

## **CONFERENCE PRESENTATIONS**

1. **Friedel, M.J.**, Cox, S., Williams, C. 2016, Evaluating the role of large earthquakes on aquifer dynamics using data fusion and knowledge discovery techniques, poster EGU016-XXXX, European Geosciences Union General Assembly, 17-22 April, 2016, Vienna, Austria. (submitted)
2. **Friedel, M.J.**, Buscema, M. 2016, Maximizing model input information through optimal subset selection using an artificial adaptive system, poster EGU016-XXXX, European Geosciences Union General Assembly, 17-22 April, 2016, Vienna, Austria. (submitted)
3. **Friedel, M.J.**, 2016, Toward real-time classification of hyperion satellite imagery: a Monte Carlo based approach for training machine-learning networks with independent hyperspectral libraries, poster EGU016-XXXX, European Geosciences Union General Assembly, 17-22 April, 2016, Vienna, Austria. (submitted)
4. **Friedel, M.J.**, 2015, Data fusion and knowledge extraction in hydrogeology (85836), Advances in hydrogeophysics posters, H13A-1489, American Geophysical Union, December 2015, San Francisco, CA.
5. Moriera, L.P, **Friedel, M.J.**, 2015, Hybrid geophysical inversion using genetic algorithm and gradient descendant methods (65813), Joint inversion methods and other interpretation strategies to integrate multi-disciplinary geophysical data, NS51A-1961, American Geophysical Union, December 2015, San Francisco, CA.
6. **Friedel, M.J.**, Rawlinson, Z, 2015, Data to knowledge: hydrogeophysical data fusion and estimation of aquifer properties in the Otago region, NZ, Hydrologic Society Meeting, December 3-5, 2015, Hamilton, NZ.
7. **Friedel, M.J.**, Rissmann, C., Daughney, C., Kees, L., 2015, Data to knowledge: identifying lithologic controls on GW/SW interaction using machine-learning and clustering techniques, Southland, NZ, Hydrologic Society Meeting, December 3-5, 2015, Hamilton, NZ.
8. **Friedel, M.J.**, Buscema, M., 2015, Artificial adaptive systems: data to knowledge in environmental science, Hydrologic Society Meeting, December 3-5, 2015, Hamilton, NZ.
9. Daughney, C., Rissmann, C., **Friedel, M.J.**, Hodson, R., Morgenstern, U., Martindale, H., Rodway, W., Moreau, M., Kees, L., 2015, Hydrochemistry and water dating for characterisation of the Southland regional groundwater-surface water system. Hydrologic Society Meeting, December 3-5, 2015, Hamilton, NZ. (accepted)
10. **Friedel, M.J.**, 2015, Using artificial adaptive systems to select input for ecosystem models, 2015 International conference on water resource and environment, July 25-28, Beijing, China.
11. Daughney, C., Rissmann, C., **Friedel, M.J.**, Hodson, R., Morgenstern, U., Martindale, H., Rodway, W., Moreau, M., Kees, L., 2015, Hydrochemistry and water dating for characterisation of a regional groundwater-surface water system, Southland, New Zealand. 42nd IAH Congress - AQUA2015 - Hydrogeology: Back to the Future!, September 13-18, Roma, Italy.
12. **Friedel, M.J.**, Rawlinson, Z., Westerhoff, R., 2015, Intelligent mapping of an alluvial aquifer in the Otago region, New Zealand. poster EGU015-7433, Hydrogeophysics in subsurface hydrology (HS8.1.2), European Geosciences Union General Assembly, April, 2015, Vienna, Austria.
13. Vicente, L., Koga-Vicente, A., **Friedel, M.**, Victoria, D., Zullo, J., Gomes, D., Bayma-Silva., G., 2014, Land use and land cover change modeling using remote sensing and soft computing approach to assess sugarcane expansion impacts in tropical agriculture, B33E-0215, Mapping,

Methods, Modeling, and Monitoring: Agriculture as For Means of Global Change Assessment I Posters, American Geophysical Union, December 2014, San Francisco, CA.

