

Timothy B. Minor

Senior Research GIS/Remote Sensing Scientist and Deputy Director; Division of Earth and Ecosystem Sciences, Desert Research Institute, 2215 Raggio Parkway, Reno, NV 89512-1095. Nevada System of Higher Education.

Phone: 775-673-7477

Email: tim.minor@dri.edu

Education

- M.A. 1982 University of California, Santa Barbara
Geography, Image processing and thermal IR remote sensing emphasis
- B.S. 1980 University of Nevada, Reno
Geography, Geology and physical geography emphasis
- A.A. 1978 Monterey Peninsula College
General Education

Employment History

- 2016 – Present *Senior Research GIS/Remote Sensing Scientist*
Desert Research Institute, Division of Earth and Ecosystem Sciences, Reno, Nevada
- 2012 – Present *Deputy Director*
Desert Research Institute, Division of Earth and Ecosystem Sciences, Reno, Nevada
- 2002 – Present *Associate Research GIS/Remote Sensing Scientist*
Desert Research Institute, Division of Earth and Ecosystem Sciences, Reno, Nevada
- 1991 – 2002 *Assistant Research GIS/Remote Sensing Scientist*
Desert Research Institute, Division of Earth and Ecosystem Sciences (formerly Biological Sciences Center), Reno, Nevada
- 1992 – 1996 *Director of the Laboratory for Spatial Analysis*
Desert Research Institute, Biological Sciences Center, Reno, Nevada
- 1989 – 1991 *Remote Sensing Geologist*
FMC Gold Company, Reno, Nevada
- 1985 – 1989 *Cartographer*
Naval Civil Engineering Laboratory, Port Hueneme, California
- 1984 – 1985 *Systems Analyst*
Management Systems Concepts, Camarillo, California
- 1983 – 1984 *Programmer/Analyst*
Science Applications Research, Greenbelt, Maryland

1982 – 1983 *Member of Technical Staff*
Computer Sciences Corporation, Silver Springs, Maryland

Professional Interests

Mr. Minor is a geographic information systems (GIS) and remote sensing scientist, with backgrounds in geology, biology, computer cartography, image processing, thermal imaging, and GIS. His current research interests include the design and analysis of GIS databases to monitor and assess geologic, hydrologic, and ecosystem processes. He conducts image processing research using satellite based remotely sensed data (ASTER, IKONOS, WorldView-2 and -3, QuickBird, LANDSAT, AVHRR, MODIS), as well as airborne based hyperspectral instruments (MASTER, ProSpecTIR, HST, AVIRIS, Probe 1, SEBASS, TIMS) and LiDAR. Mr. Minor has experience and interests in the use of unmanned aircraft systems (UAS) and thermal remotely sensed data. His specific remote sensing interests include the analysis of arid vegetation regimes, invasive species, surface disturbance analysis, impervious cover, and feature extraction using spectral and contextural classification algorithms. Mr. Minor has been involved in numerous top-down exploration and modeling efforts which integrate GIS and remote sensing to examine groundwater resources, model recharge/runoff parameters in arid environments, assess mountain watershed water quality, monitor invasive species, map impervious cover, forecast desert terrain parameters, and analyze erosional and sediment transport processes. He is responsible for maintaining and upgrading the Institute's growing image processing and GIS software requirements, and provides technical support for DRI's GIS software users. Mr. Minor teaches introductory and advanced courses in GIS applications and image processing methods.

Professional Experience

July 2012 to present

Deputy Director; Desert Research Institute, Division of Earth and Ecosystem Sciences, Reno, Nevada. Support the Executive Division Director in their efforts to effectively manage, support, facilitate, and grow the Division, including research activities, program development, personnel and budgetary management, and participation in the overall DRI leadership team. Responsibilities include: Serve as Acting Director during the Division Director's Absence; represent the Division at events and meetings involving stakeholders and sponsors in the absence of the Division Director or at the direction of the Division Director; work directly with the Division Director and Division Business Manager to establish revenue projections, set budget priorities, and allocate Division funds; participate in the MBO process for DEES faculty outside of those directly supervised; review and approve employee Payroll Action Forms (PAFs) on behalf of the Division Director; attend DEES Staff, Division Director, SVPFA/COO, Executive Staff, and President's Cabinet meetings. Approve time sheets, purchasing card purchases, purchase orders, and travel claims on behalf of the Division Director. Approve Division Internal Funding Requests through ARGIS on behalf of the Division Director. Attend Space Committee meetings and assisted with office and laboratory moves and occupancy. Meet with faculty members to discuss funding issues, Division funding requests, and proposal development. Attend other committee meetings on behalf of the Division Director, including IT and HPC discussions.

