Dr. Norman L. Jones

Curriculum Vitae

Address	242 Clyde Building Brigham Young University Provo, Utah 801-422-7569 njones@byu.edu
Position	Assistant Professor (1991 - 1996) Associate Professor (1997 - 2002) Professor (1902 – present) Department Chair (2018 - present) Dept. of Civil and Environmental Engineering Brigham Young University

Education

B.S., April 1986
Brigham Young University
Major: Civil Engineering
Outstanding Civil Engineering Graduate
Convocation Speaker for College
Summa Cum Laude.

M.S., May 1988
University of Texas at Austin
University Fellowship Recipient
Major: Geotechnical Engineering
Thesis: Applications of Computer-Aided Design Techniques for Site Characterization in Civil Engineering

Ph.D., Dec. 1990
University of Texas at Austin
University Fellowship Recipient
Major: Geotechnical Engineering
Dissertation: Solid Modeling of Earth Masses for Applications in Geotechnical Engineering

Awards

2001 Walter L. Huber Civil Engineering Research Prize
The American Society of Civil Engineers awards this prize annually to four outstanding researchers age 40 or younger.

2002 College of Engineering & Technology Special Commendation Award
In recognition of my efforts in successfully guiding our department through the ABET re-accreditation process as the Undergraduate Coordinator.

2003 Brigham Young University Technology Transfer Award

Awarded for many years of success in technology transfer. Co-recipient with Jim Nelson and Alan Zundel. At the time of the award, our software was the most successful tech transfer project in BYU history.

2007 Utah Engineering Educator of the Year
Awarded by the Utah Chapter of the American Council of Engineering Companies.

2012 Karl G. Maeser Research and Creative Arts Award
The highest award given at BYU for research.

2016 AWRA Educator of the Year
Utah Section

Teaching

University Courses
I have taught the following courses:
CE En 101 - Introduction to Civil and Environmental Engineering
CE En 201 - Infrastructure
CE En 270 – Computer Methods in Civil Engineering
CE En 341 – Elementary Soil Mechanics
CE En 540 – Geo-Environmental Engineering
CE EN 544 - Seepage and Slope Stability Analysis
CE En 547 – Ground Water Modeling
CE En 641 – Advanced Soil Mechanics

Prof. Societies/ Committees

AWRA 2014 GIS in Water Resources Technical Program Chair
American Geophysical Union
National Ground Water Association
NGWA Groundwater Modeling Interest Group Committee
American Society of Civil Engineers
EWRI Groundwater Management Committee
EWRI Emerging Technologies Committee
International Editorial Board for the Journal of HydroInformatics
Editor of AQUAmundi Journal

Environmental Modeling Research Laboratory

Formerly the director of the Environmental Modeling Research Laboratory (EMRL). The EMRL was formed in 1998 and at one point was the largest research laboratory at BYU with 35 faculty-staff-students and $1.2-1.5M per year in externally funded research. Our primary research sponsors were the US Army Corps of Engineers, but we also received funding (both directly and indirectly) from the EPA, DOE, FHWA, and the NRC. In 2007 we moved the software development activities off-campus to a consulting and software development company called Aquaveo, LLC. We continue to do modeling-related research on-campus.

Hydroinformatics Laboratory

I am currently a member of the BYU Hydroinformatics Laboratory along with my BYU colleagues Jim Nelson and Dan Ames. We conduct research on hydroinformatics, big data, GIS, and web-based decision support. We work with several agencies, including NASA. We have about 25 graduate and undergraduate students and our lab is located in 406 EB.

Software

Through my research, I have directed the development of a computer program called the "Department of Defense Groundwater Modeling System" (GMS). GMS is a state-of-the-art three-dimensional environment for ground water model construction and visualization. It includes tools for site characterization including geostatistics and solid modeling of soil stratigraphy. It also includes interfaces to a large number of ground water models including MODFLOW, MODPATH, MT3DMS, SEAM3D, RT3D, FEMWATER, SEEP2D, and ADH. GMS has been designed using a conceptual model approach where model input is created in a grid independent fashion using GIS vector objects. The model discretization is then performed automatically. It also contains state-of-the-art tools for visualization of 3D model results. GMS is the most comprehensive and sophisticated groundwater modeling software available and is used by over 8000 organizations in over 100 countries.

