for Arizona and the San Pedro Valley. Presented at the *American Geophysical Union Chapman Conference*, Santa Fe, NM, June 14-18, 2003. [van Leeuwen, W.J.D., Sammons, G., Drake, S., Marsh, S.E.]. (Invited)

An Evaluation of 25 Years of Landscape Change in a Southwest Watershed. Presented at: *U.S.G.S. Southwest Landscape Change Workshop*, February 20-21, 2002, Las Cruces, NM. [Kepner, W.G., Watts, C.J., Edmonds, C.M., Goodrich, D.M. and Marsh, S.E.].

The Changing Watershed: A 25-year History of Land Cover Change in the San Pedro River. Poster Presentation at: *U.S.G.S. Southwest Landscape Change Workshop*, February 20-21, 2002, Las Cruces, NM. [Kepner, W.G., Watts, C.J., Edmonds, C.M., Maingi, J.K., Marsh, S.E., McClure, B.C., and Juen, J.J.].

Assessing the Accuracy of Satellite-derived Land Cover Classification using Historical Aerial Photography, Digital Orthophoto Quadrangles, and Airborne Video Data. Poster Presentation at: *U.S.G.S. Southwest Landscape Change Workshop*, February 20-21, 2002, Las Cruces, NM. [Kepner, W.G., Skirvin, S.M., Marsh, S.E., Drake, S.E., Maingi, J.K., Edmonds, C.M., Watts, C.J., and Williams, D.R.].

Geospatial Tools and Data for Natural Resource Management: AVHRR and MODIS Vegetation Index Continuity. Poster Presentation at: *NASA MODIS Vegetation Workshop*, July 16-18, 2002, Missoula, MT. [Van Leeuwen, W., Marsh, S.E., Orr, B.J., Herrmann, S., Baker, L., McDonald, C., and White, A.M.]. (Invited)

RangeView – A New Web Based Tool Providing Remote Sensing Products and Data to Natural Resource Managers in the Western States. Poster Presentation at *the International Arid Land Consortium Conference – Assessing Capabilities of Soil and Water Resources in Drylands: The Role of Information Retrieval and Dissemination Technologies*, October 20-25, 2002, Tucson, AZ. [Marsh, S.E., Orr, B., White, A.M., van Leeuwen, Grunberg, W., Thwaites, A., Hutchinson, C.F., Hutchinson, B., Baker, L., Hermann, S., Farah M., Huang, C., Oldham, G., Wallace, C., Howery, L., Ruyle, G., Krausman, P., Heydlauff, A.].

Assessing the Accuracy of Satellite-Derived Land Cover Using Historical Aerial Photography, Digital Orthophoto Quadrangles, and Airborne Video Data. U.S. EPA Symposium on Remote Sensing and GIS Accuracy Assessment, Las Vegas, Nevada, December 2001. [W. Kepner, S. Skirvin, S. Marsh, S. Drake, J. Maingi, C. Edmonds, C. Watts, and D. Williams] (Invited)

Informing the Elk Debate: Applying NASA Earth Observing System (EOS) Data to Natural Resource Management Conflicts in the Western States. IEEE 2001 International Geoscience and Remote Sensing Symposium, Sydney, Australia, July 2001. [S. Marsh, B. Orr, B. Krausman, R. Enns, L. Howery, E. Trobia, C. Wallace, K. Mauz, H. Boyd, H. Salazar] (Invited)

Assessing Wildlife Habitat and Range Utilization in Arizona Using Satellite Data. American Geophysical Union Spring Meeting, Boston, MA, May 2001. [C. Hutchinson, S. Marsh, P. Krausman, R. Enns, L. Howery, E. Trobia, C. Wallace, J. Walker, K. Mauz, H. Boyd, H. Salazar] (Invited)

Assessing the Accuracy of Satellite-Derived Land Cover Using Historical Aerial Photography, Digital Orthophoto Quadrangles, and Airborne Video Data. Symposium on Remote Sensing and GIS Accuracy Assessment, Las Vegas, Nevada, December 2001. [W. Kepner, S. Skirvin, S. Marsh, S. Drake, J. Maingi, C. Edmonds, C. Watts, and D. Williams] (Invited)

Assessment of Potential Effects of Climate Change on Vegetation in the San Pedro River Watershed, Southeastern Arizona. ArcGIS Southwest Users Group Conference, Tucson, Arizona, October 2001. [S. Skirvin, S. Drake, M. McClaran, S. Marsh, and D. Meko] (Invited)

Potential Effects of Climate Change on the Vegetation in the San Pedro River Watershed, Southeastern Arizona. U.S.G.S. Conference on Predicting Hydrologic, Geologic, and Biologic Responses to a Drier and Warmer Climate in the Desert Southwest. Tucson, Arizona, April 2001.