July 2002 to present

Associate Research GIS/Remote Sensing Scientist; Desert Research Institute, Division of Earth and Ecosystem Sciences, Reno, Nevada. Responsible for design and analysis of geographic information systems (GIS) databases, the application of remote sensing to terrestrial monitoring and assessment, and the management of personnel and systems to conduct remote sensing and GIS research. Principal Investigator (PI) for several large research projects involving the application of remote sensing and GIS. PI on a project that uses the METRIC model for deriving evapotranspiration (ET) measurements for Northern Nevada/Eastern California from Landsat satellite data and meteorological data. PI and lead scientist on a GIS geodatabase development effort in support of hydrologic modeling and water rights acquisitions in the Walker River Basin. This effort involves spatial data development and analysis support for the Decision Support Tool (DST) currently being developed by modelers at the University of Nevada, Reno (UNR). PI on a database and web application development project for the Walker River Irrigation District (WRID). Supervise the upgrade of an existing Access-based database for improving the efficiency of water ordering and account management. PI on a web portal/web interface development effort for presenting the location, status and document links for Department of Energy (DOE) Environmental Restoration (EM) projects at the Nevada National Security Site (NNSS). PI on a web portal application development effort for publishing data and models for the Truckee River Watershed. This effort integrates ArcServer, ArcGIS, ArcSDE, and a Flex 4 front end/graphical user interface to publish calibrated remote sensing data products and hydrologic models. Applied LiDAR and thermal infrared imagery to analyze hydrologic systems in the Walker River Basin. Remote Sensing team leader for a large DOD funded desert terrain analysis project. LiDAR, hyperspectral, and thermal infrared image data were used to map landforms and lithology. Conducted impervious cover analysis using high resolution IKONOS multispectral satellite imagery and GIS in the Lake Tahoe basin. Constructed an impervious cover data layer for the entire Lake Tahoe basin. Integrated the impervious cover data with temporal spatial data layers dating back to the 1940's for assessing land use change in the Upper Truckee River watershed south of Lake Tahoe. Built a water table elevation database for the Great Basin as a contribution to a geothermal energy assessment of the region. Constructed environmental databases for various locations in southern Nevada. Assisted in the development of a GIS-based model for predicting recharge/runoff in Steptoe Valley, Nevada. Used gridded precipitation data to map climatic patterns over the Yucca Mountain project study area. Assisted in analysis and mapping of dry lakebed topography in the Mojave Desert using GIS. Used NOAA SSMI satellite imagery to map ice concentrations in the oceans surrounding Antarctica. Provided GIS and remote sensing support (multispectral, radar, geophysics) for a privately funded project to explore and develop groundwater resources for communities in rural Ghana, West Africa. Applied hyperspectral Probe 1 data and ASTER multispectral data to parent material mapping in the Mojave Desert. Hired GIS technicians and supervised their efforts on a desert terrain characterization project in the Mojave Desert.

June 1991 to June 2002

Assistant Research GIS/Remote Sensing Scientist; Desert Research Institute, Division of Earth and Ecosystem Sciences (formerly Biological Sciences Center), Reno, Nevada. Responsible for design and analysis of GIS databases, and the application of remote sensing to terrestrial

