

## Biographical Sketch

### **WILLIAM D. GOSNOLD, JR.**

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**Professional Preparation:** West Georgia College, Physics, B.A., 1971  
Southern Methodist University, Geophysics, Ph.D., 1977

**Dissertation Title:** A model for uranium and thorium assimilation by intrusive magmas and crystallizing plutons through interaction with crustal fluids, 131 pp.

### **Appointments:**

Chair, UND Department of Geology and Geological Engineering 2004 -  
Interim Director, UND Office of Research and Program Development, UND 2001- 2004  
Professor, University of North Dakota, 1990- present  
Associate Professor, University of North Dakota, 1982-1990  
Assistant Professor, University of Nebraska at Omaha 1977-1982

### **Honors:**

Sigma Xi Award for Research, 1991  
University of North Dakota Faculty Achievement Award for Excellence in Research, 1991  
Chester Fritz Distinguished Professor, 2006

### **Professional Memberships:**

American Geophysical Union  
Geological Society of America  
Sigma Xi

### **Publications:**

#### **Climate Change –**

Heinle, Shannon, and Will Gosnold, Determining Terrain Effects on Subsurface Temperature Using Remote Sensing, Geol. Soc. Amer. Ann. Mtg., Abstracts with Programs, 2006

Gosnold, Will Xiquan Dong, Shannon Heinle, Jacek Majorowicz, Julie Popham, Rachel Robinson, Brad Rundquist, Paul Todhunter, Linking Borehole Temperatures to Air Temperatures, invited paper, European Geosciences Union Meeting, Vienna, 2006

Gosnold, Will and Xiquan Dong, Determination of Solar Cycle and Natural Climate Variation using both Surface Air/Soil Temperature and Thermal Diffusion Models, AGU Fall Meeting, Dec. 2005, San Francisco.

Shannon, Heinle and Will Gosnold, How Much do Terrain Effects Impact the Borehole Paleoclimate Data Set?, AGU Fall Meeting, Dec. 2005, San Francisco.

Jacek Majorowicz, Walter Skinner, Will Gosnold, and Jan Safanda, Measured and Simulated Transients of Temperature Logs - A Test of Borehole Paleoclimatology, AGU Fall Meeting, Dec. 2005, San Francisco.

Gosnold, Will, Jacek Majorowicz, Jan Safanda, Jan Szewczyk, 2005, Has Northern Hemisphere Heat Flow Been Underestimated? Joint Assembly, AGU, SEG, NABS and SPD/AAS, New Orleans, May 23-27, 2005.