Seminars/Short   I have taught approximately 75 seminars and short courses at various locations in the United

Courses   States and internationally (China, Korea, Australia, Germany). The course topics have included beginning and advanced ground water modeling, and computer simulation of natural attenuation and bio-remediation. The courses are sponsored by National Ground Water Association and Aquaveo.

External Research Grants

1. Automated Mesh Generation For the TABS-2 System, $19,000, 2/90 - 11/90, U.S. Army Engineer Waterways Experiment Station
2. A Geometry Pre-Processor for HEC-1 Employing Triangulated Irregular Networks, $20,048, 3/91 - 10/91, U.S. Army Engineer Waterways Experiment Station
3. Real-Time Visualization for the TABS-2 Modelling System, $14,123, 4/91 - 8/91, U.S. Army Engineer Waterways Experiment Station
4. An Investigation of X-Windows Interface Tools, $49,556, 1/92 - 8/92, U.S. Army Engineer Waterways Experiment Station
5. Descriptive Geometry and Solid Rendering, $24,000, 1/92 - 10/92, U.S. Army Engineer Waterways Experiment Station
6. An Investigation of Automated Pre-processing Schemes for TIN-Based Drainage Analysis, $34,750, 4/92-10/92, U.S. Army Engineer Waterways Experiment Station
7. A Comprehensive Graphical User Environment for Groundwater Flow and Transport Modeling, $246,526, 6/93-9/94, U.S. Army Engineer Waterways Experiment Station
8. An Integrated Surface Flow Modeling System, $131,848, 1/94-1/95, U.S. Army Engineer Waterways Experiment Station
9. Productivity and Management Tools for Groundwater Flow and Transport Modeling, $207,404, 5/94-4/95, U.S. Army Engineer Waterways Experiment Station
10. Enhanced Tools for Quality Control in Automated Groundwater Transport Modeling, $246,553, 1/95-12/95, U.S. Army Engineer Waterways Experiment Station
11. Visualization for Two-Dimensional Surface Runoff Modeling, $98,221, 1/95-10/95, U.S. Army Engineer Waterways Experiment Station
12. Visualization Tools for Two-Dimensional Finite Element Hydrologic Modeling, $93,933, 11/95-10/96, U.S. Army Engineer Waterways Experiment Station
13. A Graphical Environment for Multi-Dimensional Surface Water Modeling, $49,789, 3/96-9/96, U.S. Army Engineer Waterways Experiment Station
14. A Conceptual Modeling Approach to Pre-processing of Groundwater Models, $475,743, 11/95-11/97, U.S. Army Engineer Waterways Experiment Station
15. Hydrosystems Modeling, $2,458,083, 5/97-4/02, U.S. Army Engineer Waterways Experiment Station
16. Second Generation Hydroinformatics Research, $4,958,127. U.S. Army Engineer Research and Development Center.
17. Flux Calculations and 3D Visualization for the SCAPS Piezocone and GeoViz System, $34,931, U.S. Navy.
18. Development of modeling methods and tools for predicting coupled reactive transport processes in porous media under multiple scales. $949,000. US Dept. of Energy. 1/07-12/09.
19. CI-WATER: Cyberinfrastructure to Advance High Performance Water Resource Modeling, $3,435,873. National Science Foundation - EPSCoR. 9/11-8/14.
20. Comprehensive Streamflow Prediction and Visualization to Support Integrated Water Managment, $599,823. NASA SERVIR, 8/16-8/19.
21. Geospatial Information Tools That Use Machine-Learning to Enable Sustainable Groundwater Management in West Africa, $657,232. NASA SERVIR, 11/19-11/22.

Summary: PI or Co-PI on 20 projects totaling $14,772,715.

Peer-Reviewed Publications

1. Jones, Norman L., Stephen G. Wright, and David R. Maidment, "Watershed delineation with triangle-based terrain models," *ASCE Journal of Hydraulic Engineering*, October, 1990, pp. 1232-1251.
2. Jones, Norman L. and Stephen G. Wright, "Algorithm for smoothing triangulated surfaces," *ASCE Journal of Computing in Civil Engineering*, January, 1991, pp. 85-102.
3. Jones, Norman L. and Stephen G. Wright, "Solid modeling for site representation in geotechnical engineering," *Geotechnical Engineering Congress*, June, 1991, pp. 1021-1031.
4. Richards, D.R., Norman L. Jones, H. C. Lin, "Graphical innovations in surface water flow analysis," *First International Conference on Integrating Geographic Information Systems and Environmental Modelling*, Sept. 15-19, 1991, Boulder, Colorado.
5. Jones, Norman L. and D.R. Richards, "Mesh generation for estuarine flow modelling," *ASCE Journal of Waterway, Port, and Coastal Engineering*, Vol. 118, No. 6, November/December, 1992, pp. 599-614.