14. Moreira, L., da-Cunha, L., **Friedel, M.**, 2104, Phosphate mineral deposits characterization using multivariate data and SOM-based processing, NG31A-3790, Neural Networks in Geophysics Posters, American Geophysical Union, December 2014, San Francisco, CA.
15. **Friedel, M.J.**, 2014, Modeling the effects of stressors on aquatic ecosystems, H11H-1251, Soil and Water: Natural Capital Stocks Delivering Valuable Ecosystem Services: Land Use Effects (Oral), 2014 Water Symposium, Integration: The Final Frontier, November 25, 2014, Blenheim, NZ.
16. Rawlinson, Z., **Friedel, M.J.**, Westerhoff, R., 2014, Mapping hydrogeological properties using helicopter electromagnetic (HEM) data In Otago, New Technologies (oral), 2014 Water Symposium, Integration: The Final Frontier, November 25, 2014, Blenheim, NZ.
17. **Friedel, M.J.**, Esfahani, A., 2013, Influence of global volcanic processes on climate modulation in the southwestern US, 132-2 (205), Session 132, T24. Climate Change in the Interior Western United States from the Last Glacial Maximum to the Holocene (Posters), Geological Society of America, Joint Annual Meeting, Denver, Colorado, 27-30 Oct., 2013.
18. Vicente, L.E., **Friedel, M.J.**, Iwashita, F., Koga-Vicente, A., 2013, Mapeamento de características de solos tropicais utilizando Self-Organizing Map aplicado à dados hiperespectrais, SBSR Brazilian Remote Sensing Symposium, April 2013, Foz do Iguaçu, PR, Brazil. [INTERNATIONAL, Presented by Vicente]
19. **Friedel, M.J.**, 2013, Big data integration for regional hydrostratigraphic mapping, H11H-1251, Regional groundwater systems: advances in modeling, characterization, and applications I Posters, American Geophysical Union, December 2013, San Francisco, CA.
20. Moreira, L., **Friedel, M.J.**, 2013, A hybrid data-integration scheme for improved crustal imaging, S23A-2469: Advances in seismic imaging: Towards integrated GeoModels on all scales – Shallow/Industry III Posters, American Geophysical Union, December 2013, San Francisco, CA.
21. **Friedel, M.J.**, 2014, Uncertainty and upscaling in rainfall-recharge modeling, NIWA Rainfall Recharge Workshop, Christchurch, NZ, August 26, 2014 (no abstract).
22. Lins, D.B, Zullo, J, **Friedel, M.J.**, 2013, Integrating vegetation index time series and meteorological data to understand the effect of the land use/land cover in the climatic seasonality of the Brazilian Cerrado, GC23B-0928, Global Environmental Change General Contributions II Posters, American Geophysical Union, December 2013, San Francisco, CA.
23. Vicente, L.E., Koga-Vicente, A., **Friedel, M.J.**, Victoria, D., Gomes, D., Bayma, G., Zullo, J., 2013, Modeling tropical land-use and land-cover change related to sugarcane crops using remote sensing and soft computing techniques, B41A: Earth Observations for Global Agricultural Monitoring II Posters, American Geophysical Union, December 2013, San Francisco, CA.
24. Lins, D.B, Zullo, J, **Friedel, M.J.**, 2013, Downscaling in climate models: an application for generation of alcohol production scenarios in Brazil, 345-3 145, Session 345, T79 Geochemical mapping at regional to continental scales (posters). Climate Change in the Interior Western United States from the Last Glacial Maximum to the Holocene, Geological Society of America, Joint Annual Meeting, Denver, Colorado, 27-30 Oct., 2013.