monitoring and assessment. Remote sensing research has included development of image processing algorithms for detecting and discriminating impervious cover in dense forest canopy. Other remote sensing research included detection of change in arid vegetation cover in the Mojave Desert using hyperspectral imaging systems. Used remote sensing and geophysics to site water wells in a fractured aquifer system in Africa. Developed parameters for a sediment loading model of the Upper Truckee River in the Lake Tahoe basin using raster based GIS analytical methods. Applied raster based GIS modeling techniques to groundwater recharge estimates on the Nevada Test Site, and developed a database of raster and vector spatial data sets for groundwater modeling in western Nevada. Named GIS coordinator for the Environmental Monitoring and Assessment Program (EMAP) Arid Resource Group. Conducted large area vegetation classifications using satellite based remotely sensed data (SPOT, Landsat ETM, Landsat TM, AVHRR). Developed indicator layers for a Desertification Susceptibility Index using Arc/Info GIS software. Conducted change detection analyses of the Amazon rain forest using Landsat TM data. Used field spectrometers to evaluate vegetation damage along the Sacramento River. Provided remote sensing support to several mining companies for domestic and international mineral exploration. Taught introductory and advanced GIS and image processing courses at the University and Community College level and the private sector, including courses taught at Chalmers Institute of Technology in Goteborg, Sweden and University of Campinas in Brazil. Developed proposals for future funding both as a member of DRI proposal teams and as an individual principal investigator.

October 1992 to November 1996

Director of the Laboratory for Spatial Analysis; Desert Research Institute, Biological Sciences Center, Reno, Nevada. Responsibilities included system administration, recharge rate development, personnel management, system maintenance, hardware and software upgrades, and evaluation of new GIS and image processing systems.

April 1989 to May 1991

Remote Sensing Geologist; FMC Gold Company. Responsible for providing remote sensing and Geographic Information System (GIS) support to geologists. Tasks included interactive interpretation of reconnaissance targets and properties with field geologists, as well as hard copy generation of image products using printers, plotters and a film writer. Developed image archiving database on Nucor GIS system. Conducted geobotanical analysis of vegetated ore zones using the CASI instrument. Implemented vegetation removal techniques for mapping clay alteration using Landsat and GERIS data. Developed hyperspectral mineral demixing capabilities with the GERIS multi-channel scanner. Geocoded image, terrain, and vector map data using the GRASS GIS system and Terra-Mar. Performed surface modeling of potential reconnaissance targets by combining SPOT and Landsat TM imagery. Conducted thermal infrared survey of pediments for detection of buried structures. System Administrator for Sun 386i and Compaq 486 workstations. Performed digital capture of analog data for integration into GIS systems.

October 1985 to April 1989

Cartographer; Naval Civil Engineering Laboratory. Systems administrator and principal analyst for the ERDAS image processing system at NCEL. Performed image processing and GIS

tasks on a 386 microcomputer. Acquired, processed, and analyzed Landsat TM, TMS, NS001, TIMS, and other image data for application to environmental resource management, vegetation analysis, and nonmetallic exploration. Utilized ARC/INFO GIS software on a SUN workstation, as well as GRASS GIS software. Conducted field spectral analysis of vegetation, soil, and exposed rock utilizing a multispectral radiometer. Performed geobotanical analysis of TMS data using IDIMS software. Utilized CAD packages for computer mapping of Naval base facilities. Also performed project management, contract management, and purchasing duties for four remote sensing projects. Conducted benchmarks of commercial hardware and software, including GIS systems, for validation of Navy requirements.

July 1984 to October 1985

Systems Analyst; Management Systems Concepts. Provided support for the Naval Civil Engineering Laboratory (NCEL). Responsible for technology assessment of GIS for a land use management system. Assisted in the design of a prototype GIS based on commercially available equipment (ARC/INFO). Designed a Test and Evaluation procedure for a video mapping system.

October 1983 to June 1984

Programmer/Analyst; Science Applications Research. Provided support to NASA Goddard Space Flight Center's Geophysics Branch. Duties involved image processing software development on the IDIMS system, including conversion, design, implementation, and documentation. Applied thermal infrared remotely sensed data to exploration of Saudi Arabia. Also provided technical support for the NASA/DOD cooperative remote sensing program. Duties included program planning and application of Landsat data to terrain and vegetation cover analysis.