- Wood, Shaun P., Gosnold, William D., and Majorowicz, Jacek, Testing the Assumptions of Borehole Paleoclimate Reconstructions, Abstracts with Programs - Geological Society of America, 2005, Vol. 37, Issue 5, pp. 13
- Gosnold, W.D., Jr., and S. Wood, 2005, Factors other than air temperatures significantly influence borehole paleoclimate data, GAC-MAC-CSPG-CSSS Annual Meeting, Halifax, NS, May 15-18.
- Todhunter, Paul E., Julie Popham, William D. Gosnold, Jr., 2005, Thermal Offset of Soil and Air Temperatures in the Great Plains of the United States: Implications for Borehole Climate Reconstruction. Joint Assembly, AGU, SEG, NABS and SPD/AAS, New Orleans, May 23-27, 2005. To be published in *EOS, Trans. Amer. Geophys. Union*
- Popham, Julie L., Xiquan Dong, and William D. Gosnold, Jr, 2005, The Impact of Cloud and Radiation on the Great Plains Climate Change During 1981-2003, Joint Assembly, AGU, SEG, NABS and SPD/AAS, New Orleans, May 23-27, 2005. To be published in *EOS, Trans. Amer. Geophys. Union*
- Majorowicz, J.; Skinner, W.; Gosnold, W.; Safanda, J., 2005, Recent climatic change - Evidence from repeated borehole temperature logs in the Canadian Prairie Provinces, European Geosciences Union, General Assembly 2005, Vienna, Austria, 24 - 29 April 2005
- Gosnold, W. D., Jr., J.A. Majorowicz, and S.P. Wood, Testing Borehole Paleoclimatology, New and Classical Applications of Heat Flow Studies, Aachen, Germany, Oct. 4-7, 2004
- Gosnold, W.D., Jr., J.A. Majorowicz, and S.P. Wood, A Multidisciplinary Analysis of the Cause of Climate Change, First International Mineralogical Days of Monaco, Sept. 15-17, 2004
- Gosnold, W. D., Jr., P. E. Todhunter, X. Dong, B. Rundquist, J. Majorowicz, D. D. Blackwell, A Multidisciplinary Approach to Assessing the Causal Components of Climate Change, *EOS, Trans. Amer. Geophys. Union* 2004
- Wood, S. P., W. D. Gosnold, Jr., J. Majorowicz, A Test of the Reliability of Borehole Paleoclimate Reconstruction, *EOS, Trans. Amer. Geophys. Union* 2004
- Todhunter, P. E., J. L. Popham, W. D. Gosnold, Jr., X. Dong, S. Wood, Long-Term Air-Soil Temperature Coupling at Fargo, North Dakota: Assessment of Borehole Climate Reconstruction Assumptions, , *EOS, Trans. Amer. Geophys. Union* 2004
- Popham, J. L., X. Dong, W. D. Gosnold, Jr., P. E. Todhunter, Solar Radiation and Climate Change in the Great Plains, *EOS, Trans. Amer. Geophys. Union* 2004
- Cermak, V., Bodri, L., Gosnold, W.D., and Jessop, A.M., Recent Climate History Stored in The Subsurface: Evidence from Repeated Temperature Logs, *POSTER EAE03-A-02117; CL19-1FR1P-1305; Nice, France, 2003*
- Schmidt, W. L., Gosnold, W.D., Jr., and Enz, J.W., A Decade of Air-ground Heat Exchange from Fargo, North Dakota, *Global and Planetary Change* 29: 311-325, 2001
- Gosnold, W.D., Jr., Climate Change, *McGraw-Hill Yearbook of Science and Technology* 2000, p. 71-73, 2000
- Harris, R. N., and Gosnold, W.D., Jr., Comparisons of borehole temperature-depth profiles and surface air temperatures in the northern plains of the USA, *Geophysical Journal International*, 138: 541-548, 1999
- Todhunter, Paul E., and Gosnold, William D., A comparison of the borehole and instrumented temperature records of climate warming at Wall, South Dakota, Abstracts, Annual Meeting - Association of American

Geographers, Vol. 1997, pp. 267, 1997

Gosnold, W.D., Jr., Todhunter, P.E., and Schmidt, W.L., The borehole temperature record of climate warming in the mid-continent of North America, *Global and Planetary Change*, 15: 33-45, 1997

Gosnold, W. D., Schmidt, W., Todhunter, P. E., Analyses of climate change based on borehole temperatures in high latitudes may contain a positive bias caused by a secular increase in precipitation, Abstracts with Programs - Geological Society of America, Vol. 27, Issue 6, pp. 207, 1995

Gosnold, William D., Jr. and Todhunter, Paul E., Analysis of the geothermal gradient as a method of paleoclimate reconstruction, *Eos, Transactions, American Geophysical Union*, Vol. 75, Issue 44, Suppl., pp. 76, 1994

Gosnold, W. D., Jr., Analysis of the climate record in borehole temperatures, *Eos, Transactions, American Geophysical Union*, Vol. 72, Issue 17, pp. 269, 1991

Gosnold, William D., Jr. and Bauer, Mike, Bore hole temperatures and the climate record in the mid-continent of North America, Abstracts with Programs - Geological Society of America, Vol. 23, Issue 5, pp. 341, 1991

Gosnold, W. D., Jr. and Bauer, M., The climate record in bore hole temperatures in the north central United States, *Eos, Transactions, American Geophysical Union*, October 23, Vol. 71, Issue 43, pp. 1597, 1990