25. Esfahani, A.A., **Friedel, M.J.**, 2012, A fractal approach to the climate of southwestern United States, 29th IUGG Conference on Mathematical Geophysics, Poster Session 1, Informatics, Edinburgh, Scotland, 13 June [INTERNATIONAL, Presented by Esfahani]
26. Moreira, L., **Friedel, M.J.**, Franca, G., 2012, Joint inversion of receiver function, surface wave dispersion, and magnetotelluric data for 2D crustal modeling, Nonlinear geophysics session NG31B-1582, American Geophysical Union, December 2012, San Francisco, CA. [PRESENTED]
27. **Friedel, M.J.**, Esfahani, A., Abraham, J., 2012, Application of machine-learning to characterize an alluvial aquifer in western Nebraska, Hydrology session H13B-1327, American Geophysical Union, December 2012, San Francisco, CA [PRESENTED]
28. **Friedel, M.J.**, Finn, C.A., Horton, J.D., 2012, Hydrogeology Ground-water flow, hydrostratigraphy, and potential water-resource targets in Mauritania, Africa, Hydrology session H13B-1327, American Geophysical Union, December 2012, San Francisco, CA [PRESENTED]
29. **Friedel, M.J.**, 2012, Remote detection, classifying, and imaging using a hybrid paradigm, U.S. Department of Army, Engineer Research Development Center, 14 November, 2012, Arlington, Virginia. [INVITED, PRESENTED] (no abstract)
30. **Friedel, M.J.**, Finn, C.A., Horton, J.D., 2012, Hydrogeology of Mauritania, Africa, Mauritania Minerals Project Workshop, Denver, CO, 13 June [PRESENTED] (no abstract)
31. **Friedel, M.J.**, Esfahani, A., Schmidt, T.S., Smith, K., Mast, M.A., 2012, Connectivity mapping among variables in a mining-aquatic ecosystem, poster presentation (abstract #32), EPA Hardrock Mining Conference: Advancing Solutions for a New Legacy, Denver, CO, 3-5 Apr. [PRESENTED]
32. **Friedel, M.J.**, Schmidt, T.S., Smith, K., Mast, M.A., 2012, Development of Aquatic-Mining Ecosystem Models Using Computational Intelligence, poster presentation (abstract #30), USEPA Hardrock Mining Conference: Advancing Solutions for a New Legacy, Denver, CO, 3-5 Apr. [PRESENTED]
33. Moreira, L.P., **Friedel, M.J.**, França G.S., 2012, Uncertainty in crustal imaging of the Paraná Basin. European Geosciences Union General Assembly, PSD5.5 - Active seismic investigations of the Earth's crust, poster XY487, 24 April. [PRESENTED]
34. Vicente, E., **Friedel, M.J.**, Iwashita, F., 2011, Landscape discrimination in Brazil using hyperion data and a self-organizing map approach, Union session (U22b) oral presentation at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec. [PRESENTED]
35. Iwashita, F., **Friedel, M.J.**, Fraser, S., 2011, Application of soft computing in hydrogeologic characterization of the Serra Geral-Guarani aquifer system, Parana state, Brazil, Union session (U22b) oral presentation at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec. [(Presented by Iwashita)]
36. **Friedel, M.J.**, 2011, Applications of soft computing in undiscovered global porphyry copper assessments, Union session (U22b) oral presentation at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec. [INVITED, PRESENTED]
37. **Friedel, M.J.**, 2011, Computational intelligence in earth systems – applied soft and hybrid modeling, U.S. Department of Army, Engineer Research Development Center, 30 November, 2011, Vicksburg, Mississippi. [INVITED, PRESENTED] (no abstract)