September 1982 to September 1983

Member of Technical Staff; Computer Sciences Corporation. Provided support for the NASA-established Eastern Regional Remote Sensing Applications Center (ERRSAC). Responsible for assisting in the design of image processing techniques used in the analysis of Landsat, HCMM, AVHRR, and other remote sensing systems for land use classification. Assisted in the practical application of Geographic Information Systems to earth resources monitoring, vegetation mapping, and wildlife habitat analysis.

December 1981 to April 1982

Project Manager; UCSB Geography Remote Sensing Unit. Supervised NASA-funded research involving microwave applications for soil moisture detection.

Selected Funded Projects (2002 to present)

- 2015 – Present Walker Basin Conservancy; GIS Mapping Support; PI – \$80,000
- 2013 – Present National Fish and Wildlife Foundation; Spatial Analysis, Modeling, Mapping Support; PI – \$288,202

- 2007 – Present Bureau of Reclamation/UNR, Walker Basin Research Project, Phases I,II, and III; Co-Project Lead Investigator – \$2,042,497
- 2009 – 2015 Bureau of Reclamation, Water Resources Evaluation Program; PI – \$995,708
- 2012 – 2013 Walker River Irrigation District, SCADA Automated Control Site Integration and Database Development; PI – \$134,753
- 2009 – 2013 Department of Energy, Nevada Water Resources Data, Modeling, and Visualization; PI – \$390,623
- 2010 – 2012 Bureau of Reclamation, Walker Basin LiDAR Acquisition Program; PI – \$300,000
- 2008 – 2012 Gas Technology Institute, Developing Thermal Conversion Options for Biorefinery Residues – \$185,548
- 2003 – 2012 Department of Defense, Integrated Terrain Forecasting for Military Operations. Remote Sensing Team Leader; Co-PI – \$185,061
- 2006 – 2009 NASA, Hyperspectral Research and Development for Invasive Species Detection and Mapping; Co-PI – \$51,689
- 2007 – 2008 Sierra Nevada Corporation, MANNRRSS II – Identification and Monitoring of Critical Infrastructure with Integrated Geo-Spatial Data Framework; PI – \$210,130
- 2004 – 2008 Department of Energy/UNR, NA-22 Development of a Collaborative Research in Nevada for the Exploitation of LWIR Hyperspectral Image Data for Non-Proliferation Applications; PI – \$50,000
- 2004 – 2006 Department of Energy, Yucca Mountain Proposed Land Withdrawal Surface Disturbance Analysis; PI – \$188,045
- 2004 – 2006 Sierra Nevada Corporation, MANNRRSS I - Identification and Monitoring of Critical Infrastructure with Integrated Geo-Spatial Data Framework; PI – \$134,534
- 2005 – 2006 Great Basin Land and Water, Walker Lake Basin Study; PI – \$15,000
- 2002 – 2004 Tahoe Regional Planning Agency, Tahoe Basin Impervious Cover Mapping; PI – \$94,900
- 2002 – 2004 UNR, Geothermal GIS Development; PI – \$31,112

Peer Reviewed Publications

Sabol, D.E., Minor, T.B., McDonald, E.V., and Bacon, S.N., *In Press*. Parent Material Mapping of Geologic Surfaces Using ASTER in Support of Integrated Terrain Forecasting for Military Operations, *Proceedings of the 9th International Conference on Military Geosciences*.