[S. Skirvin, S. Drake, M. McClaran, S. Marsh, D. Meko] (Invited)

Climate Change and Land Tenure – Potential Impacts on Vegetation and Development in the San Pedro River Watershed, Southeastern Arizona, 4th International Conference on Integrating GIS and Environmental Modeling (GIS/EM4), Banff, Canada, September 2000. [S. Skirvin, S. Drake, M. McClaran, S. Marsh, D. Meko] (Invited)

Assessing the Impacts of Land-Use in Six African Cities, 28th International Symposium on Remote Sensing of Environment, Cape Town, South Africa, March 2000. [A. Thiam, S. Marsh, J. Walker, E. Rodriguez, D. Rautenkranz, L. Christel, L., S. Drake, B. Eiswerth, M. Farah, K. Larson, S. Shupe]

Land Cover Change in Central Sonora, Mexico. USDA Forest Service Conference on Land Stewardship in the 21st Century: The Contributions of Watershed Management, Tucson, AZ, March 2000. [D. Valdez-Zamudio, A. Castellanos-Villegas, S. Marsh]

GRANTS and CONTRACTS (2000-2017)

Federal

1. Validation and Correction for the MODIS Spatial Response Role: Co-Principal Investigator (w/ R. Schowengerdt, S. Bigger), Source: NASA, Amount: \$335,218, Status: Completed (1997-2002)
2. Creation of a GIS for Six Cities in Arid Environments Role: Co-Principal Investigator (w/ T. Park, A. Thiam, G. Christopherson), Source: National Science Foundation (NSF), Amount: \$499,736, Status: Completed (1999-2002)
3. Support for a Space Grant Extension Specialist in Geospatial Information Technology for the State of Arizona Role: Co-Principal Investigator (w/ D. Young), Source: NASA, Amount: \$448,749, Status: Completed (1999-2002)
4. State and Local Government Initiative-Planning, Coordination, Materials, Preparation and Market Survey for Regional Informational Workshops Role: Co-Principal Investigator (w/ C.F. Hutchinson, M. Wallendorf), Source: NASA, Amount: \$375,493, Status: Completed (2000-2001)
5. Characterizing Landscapes Accessed by Sonoran Pronghorn Antelope Using Remote Sensing Role: Principal Investigator, Source: U.S. Department of Defense – Luke AFB, Amount: \$30,000, Status: Completed (2000-2001)
6. Models and Modes of Enabling the Use of NASA Earth Science Data in Decision Making. Role: Co-Principal Investigator (with C.F. Hutchinson, S. Drake, W. van Leeuwen, B. Orr), NASA, Amount: \$200,000, Status: Completed (2002-2004)
7. Establishing a Basis for Carbon Management Policy at the State Level: Carbon Dynamics