38. Asch T., **Friedel, M.J.**, 2011, ALLTEM UXO discrimination results from the Aberdeen proving ground using a hybrid generalized neural analysis standard dipole inversion classification scheme, In: Advances in Classification Methods for Military Munitions Response, Symposium on the Application of Geophysics to Engineering and Environmental Problems, April 12, Charleston, South Carolina. (Presented by Asch)
39. Esfahani, A. **Friedel, M.J.**, 2011, A fractional climate forecast for southern and southwestern United States, Land-climate interactions from models and observations: Implications from past to future climate, poster session CL2.15, European Geosciences Union General Assembly, 3-7 April, 2011, Vienna, Austria. [INTERNATIONAL, PRESENTED]
40. Moreira, L.P., **Friedel, M.J.**, 2011, Joint inversion of receiver function, surface wave dispersion, and magnetotelluric data for 2D crustal modeling, The Lithosphere-Asthenosphere Boundary (LAB) Dilemma, poster session GD2.4/SM4.1/TS10.2, European Geosciences Union General Assembly, 3-7 April, 2011, Vienna, Austria. [INTERNATIONAL, PRESENTED]
41. Esfahani, A. **Friedel, M.J.**, 2011, A fractional climate forecast for southern and southwestern United States, Land-climate interactions from models and observations: Implications from past to future climate, poster session CL2.15, European Geosciences Union General Assembly, 3-7 April, 2011, Vienna, Austria. (PRESENTED)
42. **Friedel, M.J.**, Long, K., 2011, A data-driven economic filter for stochastic mineral assessments, Soft Computing Techniques in Geosciences, poster session NP1.3/ESSI21, European Geosciences Union General Assembly, 3-7 April, Vienna, Austria. [INTERNATIONAL, PRESENTED]
43. **Friedel, M.J.**, 2011, El Niño-Southern Oscillation (ENSO) phenomenon – event reconstruction and analysis over the past 2000 years, ENSO – Dynamics, predictability, poster session NP2.1, European Geosciences Union General Assembly, 3-7 April, Vienna, Austria. [INTERNATIONAL, PRESENTED]
44. Iwashita, F., F., **Friedel, M.J.**, Souza Filho, C.R., Fraser, S. J., 2011, Using self-organizing maps to analyze high-dimensional geochemistry data across Paraná, Brazil. In: Proceedings 15th Simpósio Brasileiro de Sensoriamento Remoto. Curitiba, Brazil. [INTERNATIONAL]
45. **Friedel, M.J.**, 2010, Post-fire debris flow prediction using a two-step hybrid approach, U.S. Geological Survey, 3<sup>rd</sup> Modeling Conference, Denver Colorado, June, 2010. [PRESENTED]
46. **Friedel, M.J.**, 2010, Intelligent post-fire hydrologic and geomorphic landscape modeling, U.S. Geological Survey, 3<sup>rd</sup> Modeling Conference, Denver, Colorado, June, 2010. [PRESENTED]
47. **Friedel, M.J.**, 2010, Intelligent exploration for shallow groundwater in fractured rock systems, U.S. Geological Survey, 3<sup>rd</sup> Modeling Conference, Denver, Colorado, June, 2010. [PRESENTED]
48. **Friedel, M.J.**, 2010, Forecasting climate change effects on ground water recharge using an unsupervised artificial neural network, U.S. Geological Survey, 3<sup>rd</sup> Modeling Conference, Denver, Colorado, June, 2010. [PRESENTED]
49. Brown, P. and **Friedel, M.J.** 2010, Overview of new Monte Carlo software for quantitative mineral resource estimation, U.S. Geological Survey, 3<sup>rd</sup> Modeling Conference, Denver, Colorado, June, 2010. (Presented by Brown)
50. Brown, P. and **Friedel, M.J.**, 2010, Test results comparing the new US Geological Survey Monte Carlo quantitative resource estimation simulation software application to MARK3, U.S.