6. Jones, Norman L. and Stephen G. Wright, "Subsurface characterization with solid models," *ASCE Geotechnical Engineering Journal.*, Vol. 119, No. 11, November, 1993, pp. 1823-1839.

7. Nelson, James, Norman L. Jones, and A. Woodruff Miller, "Integrated hydrologic simulation with TINs," *Advances in Hydroscience and Engineering*, Volume 1, Sam S.Y. Wang, Ed., Proceedings of the First International Conference on Hydro-Science and Engineering, Washington, D.C., June 7-11, 1993, pp.571-578.

8. Jones, Norman L., and Takafumi Saito, "Flow animation techniques for two-dimensional hydrodynamic modeling," *Advances in Hydroscience and Engineering*, Volume 1, Sam S.Y. Wang, Ed., Proceedings of the First International Conference on Hydro-Science and Engineering, Washington, D.C., June 7-11, 1993, pp. 2091-2096.

9. Jones, Norman L., and E. J. Nelson, "Construction of TINs from borehole data," *Advances in Site Characterization: Data Acquisition, Data Management, and Data Interpretation*, ASCE Geotechnical Publication No. 37, 1993, pp. 13-26.

10. Nelson, J. E., Norman L. Jones, and A. Woodruff Miller, "An algorithm for precise drainage basin delineation," *ASCE Journal of Hydraulic Engineering*, Vol. 120, No. 3, March, 1994, pp. 298-312.

11. Jones, Norman L., and D. R. Richards, "A comprehensive modeling environment,"*Proceedings of the First International Conference on HYDROINFORMATICS*, Delft, the Netherlands, Sept. 19-23, 1994, pp. 317-322.

12. Nelson, E. J., and Norman L. Jones, "Reducing roundoff error in digital elevation data," *Journal of Hydrology*, Vol. 169, 1995, pp. 37-49.

13. Jones, Norman L., S. J. Owen, and E. C. Perry, "Plume characterization with natural neighbor interpolation," *GEOENVIRONMENT 2000*, ASCE Geotechnical Special Publication No 46, 1995, pp. 331-345.

14. James Nelson, A. Woodruff Miller, and Norman L. Jones, "A TIN based watershed delineation technique for both rural and urban runoff," *Water in the 21st Century: Conservation, Demand, and Supply, American Water Resources Assocation*, Salt Lake City, Utah, April 1995, pp. 643-652.

15. Owen, Steven J., Norman L. Jones, and Jeffrey P. Holland, "A comprehensive modeling environment for the simulation of groundwater flow and transport," *Engineering With Computers*, Dec., 1996, pp. 235-242.

16. Jones, Norman L., and R. J. Davis, "Three-Dimensional Characterization of Contaminant Plumes," 1996 Meeting of the Transportation Research Board, Washington, D.C., January 7-11, 1996.

17. Alan K. Zundel, and Norman L. Jones, "An integrated surface water modeling system," *Proceedings of the Second International Conference on HYDROINFORMATICS*, Zurich, Switzerland, Sept. 9-13, 1996.

18. Norman L. Jones, and David R. Richards, "A conceptual model approach to hydroinformatics," *Proceedings of the Second International Conference on HYDROINFORMATICS*, Zurich, Switzerland, Sept. 9-13, 1996.

19. David R. Richards, and Norman L. Jones, "A blueprint for hydroinformatic design of US Army hydrologic models," *Proceedings of the Second International Conference on HYDROINFORMATICS*, Zurich, Switzerland, Sept. 9-13, 1996.

20. Jones, Norman L., E.V. Edris, Jr., and M.J. Kennard, "Three-dimensional characterization of contaminant plumes using cone penetrometer data," *Proceedings of the Second International Conference on Environmental Geotechnics*, IS-Osaka '96, Nov. 5-8, 1996, Osaka, Japan.

