

# Nathan L. B. Bangs

## ADDRESS

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## EDUCATION

B.A. Williams College, 1983, Geology and Physics  
M.A. Columbia University, 1986, Marine Geophysics  
M. Phil. Columbia University, 1987, Marine Geophysics  
Ph.D. Columbia University, 1991, Marine Geophysics

## PROFESSIONAL POSITIONS

2007- Lecturer, Department of Geological Science, University of Texas, Austin, TX  
2002- Senior Research Scientist, Institute for Geophysics, University of Texas, Austin, TX  
1998-02 Research Scientist, Institute for Geophysics, University of Texas, Austin, TX  
1992-98 Research Associate, Institute for Geophysics, University of Texas, Austin, TX  
1991-92 Post-Doctoral Fellow, Institute for Geophysics, University of Texas, Austin, TX  
1990-91 Post-Doctoral Research Scientist, Lamont-Doherty Geological Observatory, Columbia University, Palisades, New York  
1983-90 Graduate Research Assistant, Columbia University, New York, New York

## GEOPHYSICAL EXPERIENCE

<i>S/N Nordic Explorer</i>	PGS Cruise 2006020 (Co-Chief Scientist)	3-D imaging of the Kumano Basin- NanTroSEIZE Site Survey April-May, 2006
<i>R/V Ewing</i>	Cruise EW0208 (Co-Chief Scientist)	Shear-wave investigation of Hydrate Ridge August-September, 2002
<i>JOIDES Resolution</i>	Leg 204	Hydrate Ridge Logging While Drilling, July, 2002
<i>JOIDES Resolution</i>	Leg 196	Nankai Trough Logging While Drilling, May, 2001
<i>R/V Thompson</i>	Cruise TTN112 (Co-Chief Scientist)	3-D Seismic Imaging of an Active Margin Hydrate System Oregon Continental Margin, June-July, 2000
<i>R/V Ewing</i>	Cruise 9907/08 (Co-Chief Scientist)	US-Japan Collaborative 3-D Seismic Experiment, Nankai Trough, June – August, 1999
<i>R/V Ewing</i>	Cruise 9803 (Chief Scientist)	Lesser Antilles Subduction Zone Backstop Seismic Experiment, March, 1998
<i>JOIDES Resolution</i>	Leg 171A	Barbados Ridge Logging While Drilling, January, 1997
<i>R/V Ewing</i>	Cruise 9409	Pacific to Bering Shelf Deep Seismic Experiment, July, 1994
<i>R/V Ewing</i>	Cruise 9207	Barbados Ridge 3-D Seismic Survey, June 1992
<i>JOIDES Resolution</i>	Leg 141	Chile Margin Triple Junction, Nov. 1991
<i>RRS Darwin</i>	Cruise 36/88	Investigation of Tectonics and Sedimentation of Chile Ridge, Dec. 1988
<i>R/V Conrad</i>	Cruise 2901	Chile Ridge/Chile Trench Geophysical Survey, Jan. 1988
<i>R/V Conrad</i>	Cruise 2604	Deformational Processes in the Lesser Antilles Subduction Zone, April 1985
<i>R/V Conrad</i>	Cruise 2312	ATT North Atlantic Cable Survey, July 1984

## COMMUNITY SERVICE

ODP-Science Steering and Evaluation Panel (Interior), 1997 - 2000  
Joint Oceanographic Institutions - United States Science Advisory Committee (JOI-USSAC), 2001 – 2004  
IODP-Site Survey Panel, 2006 – 2009  
Margins Steering Committee, 2007 - 2010

## MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Geophysical Union (AGU) Geological Society of America (GSA)

## **PUBLICATIONS (excluding abstracts)**

### **2007**

- M. Studer, Moore, G. F., P. Costa-Pisani, and N. L. Bangs, Structural restoration and application of dynamic coulomb wedge theory to the Nankai trough accretionary wedge toe, to be submitted to JGR 8-07.
- Moore, G. F., N. L. Bangs, A. Taira, S. Kuramoto, E. Pangborn, H. J. Tobin, How Three-dimensional splay fault geometry fosters tsunami generation, *Science*, in final review.
- Pecher, I. A., B. Milkereit, A. Sakai, M. Sen, N. L. Bangs, J.-W. Huang, Vertical Seismic Profiles, SEG volume on Gas Hydrates, in final revision 8-07.
- Moore G.F., N.L. Bangs, T. Yoro H. Tanaka, Commercial 3D seismic survey images Nankai subduction complex south of Japan, submitted to EOS, 1/07.
- Kumar, D., M. K. Sen, and N. L. Bangs, Gas hydrate concentration from multi-component seismic reflection data from Hydrate Ridge, JGR, in press 1/07.
- Johnson, J.E., Goldfinger, C., Bangs, N.L., and Tréhu, A.M., Structural vergence variation and clockwise block rotation in the Hydrate Ridge region, Cascadia accretionary wedge offshore Oregon, *Tectonics*, in revision 2007.
- K. Brown, N. Bangs, S. Schwartz, Report on MARGINS Interdisciplinary Mini-Workshop at AGU 2006, Margins Newsletter, 18, Spring, 2007