Geological Survey, 3<sup>rd</sup> Modeling Conference, Denver, Colorado, June, 2010. (Presented by Brown)

51. Iwashita, F., Silvana A., Vieira Monteiro, A.M., **Friedel, M.J.**, 2010, Evaluating the effects of positioning errors on the accuracy of species distribution models using synthetic data, U.S. Geological Survey, 3<sup>rd</sup> Modeling Conference, Denver, Colorado, June, 2010. (Presented by Iwashita)
52. Iwashita, F., **Friedel, M.J.**, Carlos de Souza-Filho, 2010, Surveying soil chemical weathering in Parana state/Brazil: A data mining-GIS hybrid approach, U.S. Geological Survey, 3<sup>rd</sup> Modeling Conference, Denver, Colorado, June, 2010. (Presented by Iwashita)
53. Manning, A., **Friedel, M.J.**, Verplanck, P.L., Todd, A.S., 2010, Applying numerical modeling to evaluate the significance of climate and hydrology in the formation of natural acid-rock drainage in mineralized watersheds. Session 74: Integrated approaches to modeling geochemical, hydrological, and ecological processes in watersheds, Geological Survey of America, Joint Annual Meeting, Denver, Colorado, 31 October - 3 November, 2010. (Presented by Manning)
54. **Friedel, M.J.**, 2010, Nonlinear modeling of coupled watershed processes using a data-driven approach, Session 74: Integrated approaches to modeling geochemical, hydrological, and ecological processes in watersheds, Geological Survey of America, Joint Annual Meeting, Denver, Colorado, 31 Oct.- 3 Nov, 2010. [PRESENTED]
55. Koga-Vicente, A., **Friedel, M.J.**, 2010, Comparison of empirical and data driven hydrometeorological hazard models on coastal cities of São Paulo, poster NH51A-1220 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec. [PRESENTED]
56. **Friedel, M.J.**, 2010, Hindcasting 2000 years of Pacific sea and land surface temperature changes, poster H21G-1125 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec. [PRESENTED]
57. Esfahani, A.A., **Friedel, M.J.**, 2010, The fractal nature of climate change - 2000 years in retrospect, H21G-1126 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec. (PRESENTED)
58. Iwashita, F., **Friedel, M.J.**, Ribeiro, G.F., Fraser, S.J., de Souza-Filho, C.R., 2010, Using self-organizing maps to predict soil texture and hydraulic conductivity in the Poços de Caldas, **Modelagem numérica e experimental de processos geológicos, Grande Área: MÉTODOS E TÉCNICAS EM GEOLOGIA**, 45<sup>o</sup> Congresso Brasileiro de Geologia, Belem, Brazil, October 26-31. [INVITED, INTERNATIONAL]
59. Moreira, L.P., França G.S., **Friedel, M.J.**, 2010, Joint inversion of receiver function and surface waves using a regularized Gauss-Marquardt-Levenberg nonlinear method, EOS Trans. AGU, 91(26), Jt. Assem. Suppl., Abstract, S21A-O4: 8–13 August, Foz do Iguaçu - PR, 85862–210, Brazil. [INTERNATIONAL]
60. **Friedel, M.J.**, 2010, Climate change effects on ecosystem services in the United States – issues of national and global security, NATO Advanced Study Workshop – Climate change Effect on Water Supplies – Issues of National and Global Security, Izmir, Turkey, Sept.1-5, 2010. [INTERNATIONAL, KEYNOTE]
61. Johnson, R.H., Manning, A.H., and **Friedel, M.J.**, 2009, Evaluating the utility of watershed-scale numerical models in the U.S. Geological Survey’s mineral, environmental assessment project, [Toward More Effective Use of Ground Water Modeling II: Improved Conceptual Models and Data](#)

[Integration](#) 2009 Ground Water Summit: The Science and Engineering Conference, April 21, 2009. (Presented by Johnson)

62. **Friedel, M.J.**, 2008, Overview of USGS groundwater research activities, INMET, Brasilia, Brazil – Invitation to speak about USGS and personal research [INVITED, PRESENTED] (no abstract)
63. Friedel, M.J., 2008, Methods for predicting wildfire-induced debris flows, Integrated Wildfire, presentation to USGS Central Region management, Snow Mountain Ranch, Tabernash, CO, Sept. 11, 2008. [INVITED, PRESENTED] (no abstract)