21. Staten, Matthew L., and Norman L. Jones, "Local Refinement of Three-Dimensional Finite Element Meshes," *Engineering With Computers*, 1997, Vol. 13, pp. 165-174.

22. Jones, Norman L., E.V. Edris, Jr., "Calibration tools for hydroinformatics systems," *Proceedings of the Third International Conference on HYDROINFORMATICS*, Copenhagen, Denmark, Aug. 24-26, 1998.

23. Zundel, A.K., Demirbilek, Z., Fugal, A.L., N.L. Jones, "Automatic definition of two-dimensional finite element coastal models," *Proceedings of the Third International Conference on HYDROINFORMATICS*, Copenhagen, Denmark, Aug. 24-26, 1998.

24. Nelson, E.J., N.L. Jones, R.J. Berrett, "Adaptive tessellation method for creating TINs from GIS data," *ASCE Journal of Hydrologic Engineering*, Vol. 4, No. 1, January, 1999.

25. Jones, Norman L., A.M. Lemon, C. Talbot, " Integrating GIS Data with 3D Finite Element Groundwater Models," *Proceedings of the International Symposium 2000 on Groundwater IAHR*, Saitama, Japan, May 8-10, 2000.

26. Jones, Norman L., Michael J. Kennard, Alan K. Zundel, "Fast algorithm for generating sorted contour strings," *Computers and Geosciences*, Vol. 26, pp. 831-837, 2000.

27. Jones, Norman L., E. James Nelson and Colby T. Manwaring, "Managing temporal data in a comprehensive modeling environment," *Journal of Hydroinformatics*, Vol. 2, No. 2, pp. 105-112, 2000.

28. Jones, Norman L., Alan M. Lemon, and Fred T. Tracy, "A hybrid approach to flow net generation," *International Journal of Numerical and Analytical Methods in Geomechanics,* Vol. 25, pp. 1339-1349, Sept. 2001*.*

29. Jones, Norman L., Trevor J. Budge, Alan K. Zundel, Alan M. Lemon, "Generating MODFLOW grids from boundary-representation solid models," *Ground Water*, Vol. 40, No. 2, March–April 2002, pp. 194-200.

30. Jones, Norman L., R.J. Davis, W. Sabbah, "A comparison of 3D interpolation techniques for plume characterization," *Ground Water*, Vol. 41, No. 4, July-August 2003, pp. 411-419.

31. Lemon, A.M., N.L. Jones, "Building solid models from boreholes and user-defined cross-sections," *Computers and Geosciences*, Vol. 29, No. 5, June, 2003, pp 547-555.

32. Jones, N.L., 2002, "Using transition probability geostatistics with MODFLOW," *Calibration and Reliability in Groundwater Modelling: A Few Steps Closer to Reality* (Proceedings of ModelCARE'2002,Prague, Czech Republic, 17–20 June 2002). IAHS Publ. no. 277, pp. 359–364*.*

33. Jones, N.L., J.I. Green, and J.R. Walker, "Stochastic inverse modeling for capture zone analysis," *Groundwater Quality Modeling and Management Under Uncertainty,* Proceedings of the Symposium, EWRI Congress, June 23-26, 2003, Philadelphia, Pa., Srikanta Mishra, Ed., American Society of Civil Engineers, pp. 1-12.

34. Jones, Norman L., J.R. Walker, & S.F. Carle, "Hydrogeologic unit flow characterization using transition probability geostatistics," *Ground Water*, Vol. 43, No. 2, Mar-Apr 2005, pp. 285-289.

35. Wallace, R.M., A. Byrd, C. Butler, N. Jones, R. Jones, "Generic Model Data Format", *Proceedings of the European Simulation Interoperability Workshop 2005*, Toulouse France. June. (document # 05E-SIW-046).

36. Jones, Norman L., T.P. Clement, C.H. Hansen, "A Three-Dimensional Analytical Modeling System for Risk Assessment at Chlorinated Solvent Sites," *Ground Water*, Vol. 44, No. 5, July-August 2006, pp. 613-617.

37. R. Wallace, K. Pathak, J. P. Holland, D. Stuart, C. Butler, D. R. Richards, M. Fife, N. L. Jones and J. Harris, "Information infrastructure for integrated ecohydraulic and water resources modeling and assessment", *Journal of Hydroinformatics*, Vol. 8, No. 4, 2006, pp 317-333.