Gosnold, W. D., Jr., The record of climate change in borehole temperatures in the Mid-continental United States Abstracts with Programs - Geological Society of America, Vol. 22, Issue 7, pp. 354, 1990

#### **Flood Frequency -**

Gosnold, William D., Jr., LeFever, Julie A., Todhunter, Paul E., and Osborne, Leon F., Jr., Rethinking Flood Prediction: Why the Traditional Approach Needs to Change, *Geotimes*. 45(5): 20-23, 2000

Gosnold, William D., Jr., The 1997 Grand Forks flood may be a precursor of larger floods during the next century Abstracts with Programs - Geological Society of America, Vol. 31, Issue 7, pp. 435, 1999

Gosnold, William D., Jr. LeFever, Richard D.; Boss, Stephen K.; Hartman, Joseph H., Flood frequency on the Red River of the north; can it be predicted? Abstracts with Programs - Geological Society of America, Vol. 30, Issue 7, pp. 169, 1998

#### **Geothermal Energy –**

Gosnold, W.D., Jr., and D. Merriam, 2006, Geothermal Energy: An overlooked energy resource in the midlands. Submitted to: *Natural Resources Research*

Gosnold, W.D., Jr., and D. Poochigian, Geothermal Energy is the Ethical Energy Choice of the Future, Proceedings – Sixth International Meeting, Heat Flow and the Structure of the Lithosphere, Bykov, Czech Republic, p. 42, 2006

Gosnold, Will, Geothermal prospects in the north central US, Geothermal Energy Generation in Oil and Gas Settings, Dallas, TX, <http://www.smu.edu/geothermal/Oil&Gas/presentations.htm> 2006

Gosnold, W.D., Jr., Stratabound geothermal resources of North Dakota and South Dakota, *Natural Resources Research*, 8: 177-192, 1999

Gosnold, William D., Jr., LeFever, Richard D.; Chu, Min; Crashell, John J.; Brekke, Jay, Stratabound geothermal resources in the northern Great Plains, *Geothermal Resources Council*, Vol. 14, Issue 1-2, pp. 675-681, 1990

- Gosnold, William D., Jr., Analysis of heat flow and groundwater flow in the South Dakota geothermal anomaly  
*Transactions - Geothermal Resources Council, Vol. 12, pp. 251-255, 1988*
- Gosnold, William D., Jr., Geothermal resource assessment in South Dakota, *Transactions - Geothermal Resources Council, Vol. 11, pp. 355-360, 1987*
- Gosnold, William D., Jr., Geothermal resources in the Williston Basin; North Dakota Transactions - Geothermal Resources Council, Vol. 8, pp. 431-436, 1984
- Gosnold, William D., Jr.; Eversoll, Duane A.; Carlson, Marvin P., Three years of geothermal research in Nebraska, Geothermal Direct Heat Program, Volume I State Coupled Resource Assessment Program. Ruscetta, Carl A., Ed., pp. 141-157, 1982
- Gosnold, William D., Jr., Geothermal resource maps and bottom hole temperature surveys, Transactions - Geothermal Resources Council, Vol. 6, pp. 23-26, 1982
- Gosnold, William D., Jr., and Eversoll, Duane A., Geothermal resources of Nebraska, 1982, U. S. Department of Commerce, National Oceanic and Atmospheric Administration, National Geophysical and Solar-Terrestrial Data Center, 1:500,000 scale map, 1982
- Gosnold, William D., Jr., Eversoll, Duane A.; Carlson, Marvin P., Geothermal investigations in Nebraska: Methods and results, Geothermal Direct Heat Program; Glenwood Springs technical conference proceedings; Volume 1, Ruscetta, Carl A. and Foley, Duncan Eds., pp. 187-204, 1981
- Gosnold, William D., Jr., and Eversoll, Duane A., Usefulness of heat flow data in regional assessment of low temperature geothermal resources with special reference to Nebraska, Transactions - Geothermal Resources Council, Vol. 5, pp. 79-82, 1981
- Gosnold, William D., Preliminary report on the geothermal resource potential of Nebraska, Transactions - Geothermal Resources Council, Vol. 4, pp. 45-48, 1980
- Gosnold, W. D., Heat flow and the geothermal regime of Nebraska and the Great, Proceedings of the Nebraska Academy of Sciences and Affiliated Societies, Issue 89, pp. 49, 1979