- at Site, Landscape, and Regional Scales for Arizona State Lands. Role: Co-Principal Investigator (w/ C.F. Hutchinson, M. McClaran, S. McLaughlin, J. DeSteiguer, M. Karpiscak), Source: NASA, Amount: \$756,338, Status: Completed (2001-2006)
8. Assimilation of NASA Science Results and Data into National Decision Support Systems. Role: Co-Principal Investigator (with C.F. Hutchinson, S. Drake, W. van Leeuwen, B. Orr), Source: NASA, Amount: \$600,000, Status: Completed (2002-2005)
 9. Vegetation Mapping of Sonoran Pronghorn Habitat on the Air Force Portion of the Barry M. Goldwater Range, Arizona. Role: Co-Principal Investigator (with S. McLaughlin, S. Drake), Source: U.S. Army Engineering and Support Center, Amount: \$150,000, Status: Completed (2003-2007).
 10. Tree-Grass Coexistence in Semiarid Savannas. Role: Principal Investigator (with Cho-Ying Huang and Mitchel McClaran), Source: NSF (Doctoral Dissertation Research Grant), Amount: \$12,000, Status: Completed (2005-2007).
 11. A Decision Model for Controlling Buffelgrass Invasion in an Urban-Wildland Interface Combining Dynamic Programming with Analytical Hierarchy Process. Role: Co Principal Investigator (with G. Frisvold, J. Betancourt, A. Olsson, B. Orr), Source: USDA-ERS-PREISM, Amount: \$119,000, Status: Completed (2006-2010).
 12. From InfoMart to Solutions Network: Understanding Operations. Role: Co Principal Investigator (with C.F. Hutchinson, W. van Leeuwen, S. Drake), Source: NASA, Amount: \$150,000, Status: Completed (2007-2008).
 13. "High Tech, High Touch": Professional Development in Geospatial Applications for Invasive Species Management. Role: Co Principal Investigator (with B. Orr). Source: USDA Western SARE, Amount: \$60,560, Status: Completed (2007-2008).
 14. Integrating Development and Field Test of the Refuge Strategy for the Management of Whitefly Resistance to Pyriproxygen. Role: Co Principal Investigator (with Y. Carrier and B. Orr). Source: USDA NRI. Amount: \$359,000, Status: In Progress (2007-2010).
 15. Vegetation Mapping of SW National Park Lands. Role: Co Principal Investigator (with S. Drake). Source: National Park Service. Amount: \$157,873. Status: Completed (2008-2009).
 16. Using Remote Sensing to Map and Manage Buffelgrass Infestations. Role: Co Principal Investigator (with A. Olsson). Source: National Park Service. Amount: \$14,500. Status: Completed (2007-2008).
 17. Developing DroughtView: A Decision Support System for Drought Monitoring Utilizing Multitemporal Remote Sensing Data (with M. Crimmins, W. van Leeuwen). Source: Arizona Space Grant Consortium - NASA. Amount: \$70,000. Status: Completed (2008-2010).

18. NPS Sonoran Desert Network Vegetation Mapping Project (with S. Drake). Source: National Park Service. Amount: 81,085. Status: Completed (2010-2012).
19. Stealth Health: Youth Innovation, Mobile Technology, Online Social Networking and Informal Learning to Promote Physical Activity (with S. Going, N. Hongu, B. Orr, D. Roe, M. Nichter, K. Astroth). Source U.S. Department of Agriculture – CSREES-NIR. Amount: \$1,476,301. Status: Completed (2009-2012).
20. San Simon Watershed Assessment Project (with B. Orr, M. Crimmins, B. Brandau, C. Hutchinson). Source: Bureau of Land Management. Amount: \$100,000. Status: Completed (2009-2013).
21. Assessing and Supporting Drought Monitoring Needs on the Hopi and Navajo Nations (w. M. Crimmins, D. Ferguson, W. van Leeuwen, B. Orr). Source: NOAA. Amount: \$253,121. Status: Completed (2010-2012).
22. Development of a Remote Sensing Website for the Laurel Clark Earth Camp Experience. Source: Arizona Sonoran Desert Museum and NASA. Amount: \$45,000. Status: Completed (2011-2013).
23. Land Cover Mapping of the Tijuana Watershed – California and Mexico (with W. van Leeuwen). Border Environmental Cooperation Commission (EPA/ARS). Amount: \$24,998. Status: Completed. 2013-2014.
24. Basic Operation of the Sonoran Desert Research Station. U.S. Geological Survey. Amount: \$70,000. Status: In Progress. 2015-2016.
25. USA National Phenology Network (with T. Crimmins). U.S. Geological Survey. Amount: \$2,849,000. Status: In Progress. 2014-2018.
26. Leadership, Coordination, and Administrative Oversight for the Desert Southwest Cooperative Ecosystem Studies Unit. National Park Service. Amount: \$14,600. Status: In Progress. 2017-2018.

State or County

1. Remote Sensing of Land Status on the A-7 Ranch in Support of Water Protection Role: Principal Investigator (w/ C.F. Hutchinson), Source: City of Tucson – Arizona Water Protection Fund, Amount: \$76,365, Status: Completed (2000-2004).
2. Arizona Fire Map – Internet Mapping Software Project for Arizona State Lands. Role: Co-Principal Investigator (with B. Orr), Source: Arizona State Land Department, Amount: \$85,268, Status: Completed (2004-2006).