- Merenyi, E., Farrand, W.H., Taranik, J.V., and Minor, T.B., 2014. Classification of hyperspectral imagery with neural networks: comparison to conventional tools, *EURASIP Journal on Advances in Signal Processing*, Vol. 71: 1-19.
- McGwire, K.C., Minor, T.B., and Schultz, B.W., 2011. Progressive Discrimination: An Automatic Method for Mapping Individual Targets in Hyperspectral Imagery, *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 49 (7): 2674-2685.
- Carroll, R.W.H., Pohll, G., McGraw, D., Garner, C., Knust, A., Boyle, D., Minor, T., Bassett, S., and Pohlmann, K., 2010. Mason Valley Groundwater Model: Linking Surface Water and Groundwater in the Walker River Basin, Nevada, *Journal of the American Water Resources Association (JAWRA)*, Vol. 46 (3): 554-573.
- Minor, T.B., Russell, C.E., and Mizell, S.A., 2006. Development of a GIS-based Model for Extrapolating Mesoscale Groundwater Recharge Estimates Using Integrated Geospatial Data Sets, *Hydrogeology Journal*, Vol. 15: 183-195.
- Minor, T.B., and Cablk, M.E., 2004. Estimation of Impervious Cover in the Lake Tahoe Basin Using Remote Sensing and Geographic Information Systems Data Integration. *Journal of the Nevada Water Resources Association*, Vol I, No. 1.
- Cablk, M. and Minor, T.B., 2003. Detecting and discriminating impervious cover with high-resolution IKONOS data using principal component analysis and morphological operators. *International Journal of Remote Sensing*, Vol. 24 (23): 4627-4645.
- Adams, K. and Minor, T.B., 2002. Historic Shoreline Change at Lake Tahoe from 1938 to 1998: Implications for Water Clarity. *Journal of Coastal Research*, Vol. 18 (4): 637-651.
- Forney, W., Richards, L., Adams, K.D., Minor, T.B., Rowe, T.G., Smith, J.L., and Raumann, C.G., 2001. Land Use Change and Effects on Water Quality and Ecosystem Health in the Lake Tahoe Basin, Nevada and California. *U.S.G.S. Open File Report 01-418*.
- McGwire, K., Minor, T.B., and Fenstermaker, L., 2000. Hyperspectral Mixture Modeling for Quantifying Sparse Vegetation Cover in Arid Environments. *Remote Sensing of Environment*, Vol. 72: 360-374.
- Minor, T.B., Lancaster, J., Wade, T.G., Wickham, J., Whitford, W., and Jones, K.B., 1999. Evaluating Change in Rangeland Condition Using Multitemporal AVHRR Data and Geographic Information System Analysis. *Environmental Monitoring and Assessment*, Vol. 59: 211-223.
- Taylor, K.C., Minor, T.B., Chesley, M.M., and Matanawi, K., 1999. Cost Effectiveness of Remote Sensing and Geophysics to Locate Favorable Well Sites in a Fractured Aquifer. *Groundwater*, Vol. 37 (2): 271-274.
- Sander, P., Minor, T.B., and Chesley, M.M., 1997. Ground-Water Exploration Based on Lineament Analysis and Reproducibility Tests. *Groundwater*, Vol. 35 (5): 888-894.
- Sander, P., Chesley, M.M., and T.B. Minor., 1996. Groundwater Assessment Using Remote Sensing and GIS in a Rural Groundwater Project in Ghana: Lessons Learned. *Hydrogeology Journal*, Vol. 4 (3): 40-49.

Book Chapters

- Sabol, D.E., Minor, T.B., McDonald, E.V., Bacon, S.N., 2016. Parent Material Mapping of Geologic Surfaces Using ASTER in Support of Integrated Terrain Forecasting for Military Operations, in E. McDonald and T. Bullard (Eds): *Military Geosciences and Desert Warfare, Past Lessons and Modern Challenges*, Springer, 978-1-4939-3427-0, 305323_1_En, (Ch. 20, p. 311-338).
- McDonald, E., Bacon, S.N, Bassett, S., Amit, R., Enzel, Y., Minor, McGwire, K., Crouvi, O., Nahmias, Y., 2016. Integrated Terrain Forecasting for Military Operations in Deserts: Geologic basis for rapid predictive mapping of soils and terrain features, in E. McDonald and T. Bullard (Eds): *Military Geosciences and Desert Warfare, Past Lessons and Modern Challenges*, Springer, 978-1-4939-3427-0, 305323_1_En, (Ch. 22, p. 353-375).
- Bacon, S., Dalldorf, G., McDonald, E., Baker, S., Sabol, D, Minor, T., Bassett, S., MacCabe, S., and Bullard, T., 2010. Predictive soil maps based on geomorphic mapping, remote sensing, and soil databases in the desert southwest, in Boettinger, J., Howell, D., Moore, A., Hartemink, A., Kienast-Brown, S. (Eds): *Digital soil mapping: bridging research, production, and environmental application*, Springer, Netherlands, (p. 409-419).