#### **Gravity –**

- Davids, Christina, and Gosnold, William D., Gravity survey of the Lake Saint Martin impact structure, southern Manitoba, Abstracts with Programs - Geological Society of America, Vol. 27, Issue 6, pp. 208, 1995
- Balde, Mamadou; Aiken, C. L. V.; Hare, Jennifer; Gosnold, William D.; Cates, Steve W. Kinematic GPS positioning of geophysical surveys; gravity survey of Ft. Berthold Indian Reservation, North Dakota SEG Annual Meeting Expanded Technical Program Abstracts with Biographies, Vol. 62, pp. 585-588, 1992
- Balde, M.; Aiken, C. L. V.; Ziegler, D. G.; Cates, Steve W.; Gosnold, W. D., Large scale, detailed gravity survey in North Dakota positioned using Global Positioning System (GPS) technology, Eos, Transactions, American Geophysical Union, April 23, Vol. 72, Issue 17, pp. 90, 1991
- Cates, S. W.; Aiken, Carlos L. V.; Ziegler, Daniel G.; Gosnold, W. D., High-accuracy gravity data used for rapid delineation of small, shallow aquifers in west-central North Dakota, Eos, Transactions, American Geophysical Union, April 23, Vol. 72, Issue 17, pp. 132, 1991
- Gosnold, W. D., Jr., Assessment of geothermal resources in Nebraska, Proceedings of the Nebraska Academy of

Sciences and Affiliated Societies, Issue 90, pp. 32, 1980

**Heat Flow -**

- Gosnold, W. D., Jr., Northern Hemisphere Heat Flow may Require Significant Reevaluation, Proceedings – Sixth International Meeting, Heat Flow and the Structure of the Lithosphere, Bykov, Czech Republic, p. 43, 2006
- Gosnold, W. D., Jr., and V. M. Hamza, Heat flow transects across the Cascades and Andes magmatic arcs, IASPEI, Santiago, Chile, 2005
- Gosnold, Will, Jacek Majorowicz, Jan Safanda, Jan Szewczyk, Has Northern Hemisphere Heat Flow Been Underestimated? Joint Assembly, AGU, SEG, NABS and SPD/AAS, New Orleans, May 23-27, *EOS, Trans. Amer. Geophys. Union*, 2005
- Blackwell, D. D., and M. Richards; *T. Lewis, J. Majorowicz, J-C Mareschal, and W. D. Gosnold, Jr., Eds.*, Geothermal Map of North America, AAPG, 2004.
- Kukkonen, I. T., Gosnold, W.D., Jr., and Safanda, J., Anomalously low heat flow density in eastern Karelia, Baltic Shield: A possible palaeoclimatic signature, *Tectonophysics*, 270: 235-249, 1998
- Gosnold, William D., Jr., Some diverse applications of heat flow data, *Eos, Transactions, American Geophysical Union*, Vol. 79, Issue 45, Suppl., pp. 838-839, 1998
- Gosnold, W. D., Jr., Core drilling as a means of testing hypotheses of the nature of coincident geological and geophysical features, Abstracts with Programs - Geological Society of America, April 1995, Vol. 27, Issue 3, pp. 52
- Gosnold, William D., Jr., Heat flow data from core holes at the Manson impact site, Abstracts with Programs - Geological Society of America, Vol. 26, Issue 7, pp. 403-404, 1994
- Gosnold, William D., Jr., An enigmatic heat source in the Great Plains, Abstracts with Programs - Geological Society of America, Vol. 25, Issue 6, pp. 144, 1993
- Gosnold, William D., Jr., and Sweeney, Jerry J., Heat flow in the Williston Basin, *Eos, Transactions, American Geophysical Union*, Vol. 73, Issue 14, Suppl., pp. 322, 1992
- Gosnold, W.D., Jr., Subsurface Temperatures in the Northern Great Plains, *Neotectonics of North America: Boulder, Colorado, Geological Society of America, Decade Map Volume 1*, 467-472, 1991
- Gosnold, W.D., Jr., Basin Scale Ground Water Flow and Advective Heat Flow: An Example from the Northern Great Plains, *Geothermics in Basin Analysis, Forester, A and Merriam, D. ed.s, Kluwer Academic/Plenum Press*. 99-116, 1999
- Morgan P., and Gosnold, W.D., Heat flow and the Thermal Regime of the Continental United States, Geophysical Framework of the United States, *Geol. Soc. Amer. Memoir 172*, 493-522, 1989
- Gosnold, William D., Jr., Redistribution of U and Th in shallow plutonic environments, *Geophysical Research Letters*, Vol. 14, Issue 3, pp. 291-294, 1987
- Gosnold, William D., Heat flow in the north central United States, *Eos, Transactions, American Geophysical Union*, Vol. 67, Issue 44, pp. 1238, 1986
- Gosnold, W. D., Jr., Heat flow and ground water flow in the Great Plains of the United States, *Journal of Geodynamics*, Vol. 4, Issue 1-4, pp. 247-264, 1985