64. **Friedel, M.J.**, 2008. Hazards and risks – flooding, 2<sup>nd</sup> USGS Modeling conference, National Hazards Panel, Perdido Beach, Alabama, February, 2008. [INVITED, KEYNOTE]
65. **Friedel, M.J.**, 2008, Application of stochastic modeling to forecast likely urbanization effects on ecological integrity in the Upper Illinois River Basin, USA, Extended abstract, United States Geological Survey, 2<sup>nd</sup> Modeling Conference, Gulf Shores, Alabama, February, 10-15, 2008 [PRESENTED]
66. **Friedel, M.J.**, 2008, Joint inverse modeling to estimate extreme rainfall events and their uncertainty in ungauged coastal basins, El Salvador, Central America, Extended abstract, United States Geological Survey, 2<sup>nd</sup> Modeling Conference, Gulf Shores, Alabama, February, 10-15, 2008 [PRESENTED]
67. **Friedel, M.J.**, 2008, Joint inverse modeling to estimate flood-flow depths and their uncertainty in ungauged coastal basins, El Salvador, Central America, Extended abstract, United States Geological Survey, 2<sup>nd</sup> Modeling Conference, Gulf Shores, Alabama, February, 10-15, 2008 [PRESENTED]
68. **Friedel, M.J.**, Souza, O.F., Yoshinaga, S. P, Silva, A M, 2008, Application of a joint inversion strategy to improve electromagnetic imaging of hydrogeologic structures in Northeastern Brazil, EOS Trans. AGU, 89(53), Fall Meet. Suppl., Abstract, NS31A-1224. [PRESENTED]
69. **Friedel, M.J.**, 2008, Quantifying ground-water recharge using a coupled water-heat-solute transport model: optimal nonlinear parameter estimation, nonuniqueness, and predictive uncertainty, Trans. AGU fall meeting, San Francisco, CA, Dec 10, 2008. [PRESENTED]
70. Johnson, R.H., and **Friedel, M.J.**, 2008, Factoring uncertainty into restoration modeling of in-situ leach uranium mines, 330-8, Hydrogeology III - Uranium, Metals, and Other Contaminants in Groundwater, Geological Survey of America, 2008 Joint Annual Meeting, 5-9 Oct. 2008. (Presented by Johnson)
71. **Friedel, M.J.**, 2008, Numerical modeling strategies in resource assessments – past, present, and future. *SP 41. Modelagem numérica e experimental de processos geológicos, Grande Área: MÉTODOS E TÉCNICAS EM GEOLOGIA*, 44<sup>o</sup> Congresso Brasileiro de Geologia, Curitiba, Brazil, October 26-31. [INTERNATIONAL, KEYNOTE]
72. Tindall, J.A., Figueroa-Johnson, M., and **Friedel, M.J.**, 2007, Comparison of soil-water sampling techniques, Trans. AGU, 83(42), Fall Meet. Suppl., H53F-1489. (Presented by Tindall)
73. **Friedel, M.J.**, 2007, Assessment and management of mining-related environmental risks with applications, University of Kuopio, Kuopio, Finland [INVITED, INTERNATIONAL, PRESENTED]

74. **Friedel, M.J.**, 2007, Overview of hazards risk mitigation and emergency preparedness project, Bucharest, Romania, presentation to World Bank Experts, stakeholders, and concerned citizens, 2007. [INVITED, INTERNATIONAL, PRESENTED]
75. **Friedel, M.J.**, 2006, Overview of hazards risk mitigation and emergency preparedness project, Bucharest, Romania, presentation to World Bank Experts, stakeholders, and concerned citizens, January, 2006. [INVITED, INTERNATIONAL, PRESENTED] (no abstract)
76. **Friedel, M.J.**, 2005, Combined groundwater-geophysical inverse modeling to reduce predictive uncertainty, presentation as part of Groundwater Resources Program research initiative in Linking Geologic Models to MODFLOW, DFC, Bldg 53, Central Region conference room, F1216, Lakewood, CO, presentation to regional groundwater specialist (A. Burns) and invited scientists, June 16, 2005. [INVITED, PRESENTED] (no abstract)
77. Figueroa, M., Tindall, J.A., and **Friedel, M.J.**, 2006, Comparison of  $d^{18}O$  composition of water extracted from suction lysimeters, centrifugation, and azeotropic distillation, Trans. AGU, 83(42), Fall Meet. Suppl., H13-6703 (Presented by Figueroa)