Proceedings

- Coolbaugh, M.F., Sawatzky, D.L., Oppliger, G.L., Minor, T.B., Raines, G.L., Shevenell, L.A., Blewitt, G., and Louie, J.N., 2003. Geothermal GIS coverage of the Great Basin, USA: Defining regional controls and favorable exploration terrains: Proceedings, Annual Meeting, Morelia, Mexico, Oct. 12-15, 2003, *Geothermal Resources Council Transactions*, v. 27, p. 9-13.
- Coolbaugh, M.F., Taranik, J.V., Raines, G.L., Shevenell, L.A., Sawatzky, D.L., Minor, T.B., and Bedell, R., 2002. A geothermal GIS for Nevada: defining regional controls and favorable exploration terrains for extensional geothermal systems; Proceedings, Annual Meeting, Reno, NV., Sept. 22-25, 2002, *Geothermal Resources Council Transactions*, v. 26, p. 485-490.
- Lancaster, J., Wade, T.G., Minor, T.B., Whitford, W.G., and K.B. Jones, 1996. Condition of New Mexico Rangelands Derived from Multi-year AVHRR Imagery and Associated Spatial Variables. *Proceedings of the Eleventh Thematic Conference on Geologic Remote Sensing*, Las Vegas, NV, February 27-29, 1996.
- Chesley, M.M., Sander, P, and T.B. Minor, 1995. Using Remote Sensing and GIS to Increase the Success Rate of a Rural Groundwater Project in Ghana, West Africa: Lessons Learned. *Proceedings of Solutions '95 Conference*, June 1995.
- Minor, T.B., J.A. Carter, M.M. Chesley, R.B. Knowles, and P. Gustafsson, 1994. The Use of GIS and Remote Sensing in Groundwater Exploration for Developing Countries. *Proceedings of the Tenth Thematic Conference on Geologic Remote Sensing*, Vol. 1, May 1994.
- Minor, T.B., J.A. Carter, M.M. Chesley, and R.B. Knowles, 1994. An Integrated Approach to Groundwater Exploration in Developing Countries. *1994 ASPRS/ACSM Annual Convention Technical Papers*, Vol. 1, April 1994.

- Mouat, D.A., J.M. Lancaster, T.B. Minor, and T.G. Wade, 1993. The Use of GIS in the Development of a Desertification Susceptibility Index: A Hypothetical Assessment. *Proceedings of the Thirteenth ESRI User Conference*, Vol. 1, May 1993.
- Mouat, D.A., Lancaster, J.M., Minor, T.B., Wade, T.G., and W.G. Kepner, 1993. A Desertification Susceptibility Index: Use of GIS to Assess Potential Desertification. *Proceedings of Symposium on Vegetation Management of Hot Desert Rangeland Ecosystems*, pp. 44-52, Phoenix, AZ, July 28-30, 1993.
- Minor, T.B., D.A. Mouat, and J. Myers, 1988. Geobotanical Determination of Aggregate Source Material Using Airborne Thematic Mapper Imagery. *Proceedings of the Sixth Thematic Conference on Remote Sensing for Exploration Geology*, Vol. 1, May 1988.
- Minor, T.B. and D.A. Mouat, 1988. Geobotanical Remote Sensing. *Proceedings of the First Navy Independent Research-Independent Exploratory Development Symposium*, June 1988.