3. Santa Cruz County Riparian Mapping and Native Plant Ordinance Project. Role: Co-Principal Investigator (with S. Drake), Source: Santa Cruz County Arizona, Amount: \$76,800, Status: Completed (2006-2007).
4. Development of the Drought Triggers Reporting System for the State of Arizona. Role: Co Principal Investigator (with M. Crimmins), Source: Arizona Water Institute. Amount: \$30,000, Status: Completed (2007-2008).
5. Development of a Drought Impacts Reporting System for the State of Arizona. Role: Co Principal Investigator (with M. Crimmins), Source Arizona Water Institute. Amount: \$30,000, Status: Completed (2007-2008).
6. Development of a Modern Website for the School of Natural Resources. Role: Principal Investigator, Source: College of Agriculture and Life Sciences. Amount: \$27,000, Status: Completed (2007-2008).
7. New Mexico FireMap Development Project. Role: Principal Investigator (W. A. Olsson, B. Orr). Source: State of New Mexico. Amount: \$75,000, Status: Completed (2008-2010).

Industry/Private

1. Informing the Elk Debate – Applying NASA Earth Observing System Data to Natural Resource Management Conflicts in the Western States. Role: Co-Principal Investigator (w/ C.F. Hutchinson, P. Krausman, L. Howery, M. Enns), Source: Raytheon - NASA, Amount: \$343,492, Status: Completed (2000-2001)
2. An InfoMart for Natural Resources: EOS Science Results and Data for Public Land Management in the Western States. Role: Co-Principal Investigator (w/ C.F. Hutchinson, G. Ruyle, P. Krausman, L. Howery, M. Enns), Source: Raytheon - NASA, Amount: \$400,000, Status: Completed (2001-2002)
3. Synergy III – Extending and Sustaining InfoMart Tools and Data for Natural Resource Management. Role: Principal Investigator (w/ B. Orr, B. Hutchinson, G. Ruyle, P. Krausman, L. Howery), Source: Raytheon – NASA, Amount: \$426,526, Status: Completed (2002-2003)
4. Synergy IV – Extending and Operationalizing RangeView for Natural Resource Management. Role: Principal Investigator (w/ B. Orr, B. Hutchinson, C. Hutchinson, G. Ruyle, P. Krausman, L. Howery), Source: Raytheon – NASA, Amount: \$475,255, Status: Completed (2003-2004)
5. Synergy V – RangeView: A Decision Support Tool for Ecological Forecasting Role: Principal Investigator (w/ B. Orr, B. Hutchinson, C. Hutchinson, L. Howery), Source: Raytheon – NASA, Amount: \$249,999, Status: Completed (2004-2005).

6. Remotely Sensed Vegetation Classification and Mapping of the Madrean Sky Islands. (w/ W. van Leeuwen). Source: Sky Island Alliance. Amount: \$13,077. Status: Completed (2010-2012).

International Organizations

1. A Terrestrial Ecology Study to Assess the Impact of Man's Activities on Rangeland Resources – Saudi Arabia. Role: Co-Principal Investigator (w/ K. Foster), Source: Meteorology and Environmental Protection Administration – Kingdom of Saudi Arabia, Amount: \$300,000, Status: Completed (1999-2001)
2. Advanced GIS, Data Analysis, and Visualization Tools for Semi-Arid Watersheds Role: Co-Principal Investigator (w/ B. Hutchinson, M. Baker, J. Schalau, B. Orr), Source: IALC, Amount: \$74,996, Status: Completed (2002-2004).

References

Andrew C. Comrie
Senior Vice President for Academic Affairs and Provost
The University of Arizona
Email: comrie@email.arizona.edu – Phone: 520-621-1856

Shane C. Burgess
Vice President, Agriculture - Life and Veterinary Sciences / Cooperative Extension
Dean, College of Agriculture and Life Sciences
The University of Arizona
Email: sburgess@cals.arizona.edu – Phone: 520-621-7621

John Paul Jones
Dean College of Social and Behavioral Sciences
The University of Arizona
Email: jpjones@email.arizona.edu – Phone: 520-621-1112

Lisa J. Graumlich
Dean College of the Environment
The University of Washington
Email: graumlic@uw.edu – Phone: 206-221-0908

John L. Koprowski
Professor and Associate Director
School of Natural Resources & the Environment
The University of Arizona
Email: squirrel@ag.arizona.edu - Phone: 520- 626-5895