38. Strasberg G., D.R. Maidment, N.L. Jones, "*A geographic data model for representing ground water systems,*" Ground Water, Vol. 45, No. 4, July-August 2007, pp. 515-518.

39. Jones N.L., and G. Strassberg, "The Arc Hydro MODFLOW data model", *Water Resources Impact*, Vol. 10, Num 1, January 2008, pp. 17-19.

40. Williams, G, N. Jones, T. Winkel, A. Mayo, 2008, "Field description and multi-phase modeling of a naturally occurring inverted density groundwater interface," *Proceedings of the American Society of Civil Engineers (ASCE) Environmental and Water Resources Institute*, May 2008, Honolulu, HI.

41. Williams, G, N. Jones, T. Winkel, A. Mayo, 2008, "Field measurements and an osmotic conceptual model of a steady-state groundwater pressure ridge," *Proceedings of the American Society of Civil Engineers (ASCE) Environmental and Water Resources Institute*, May 2008, Honolulu, HI.

42. Jones N.L., J.R. Handy, R.M. Wallace, "Levee Analyst: A GIS-based levee modeling and management system," Proceedings of the Association of State Dam Safety Officials Annual Conference 2008, September 7-11, Indian Wells, California.

43. Gustavious P. Williams, Norman Jones, and Jeffrey Handy, "A Heuristic Algorithm for Optimal Alignment and Matching of Borehole Stratigraphy", *Proceedings of the ASCE Environmental and Water Resources Institute 2008 Conference*, Kansas City, Kansas, May 2009.

44. Jones, N., Lemon, A, Patton, R., "Automated well permitting in a coastal region using SEAWAT and ArcGIS", *SWIM21 - 21st Salt Water Intrusion Meeting*, Azores, Portugal, June 21-26, 2010, pp. 187-190.

45. Strassberg, G., Jones, N., "Arc Hydro Groundwater Data Model and Tools: Overview and Use Cases," AQUA mundi, Vol. 1, No. 2, December 2010, pp. 101-114.

46. Jones, N.L., M. Smilowitz, and D. Whitehead, "The Sacramento Regional Groundwater Model", *World Environmental & Water Resources Congress 2011*, May 22-26, Palm Springs, CA.

47. Jones, N., Wallace, R., Jones, R., Butler, C., Zundel, A. "Efficient Application Programming Interface for Multi-Dimensional Modeling Data", *Journal of Hydroinformatics*, Vol. 14, No 1., 2012, pp 1-12.

48. Whiteaker, T., N. Jones, G. Strassberg, A. Lemon, D. Gallup, "GIS-based Data Model and Tools for Creating and Managing Two-Dimensional Cross Sections," *Computers and Geosciences*, Vol 29, Feb 2012.

49. Christensen, Scott D., Michael Burns, Gil Strassberg, and Norman L. Jones. "A Web-Based Groundwater Mapping and Visualization Tool Using Google Earth." In *World Environmental & Water Resources Congress*. Duke Energy Convention Center, Cincinnati, OH, 2013.

50. Jones, Norman L., E. James Nelson, Gustavious P. Williams, Fred Ogden, David Tarboton, Steve Burian. " CI-WATER: Cyberinfrastructure to Advance High Performance Water Resource Modeling." In *World Environmental & Water Resources Congress*. Duke Energy Convention Center, Cincinnati, OH, 2013.

51. Latu, Kilisimasi, Nathan R. Swain, Scott D. Christensen, Norman L. Jones, James E. Nelson, and Gustavious P. Williams. "Essential GIS Technologies for Hydrologic Simulation Applications in Cloud Computing." In *World Environmental & Water Resources Congress*. Duke Energy Convention Center, Cincinnati, OH, 2013.