Presentations

- Huntington, J. L., Morton, C. G., Bromley, M., Liebert, R. M., Minor, T. B., Allen, R., 2014. Landsat Water Use Mapping of Crop and Phreatophyte Areas in Nevada, *Nevada Water Resources Association Fall Symposium: Reno, NV, October 15, 2014-October 16, 2014*.
- Bromley, M., Morton, C.G., Huntington, J.L., Minor, T.B., Albright, T., Paudel, K., 2014. Analyzing Differences in Crop ET during Wet and Dry Years in the Walker Basin using Remotely Sensed Data. *Nevada Water Resources Association Annual Conference, Reno, NV*.
- Morton, C.G., Huntington, J.L., Allen, R.G., Melton, F., Minor, T.B., Bromley, M., Sullivan, A., 2013. Towards Rapid and Accurate Remote Sensing of Evapotranspiration from Irrigated Lands with Landsat for Improved Hydrologic Modeling, Operations, and Procedures. *Nevada Water Resources Association Annual Conference, Reno, NV*.
- Huntington, J.L., Morton, C.G., Allen, R.G., Minor, T.B., King, D., Harrison, A., Spears, M., Thomas, J.M., 2012. Recent DRI Applications for Estimating Crop Consumptive Use across the Western U.S. using Traditional and Remote Sensing Methods. *U.S. Society for Irrigation and Drainage Annual Conference, November 13-16, 2012, Reno, NV*.
- Morton, C.G., Huntington, J.L., Minor, T.B., Allen, R., Melton, F., 2012. Improving the Efficiency of Operational ET Estimates using METRIC. *Western States ET Workshop 2012, Boise, ID*.
- Huntington, J.L., Morton, C.G., Gilbertson, L., Minor, T.B., Pohll, G.M., 2012. Recent Applications Mapping Consumptive Use via Remote Sensing in Nevada. *Nevada Water Resources Association Annual Conference, Las Vegas, NV*.
- Huntington, J.L., Morton, C.G., Pohll, G.M., Minor, T.B., 2011. Remote Sensing in Consumptive Use Applications. *American Water Resources Association Conference, November 7-10, 2011, Albuquerque, NM*.
- Huntington, J.L., Sullivan, A., Minor, T.B., Mihevc, T.M., Lyles, B.F., McCurdy, G.D., Allen, R.G., Pohll, G.M., Thomas, J.M., 2011. Towards Updating & Enhancing Existing Agricultural Consumptive Use & Basin Water Budgets Throughout the State of Nevada. *Nevada Water Resources Association 2011 Annual Conference, Reno, NV*.

- Huntington, J.L., Sullivan, A., Allen, R.G., Minor, T.B., Morton, C.G., Pohll, G.M., Thomas, J.M., 2011. Water Transfers from Agriculture to Cities and Basin Management – ET Mapping Contributions in Nevada. *First Annual Western States ET Workshop*, Boise, ID.
- Morton, C.G., MacCabe, S.R., Minor, T.B., Huntington, J.L., 2011. Development of a Web Portal for Hydrologic & Environmental Monitoring in the Truckee River Basin: A Gateway for Historical Remote Sensing Products. *NWRA Truckee River Symposium*, September 27-29, 2011, Reno, NV.
- Sabol Jr., D.E., Minor, T.B., McDonald, E.V., 2011. Remote Sensing for Rapid Surface Mapping of Desert Terrains in Support of Military Operations. *9th International Conference on Military Geosciences*, Reno, NV.
- Huntington, J.L., Morton, C.G., Beamer, J., Minor T.B., Allen, R.G., Sullivan, A., Pohll, G.M., Lyles, B.F., Thomas, J.M., 2010. Western Nevada Water Resources Evaluation Program. *The USBR-Alliance University Applied Remote Sensing of Evapotranspiration Conference*, Las Vegas, NV.
- Sabol Jr., D.E., Kruse, F., Aslett, Z., Minor, T.B., Kratt, C., Taranik, J.V., Morkin, T., 2010. Spatial and Temporal VIS/SWIR/TIR Spectral Variability of Natural Desert Surfaces. *Recent Advances in Quantitative Remote Sensing III Conference*, Torrent (Valencia), Spain.
- Bacon, S.N., McDonald, E.V., Dalldorf, G.K., Baker, S.E., Sabol Jr., D.E., Minor, T.B., Bassett, S.D., MacCabe, S.R., Bullard, T.F., 2009. Predictive terrain hazard maps for military operations in the desert based on geomorphic mapping, remote sensing, and soil databases: *8th International Conference on Military Geosciences, Abstracts with Programs*, June 15-19, 2009, Vienna, Austria, p 14.
- Boyle, D. P., Minor, T.B., Pohll, GM., Knust, A.M., Garner, C., Carroll, R.W., McGraw, D.S., Bassett, S., Barth, C., Norpchen, D., Stroud, A., 2009. Development and Testing of a Decision Support Tool in Support of Water Right Acquisitions in the Walker River Basin. *Presented at the International Symposium on Terminus Lakes*. Reno, NV.
- McDonald, E., Bassett, S., Bacon, S., Minor, T.B., Bullard, T., 2009. Integrated Terrain Analysis for Military Operations in Deserts: Geologic basis for rapid predictive mapping of soils and terrain features. *8th International Conference on Military Geosciences, Abstracts, with Programs*, June 15-19, 2009, Vienna, Austria, p.92.
- Bacon, S.N., Dalldorf, G.K., McDonald, E.V., Baker, S.E., Sabol Jr., D.E., Minor, T.B., Bassett, S.D., MacCabe, S.R., Bullard, T.F., 2008. Predictive soil maps based on geomorphic mapping, remote sensing, and soil databases in the Desert Southwest. *3rd Global Workshop on Digital Soil Mapping*, Session 6, 10 p., Logan, UT.
- Bacon, S.N., McDonald, E.V., Dalldorf, G.K., Baker, S.E., Sabol Jr., D.E., Minor, T.B., Bassett, S.D., MacCabe, S.R., Bullard, T.F., 2008. An expert based system to predict soil attributes using geomorphic mapping, remote sensing, and soil databases in the Desert Southwest USA. *European Geosciences Union General Assembly 2008*, EGU2008-A-10709, SSS25-1FR5P-0669, Abstract XY0669. Vienna, Austria.
- Dalldorf, G.K., Bacon, S.N., McDonald, E.V., Baker, S.E., Sabol Jr., D.E., Minor, T.B., Bassett, S.D., MacCabe, S.R., Bullard, T.B., 2008. Predictive soil maps based on geomorphic