78. Little, J., Tindall, J.A., and **Friedel, M.J.**, 2005, Scaling relations between laboratory and field scale hysteretic measurements for a coarse sandy loam soil, Trans. AGU, 83(42), Fall Meet. Suppl., H13-6703. (Presented by Little)
79. **Friedel, M.J.**, 2005, Effects of Coal-bed methane discharge waters on vegetation and soil ecosystem in Powder River Basin, Wyoming, USA, International Symposium on Methodology in Hydrology, Nanjing, China, Oct. 30 - Nov. 2, 2005. [INTERNATIONAL, KEYNOTE]
80. **Friedel, M.J.**, 2005, Simultaneous estimation of recurrent rainfall amounts in ungaged coastal basins of El Salvador, International Symposium on Methodology in Hydrology, Nanjing, China, Oct. 30 - Nov. 2, 2005. [INTERNATIONAL, KEYNOTE]
81. **Friedel, M.J.**, 2005, Probable flooding in ungaged coastal basins of El Salvador, International Symposium on Methodology in Hydrology, Nanjing, China, Oct. 30 -Nov. 2, 2005. [INTERNATIONAL, KEYNOTE]
82. **Friedel, M.J.**, 2005, Urbanization effects on ecological integrity in the Upper Illinois River Basin, USA, NATO Advanced Study Workshop - Groundwater and Ecosystems, Canakkale, Turkey, Sept. 5-7, 2005. [INTERNATIONAL, KEYNOTE]
83. Little, J., Tindall, J.A., and **Friedel, M.J.**, 2004, Correlated moisture content, pressure and temperature data for development of hysteretic moisture retention curves, Trans. AGU, 83(42), Fall Meet. Suppl., H33B-0464. (Presented by Little)
84. **Friedel, M.J.**, 2004, Reliability in urban ground-water recharge estimates through the vadose zone: managing sustainable development in arid and semiarid regions, NATO Advanced Study Institute - Management and Sustainable Development of Urban Groundwater Systems, Baku, Azerbaijan, Aug. 10-20, 2004. [INTERNATIONAL, KEYNOTE]
85. **Friedel, M.J.**, 2003, Potential post-fire debris flow hazards associated with Wulfsohn and Golenwood alluvial fans, Glenwood Springs, Colorado, presentation to Mayor and city council, May 28, 2003. [INVITED, PRESENTED] (no abstract)
86. **Friedel, M.J.**, 2003, Predicting maximum likely debris flows: from pre-fire streamflow measurements to post-fire hazard mapping, presentation at Colorado Stream Gauging Symposium, 2003, Breckenridge, CO, May 8, 2003. [INVITED, PRESENTED]

87. **Friedel, M.J.**, 2002, Application of genetic algorithms and programming to water resource problems, oral and cyber presentation to USGS earth scientists, USGS National Training Center, Lakewood, CO, December 4, 2002. [PRESENTED] (no abstract)
88. **Friedel, M.J.**, 2002, Stochastic modeling of quantity and quality of Colorado River streamflow following development and operation of Sulphur Gulch reservoir, presentation to Denver Water and Northern Colorado Water Conservancy District management and engineers, and attorneys of Trout-Whitman, Loveland, CO, November 22, 2002. [INVITED, PRESENTED] (no abstract)
89. **Friedel, M.J.**, 2002, Application of stochastic simulation to assess the effects of development and operation of Sulphur Gulch reservoir on changes in Colorado Water Quality, presentation to Denver Water and Northern Colorado Water Conservancy District management and engineers, Denver Water, Denver, CO, August 9, 2002. [INVITED, PRESENTED] (no abstract)
90. **Friedel, M.J.**, 2002, Drought effects on water quantity and quality. U.S. Geological Survey drought workshop, Pueblo, CO, July, 2002. [INVITED, PRESENTED]
91. **Friedel, M.J.**, 2002, Drought effects on water quantity and quality. U.S. Geological Survey drought workshop, Greeley, CO, July, 2002. [INVITED, PRESENTED]
92. **Friedel, M.J.**, 2002, Transport model parameter nonuniqueness and its effect on recharge prediction in a coupled variably saturated ground-water system. U.S. Geological Survey artificial recharge workshop, Sacramento, CA, April, 2002. [PRESENTED]