52. Jones, N. L., Lemon, A. M. and Kennard, M. J. (2013), Efficient Storage of Large MODFLOW Models. Ground Water. doi: 10.1111/gwat.12060

53. Jones, N., Nelson, J., Swain, N., Christensen, S., Tarboton, D. Dash, P. Tethys: A Software Framework for Web-Based Modeling and Decision Support Applications. In: Ames, D.P., Quinn, N.W.T., Rizzoli, A.E. (Eds.), Proceedings of the 7th International Congress on Environmental Modelling and Software, June 15-19, San Diego, California, USA. ISBN: 978-88-9035-744-2

54. Jones, N., Griffiths, T., Lemon, A., Kudlas, S. Automated Well Permitting in Virginia's Coastal Plain Using SEAWAT and GIS Geoprocessing Tools. In: Ames, D.P., Quinn, N.W.T., Rizzoli, A.E. (Eds.), Proceedings of the 7th International Congress on Environmental Modelling and Software, June 15-19, San Diego, California, USA. ISBN: 978-88-9035-744-2

55. Y. Fan, S. Richard, R. S. Bristol, S. E. Peters, S. E. Ingebritsen, N. Moosdorf, A. Packman, T. Gleeson, I. Zaslavsky, S. Peckham, L. Murdoch, M. Fienen, M. Cardiff, D. Tarboton, N. Jones, R. Hooper, J. Arrigo, D. Gochis, J. Olson and D. Wolock (2014), DigitalCrust – a 4D data system of material properties for transforming research on crustal fluid flow, *GeoFluids*, Article first published online: 7 OCT 2014 | DOI: 10.1111/gfl.12114.

56. Swain, N.R., K. Latu, S.D. Christensen, N.L. Jones, E.J. Nelson, D.P. Ames, G.P. Williams (2015). "A review of open source software solutions for developing water resources web applications." Environmental Modeling & Software 67: 108-117.

57. Jones, David, Norm Jones, James Greer, and Jim Nelson, "*A cloud-based MODFLOW service for aquifer management decision support,*" Computers and GeoSciences, Vol. 78, pp. 81-87, 2015.

58. Dolder, H., Jones, N., and Nelson, E. (2015). "Simple Method for Using Precomputed Hydrologic Models in Flood Forecasting with Uniform Rainfall and Soil Moisture Pattern." *J. Hydrol. Eng.,*10.1061/(ASCE)HE.1943-5584.0001232 , 04015039.

59. Fatichi, S., Vivoni, E.R., Ogden, F.L., Ivanov, V.Y., Mirus, B., Gochis, D., Downer, C.W., Camporese, M., Davidson, J.H., Ebel, B., Jones, N., Kim, J., Mascaro, G., Niswonger, R., Restrepo, P., Rigon, R., Shen, C., Sulis, M., and Tarboton, D. (2016). *An Overview of Challenges, Current Applications and Future Trends of Distributed Process-based Models in Hydrology*. Journal of Hydrology. Vol 537, 45-60. DOI:10.1016/j.jhydrol.2016.03.026

60. Snow, Alan D., Scott D. Christensen, Nathan R. Swain, E. James Nelson, Daniel P. Ames, Norman L. Jones, Deng Ding, Nawajish S. Noman, Cédric H. David, Florian Pappenberger, and Ervin Zsoter, 2016. *A High-Resolution National-Scale Hydrologic Forecast System from a Global Ensemble Land Surface Model*. Journal of the American Water Resources Association (JAWRA) 52(4):950–964, DOI: 10.1111/1752-

61. Perez, J. Fidel, Nathan R. Swain, Herman G. Dolder, Scott D. Christensen, Alan D. Snow, E. James Nelson, and Norman L. Jones, 2016. *From Global to Local: Providing Actionable Flood Forecast Information in a Cloud-Based Computing Environment*. Journal of the American Water Resources Association (JAWRA) 52(4):965–978. DOI: 10.1111/1752-1688.12392

62. Swain, N. R., S. D. Christensen, A. D. Snow, H. Dolder, G. Espinoza-Dávalos, E. Goharian, N. L. Jones, E. J. Nelson, D. P. Ames and S. J. Burian (2016). "A new open source platform for lowering the barrier for environmental web app development." Environmental Modelling & Software 85: 11-26.

63. Souffront Alcantara, Michael A.; Crawley, Shawn; Stealey, Michael J.; Nelson, E. James; Ames, Daniel P.; and Jones, Norm L. (2017) "Open Water Data Solutions for Accessing the National Water Model," Open Water Journal: Vol. 4 : Iss. 1 , Article 3.

64. Souffront Alcantara, Michael, C Kesler, M Stealey, J Nelson, D Ames, N Jones, 2017. Cyberinfrastructure and Web Apps for Managing and Disseminating the National Water Model, *Journal of the American Water Resources Association*, *JAWRA Journal of the American Water Resources Association* 54, no. 4 (2018): 859-871.