- mapping, remote sensing, and soil databases in the desert southwest: *3rd Global Workshop on Digital Soil Mapping*, Paper in Session 6, 10 p.
- Koracin, D., Reinhardt, R. L., Liddle, M. B., McCord, T., Podnar, D., & Minor, T. B., 2007. Assessment of wind energy for Nevada using towers and mesoscale modeling. *ASME 2007 Energy Sustainability Conference*, June, 2007, Long Beach, CA.
- McDonald, E., Bassett, S., Bacon, S., Minor, T.B., Bullard, T., 2007. Integrated Terrain Forecasting for Military Operations: Predicting the Location of Critical Soil Conditions using Geomorphic Image Analysis. *7th International Conference on Military Geology and Geography*, June 18-21, 2007, Quebec, Canada. Session 9 – Soil and Technology, abstract and talk, p.22.
- McDonald, E.V., Bassett, S.D., Bacon, S.N., Minor, T.B., Bullard, T.F., 2006. Integrated desert terrain forecasting for military operations: *25th Army Science Conference*, November 27-30, 2006, Orlando, FL, Session O Environmental and Engineering Geosciences; OP-14, poster & short paper, 6 p.
- Shafer, D.S., Martin, C., Pohlmann, K.F., Russell, C.E., Ye, M., Engelbrecht, J., Minor, T.B., Bishop, L., 2005. Establishing Baseline Environmental Conditions for the Proposed Yucca Mountain Repository, Nevada, USA. *10th International Conference on Environmental Remediation and Radioactive Waste Management*, Sept. 4-8, 2005, Glasgow, Scotland (GB).
- Minor, T.B., and Cablk, M.E., 2004. Estimation of Impervious Cover in the Lake Tahoe Basin Using Remote Sensing and Geographic Information Systems Data Integration. *2nd Biennial Conference on Tahoe Environmental Concerns*, Incline Village, NV.
- Coolbaugh, M., Zehner, R., Kreemer, C., Blackwell, D., Oppliger, G., Sawatzky, D., Blewitt, G., Pancha, A., Richards, M., Helm-Clark, C., Shevenell, L., Raines, G., Johnson, G., Minor, T., and Boyd, T., 2004. Geothermal map of the Great Basin, Western United States. *Presented at Geothermal Workshop, University of Nevada, Reno, Reno, NV.*
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