93. **Friedel, M.J.**, 2002, Coupled ground-water model calibration and predictive analysis - space age technology or science fiction? U.S. Geological Survey, Recharge Estimation Workshop, Lakewood, CO, February 26, 2002. [INVITED, PRESENTED]
94. **Friedel, M.J.**, 2002, Salinity issues in Western United States. Proceedings Western drought effects on water quantity and quality. American Institute of Hydrology, Minneapolis, MN, August 9, 2002. [INVITED, PRESENTED]
95. **Friedel, M.J.**, 2002, Quantifying ground-water recharge using a coupled water-heat-solute transport model: optimal nonlinear parameter estimation, nonuniqueness, and predictive uncertainty, Trans. AGU fall meeting, San Francisco, CA, Dec 10, 2002. [PRESENTED]
96. **Friedel, M.J.**, 2002, Quantifying ground-water recharge using a coupled water-heat-solute transport model: nonlinear parameter estimation, nonuniqueness, and predictive uncertainty, Trans. AGU, 83(42), Fall Meet. Suppl., H21D-0860, 2002. [PRESENTED]
97. **Friedel, M.J.**, 2001, Developed and presented seminar on Model calibration and simulation of urbanization and its effects on ecological integrity. U.S. Geological Survey, Colorado-District, Denver, CO, Jan. 2001. [INVITED, PRESENTED] (no abstract)
98. **Friedel, M.J.**, 2001, Developing an Urbanization TMDL ... good, bad, and the ugly. Upper Illinois River Basin - National Water Quality Assessment liaison meeting, Chicago, IL, April 20, 2001. [PRESENTED] (no abstract)
99. **Friedel, M.J.**, 2001, Overview of VST2D model applications and future extensions to regional ground-water specialists and ground-water resources program management, Lakewood, CO, Oct. 9, 2001. [INVITED, PRESENTED] (no abstract)
100. **Arnold, T., Friedel, M.J., and Warner, K.L.**, 2001, Hydrogeologic inventory of the upper Illinois River Basin – creating a large data base from well construction records. Geological Society of America April 22, 2001 in Bloomington, Illinois. (Presented by Arnold)



101. **Friedel, M.J.**, 2001, Salinity overview of water resources in the South Platte River Basin, A Colorado Salinity/Selenium Symposium and Workshop, Soil Water Conservation Society, Colorado Springs, CO, October 4, 2001. [INVITED, PRESENTED] (no abstract)
102. **Friedel, M.**, 1999, VST2D – Variably saturated water-heat-solute transport model. U.S. Geological Survey - Unsaturated Zone Interest Group, Menlo Park, CA, Jan. 13, 1999. [PRESENTED] (no abstract)
103. **Friedel, M.J.**, 1999, Ground-water risk assessment – Cyprus mine tailings impoundment. U.S. Geological Survey - Unsaturated Zone Interest Group, Menlo Park, CA, Jan. 13, 1999. [INVITED, PRESENTED]
104. **Friedel, M.J.**, 1998, Developed and presented seminar on land use gradient study: predicting the effects of urbanization on water quality. U.S. Geological Survey, National Water Quality Assessment Leadership Team, Reston, VA, Dec. 1998. [INVITED, PRESENTED] (no abstract)
105. **Friedel, M.J.**, 1998, Probabilistic assessment of source drinking water in the Upper Illinois River Basin. U.S. Geological Survey, National Water Quality Assessment Leadership Team, Reston, VA, Dec. 1998. [INVITED, PRESENTED] (no abstract)
106. Nieber, J.L., **Friedel, M.J.**, and Sharratt, B.S., 1997, Modeling equations for two-dimensional coupled heat, fluid, and solute transport in variably-saturated, variably-frozen soils, CRREL Special Report 97-10: Proceedings International symposium on physics, chemistry and ecology of seasonally frozen soils, Fairbanks, Alaska, June 10-12, pp. 140-146. [INVITED]
107. Scott, D.F, Williams, T.J., and **Friedel, M.J.**, 1996, Application of seismic tomography in underground mining, Proceedings 15th International Conference on Ground Control in Underground Mining, Golden, CO, Aug. 13-15. [INVITED]
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