- Gosnold, W. D., Heat flow and ground water movement in the Central Great Plains, Geohydrology of the Dakota Aquifer, Jorgensen, D. G., and Signor, D. C., U. S. Geol. Surv., Cent. Midwest. RASA, pp. 176-181, 1984
- Gosnold, William D., Heat flow studies in sedimentary basins, Transactions, American Geophysical Union, Vol. 65, Issue 45, pp. 1115, 1984
- Majorowicz, Jacek A., Gosnold, William, Jessop, Alan, Interpretation of temperature-depth logs from experimental boreholes in Manitoba and Saskatchewan, Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting, 1994, Vol. 19, pp. 70
- Shoberg, T., and Gosnold, W. D., Jr., A thermal model of the Elk Creek Carbonatite, Proceedings of the Nebraska Academy of Sciences and Affiliated Societies, Issue 90, pp. 33, 1980
- Gosnold, William D., Heat flow studies in sedimentary basins, Eos, Transactions, American Geophysical Union, Vol. 65, Issue 45, pp. 1115, 1984
- Gosnold, W., Heat flow as an indicator of regional ground-water migration in Great Plains, AAPG Bulletin, Vol. 68, Issue 4, pp. 4891, 1984
- Gosnold, W. D., and Eversoll, D. A. , A heat flow anomaly in the Great Plains, Eos, Transactions, American Geophysical Union, Vol. 63, Issue 45, pp. 1091, 1982
- Gosnold, W. D., Jr., Becker, D. J., and Eversoll, D., A New heat flow data from Nebraska, Eos, Transactions, American Geophysical Union, Vol. 62, Issue 45, pp. 1054, 1981
- Gosnold, William D., Jr., Preliminary heat flow data from Nebraska, Eos, Transactions, American Geophysical Union, Vol. 61, Issue 48, pp. 1193-1194, 1980
- Becker, D. and Gosnold, W. D., Jr., Use of the finite difference method to predict subsurface temperatures, Proceedings of the Nebraska Academy of Sciences and Affiliated Societies, Issue 90, pp. 31, 1980
- Gosnold, W. D., Jr., A hypothesis to explain the vertical distribution of heat production in the continental crust, Eos, Transactions, American Geophysical Union, Vol. 59, Issue 4, pp. 392, 1978
- Petroleum Formation –**
- Gosnold, William D., Jr., Applications of borehole-temperature measurements, *in* Petroleum systems of sedimentary basins in the southern Midcontinent, 2000 symposium. Johnson, K. S., and [editor]; Merriam, D. F., Eds., pp. 195, 2001
- Gosnold, W. D., Jr. , Lefever, R. D.; Craschel, J. J., Thermal history of Bakken Shale in Williston Basin, AAPG Bulletin, Vol. 73, Issue 12, pp. 1491, 1989
- Gosnold, W. D.; Cron, J.; Lambrecht, J.; Pederson, C.; Solheim, J.; Wetzel, M., Comparison of thermal profiles and thermal history models for the Anadarko, Big Horn, Denver, Michigan and Williston basins. Proc. N.D. A. S., Vol. 43, pp. 47, 1989
- Gosnold, William D., Jr., and Huang, Y. C., Factors determining the thermal history of a continental basin, *Fifth international Williston Basin symposium*, Carlson, C.G, and Christopher, J.E., Eds., *Special Publication - Saskatchewan Geological Society, Vol. 9, pp. 17-21*, 1987
- Gosnold, William D., Jr., Huang, Yue-Chain; Anderson, Douglas, Thermal parameters in analysis of continental basins, Abstracts with Programs - Geological Society of America, Vol. 19, Issue 7, pp. 680, 1987