65. Christensen, Scott D., Nathan R. Swain, Norman L. Jones, E. James Nelson, Alan D. Snow, and Herman G. Dolder. "A Comprehensive Python Toolkit for Accessing High-Throughput Computing to Support Large Hydrologic Modeling Tasks." *JAWRA Journal of the American Water Resources Association* 53, no. 2 (2017): 333-343.

66. Nelson, E. J., Pulla, S. T., Matin, M. A., Shakya, K., Jones, N., Ames, D. P., Ellenberg, W.L., Markert, K.N., Hales, R. (2019). Enabling Stakeholder Decision-Making With Earth

Observation and Modeling Data Using Tethys Platform. *Frontiers in Environmental Science*, *7*. https://doi.org/10.3389/fenvs.2019.00148

67. Purdy, A. J., David, C. H., Sikder, M. S., Reager, J. T., Chandanpurkar, H. A., Jones, N. L., & Matin, M. A. (2019). An Open-Source Tool to Facilitate the Processing of GRACE Observations and GLDAS Outputs: An Evaluation in Bangladesh. *Frontiers in Environmental Science*, *7*. https://doi.org/10.3389/fenvs.2019.00155

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69. Evans, S.; Williams, G.P.; Jones, N.L.; Ames, D.P.; Nelson, E.J. Exploiting Earth Observation Data to Impute Groundwater Level Measurements with an Extreme Learning Machine. *Remote Sens.* 2020, *12*, 2044. https://doi.org/10.3390/rs12122044

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Books Manuals Reports

1. Jones, N.L., *FastTABS Reference Manual*, Engineering Computer Graphics Laboratory, Brigham Young University, 1992. 150 pp.
2. Jones, N.L., *FastTABS Tutorials*, Engineering Computer Graphics Laboratory, Brigham Young University, 1992. 85 pp.
3. Jones, N.L., D.R. Richards, *RMA-2 Primer*. , U.S. Army Engineer Waterways Experiment Station, 1993. 165 pp.
4. Jones, N.L., *GMS v1.0 Reference Manual*, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 1994, 300 pp.
5. Jones, N.L., *GMS v1.0 Tutorials*, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 1994, 175 pp.
6. Jones, N.L., *GMS v2.0 Reference Manual*, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 1996, 350 pp.
7. Jones, N.L., *GMS v2.0 Tutorials*, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 1996, 200 pp.
8. Jones, N.L., *GMS v2.1 Reference Manual*, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 1997, 425 pp.
9. Jones, N.L., *GMS v2.1 Tutorials*, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 1997, 230 pp.
10. Lin, Richards, Talbot, Yeh, Cheng, Cheng, Jones, *FEMWATER (version 2.0) : A Three-Dimensional Finite Element Computer Model for Simulating Density-Dependent Flow and Transport in Variably Saturated Media*. Technical Report CHL-97-12, U.S. Army Engineer Waterways Experiment Station, July 1997, 151 pp.
11. Jones, N.L., GMS v3.0 Reference Manual, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 1999, 584 pp.
12. Jones, N.L., GMS v3.0 Tutorials, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 1999, 261 pp.
13. *Jones, N.L., GMS v3.0 File Formats, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 1999, 94 pp.
14. *T.P. Clement, and N.L.Jones, RT3D Tutorials for GMS v3.0 Users, Battelle Pacific Northwest National Lab, Hanford, Washington, 1998, 99 pp.
15. Jones, N.L., SEEP2D Primer. Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 1999, 94 pp.
16. Richards, Lin, Cheng, Talbot, Jones, *Development of a multidimensional hydroinformatic system for simulating canal, overland, and groundwater flow in South Florida*, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi, 2000, 350 pp.
17. Jones, N.L., GMS v3.1 HTML Help Document, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 2000.
18. Jones, N.L., GMS v3.1 Tutorials, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 2000, 313 pp.
19. T.P. Clement, and N.L.Jones, RT3D Tutorials for GMS v3.1 Users, Environmental Modeling Research Laboratory, Brigham Young University, Provo, Utah, 2000, 97 pp.
20. N.L. Jones, Ground Water Modeling with GMS Training Manual, EMS-I, Provo, Utah, 2000.
21. N.L. Jones, Advance Ground Water Modeling with GMS Training Manual, EMS-I, Provo, Utah, 2000.
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