Gosnold, W. D. and Fischer, D. W., Heat flow studies in sedimentary basins, *in* Thermal modeling in sedimentary basins. Burrus, J., Ed., Vol. 44, pp. 199-217, 1986

Gosnold, William D. and Fischer, David W., Heat flow and geothermal studies in the Great Plains, Interstate Oil Compact Commission Committee Bulletin, Vol. 27, Issue 2, pp. 19-26, 1985

Gosnold, William D., Jr., Factors in determining the thermal history of a continental basin, West Virginia Geological and Economic Survey, Vol. 38, pp. 24, 1986

Gosnold, William D., and Fischer, D. W., Heat flow in geophysical exploration of sedimentary basins, AAPG Bulletin, Vol. 69, Issue 5, pp. 849, 1985

#### **Tectonics –**

Gosnold, W. D. Jr., and S. L. de Silva, Heat Flow Models of the Andean Volcanic Arc, Proceedings – Sixth International Meeting, Heat Flow and the Structure of the Lithosphere, Bykov, Czech Republic, p. 44, 2006

de Silva, Shanaka L., and William D. Gosnold, Episodic construction of batholiths: insights from the spatiotemporal development of an ignimbrite flare-up, submitted to Journal of Volcanology and Geothermal Research

Will Gosnold and Shan de Silva, Subduction Tectonics, Magmatism and Surface Heat Flow in the Andean Arc, Geological Society of America Annual Meeting, Oct. 2005, Salt Lake City.

Shan de Silva and Will Gosnold, Thermomechanical Modeling of Ignimbrite Flare-Ups, AGU Fall Meeting, Dec. 2005, San Francisco.

Gosnold, William D., Jr. and LeFever, Richard D., Did global climate change in the Late Cretaceous cause a decline in global sea level throughout the Tertiary? Abstracts with Programs - Geological Society of America, Vol. 32, Issue 7, pp. 145, 2000

Gosnold, William David, Jr., A model for uranium and thorium assimilation by intrusive magmas and crystallizing plutons through interaction with crustal fluids, 131 pp., 1976

Gosnold, Will, A magmatic heat source for granulite facies metamorphism in the English River Subprovince (ERSP), western Ontario, Abstracts with Programs - Geological Society of America, Vol. 21, Issue 6, pp. 182, 1989

Gosnold, William D., Jr., Heat flow anomalies and the Mohorovicic discontinuity, Abstracts with Programs - Geological Society of America, Vol. 18, Issue 6, pp. 618-619, 1986

Chipera, Steve C. Baumann, Rodney M.; Robinson, Scott E.; Perkins, Dexter, III; Gosnold, William D., Archean tectonism; an example from western Ontario, Abstracts with Programs - Geological Society of America, Vol. 16, Issue 6, pp. 469-470, 1984

Gosnold, W. D., Jr., A convenient history of disturbed zones in the western Cordillera, Transactions, American Geophysical Union, Vol. 65, Issue 16, pp. 285, 1984