### **2006**

- Kumar D., M. K. Sen, N. L. Bangs, C. Wang, I. Pecher (2006), Seismic anisotropy at Hydrate Ridge, *Geophys. Res. Lett.*, 33, L01306, doi:10.1029/2005GL023945.
- Kumar, D., M. K. Sen, and N. L. Bangs, Seismic characteristics of gas hydrates at Hydrate Ridge, *The Leading Edge*, 25, 616 – 619, 2006.
- Bangs, N. L. B., S. P. S. Gulick, T. H. Shipley, Seamount subduction erosion in the Nankai Trough and its potential impact on the seismogenic zone, *Geology*, 34, 701 - 704, 2006.
- Tréhu, A.M., Bangs, N.L., and Guerin, G., Near-offset vertical seismic experiments during Leg 204. In Tréhu, A.M., Bohrmann, G., Torres, M.E., and Colwell, F.S. (Eds.), *Proc. ODP, Sci. Results*, 204 [Online]. Available from World Wide Web: [http://www-odp.tamu.edu/publications/204\\_SR/120/120.htm](http://www-odp.tamu.edu/publications/204_SR/120/120.htm), 2006.
- Bangs, N. L., “Earthquake genesis along the Nankai Trough”, *Imaging Earth History Beneath the Ocean Floor*, NSF Publication, 2006.
- Nedimović, M. R. and N. L. Bangs, “Megathrust seismic hazards by reflection mapping”, *Imaging Earth History Beneath the Ocean Floor*, NSF Publication, 2006.
- Johnson, J. E., C. Goldfinger, A. M. Tréhu, N. L. B. Bangs, M. E. Torres and J Chevallier, North-south variability in the history of deformation and fluid venting across Hydrate Ridge, Cascadia Margin,

In Tréhu, A.M., Bohrmann, G., Torres, M.E., and Colwell, F.S. (Eds.), Proc. ODP, Sci. Results, 204 [Online]. Available from World Wide Web: [http://www-odp.tamu.edu/publications/204\\_SR/120/120.htm](http://www-odp.tamu.edu/publications/204_SR/120/120.htm), 2006.

Chevallier, J., A. M Tréhu, N. Bangs, J. Johnson, J. Meyer, Seismic sequence stratigraphy and tectonic evolution of southern Hydrate Ridge, In Tréhu, A.M., Bohrmann, G., Torres, M.E., and Colwell, F.S. (Eds.), Proc. ODP, Sci. Results, 204 [Online]. Available from World Wide Web: [http://www-odp.tamu.edu/publications/204\\_SR/120/120.htm](http://www-odp.tamu.edu/publications/204_SR/120/120.htm), 2006.

Musgrave, R. J., N. L. Bangs, E. Gràcia, J. C. Larrasoàna, J. A. Hollamby, and M. E Vega, A rock-magnetic record of the upward migration of the gas hydrate stability zone, *Geology*, 34, 117-120, 2006.

## 2005

Bangs, N., and the Nankai 3-D working group, The 3-D architecture of the Nankai Trough accretionary wedge and the development of the seismogenic zone, *Margins Newsletter*, 14, 2005.

Tsuji, T., T. Noguchi, H. Niino, T. Matsuoka, Y. Nakamura, H. Tokuyama, S. Kuramoto, N. Bangs, Two-Dimensional Mapping of Microstructures in the Kuroshio Current Using Seismic Reflection Data, *Geophys. Res. Lett.*, 14, L14609, doi:10.1029/2005GL023095, 2005.

Johnson, J. E., C. Goldfinger, N. L. B. Bangs, A. M Tréhu, and J. Chavallier, Structural vergence variation and clockwise block rotation in the Cascadia accretionary wedge, offshore Oregon, *Tectonics* (submitted 1/05).

Bangs, N. L. B., R. J. Musgrave, A. M. Tréhu, Upward Shifts in the South Hydrate Ridge Gas Hydrate Stability Zone Following Post-Glacial Warming, Offshore Oregon, *Jour. Geophys. Res.* 110, B3, B03102, 10.1029/2004JB003293, 2005.

Gulick, S. P. S., N. L. B. Bangs, and the Leg 196 scientific party, Negative-polarity at the frontal thrust, is free gas the culprit?: Insights from Nankai accretionary prism off Cape Muroto using seismic-logging integration, In Mikada, H., Moore, G.F., Taira, A., Becker, K., Moore, J.C., and Klaus, A. (Eds.), *Proc. ODP, Sci. Results*, 190/196 [Online], 2004. Available from World Wide Web: <http://www-odp.tamu.edu/publications/190196SR/353/353.htm>.

Bangs, N.L.B., and Gulick, S.P.S., 2005. Physical properties along the developing décollement in the Nankai Trough: inferences from 3-D seismic reflection data inversion and Leg 190 and 196 drilling data. In Mikada, H., Moore, G.F., Taira, A., Becker, K., Moore, J.C., and Klaus, A. (Eds.), *Proc. ODP, Sci. Results*, 190/196 [Online]. Available from World Wide Web: <http://www-odp.tamu.edu/publications/190196SR/354/354.htm>.

Tsuji, T, Y. Nakamura, H. Tokuyama, T. Matsuoka, Y. Yamada, S. Kuramoto, N. Bangs, and T. Ulrych, Initiation of the plate boundary slip and the growth of the accretionary prism in Nankai Trough, *Geophys. Res. Lett.*, 11, L12306, 2004GL021861, 2005.

## 2004

Tréhu, A. M., P. B. Flemings, N. L. Bangs, J. Chevallier, E. Gràcia, J. E. Johnson, C.-S. Liu, X. Liu, M. Riedel, M. E. Torres, Feeding methane vents and gas hydrate deposits at south Hydrate Ridge, *Geophysical Research Letters*, 31, L23310, doi:10.1029/2004GL021286, 2004.

Gulick, S. P. S., N. L. Bangs, T. H. Shipley, Y. Nakamura, G. F. Moore, and S. Kuramoto, 3-D architecture of the Nankai accretionary prism's imbricate thrust zone off Cape Muroto, Japan: En

echelon thrust accommodation of along strike stress regime changes, *Jour. Geophys. Res.*, 109, B02105, doi:10.1029/2003JB002654, 2004.

Bangs, N. L., T. Shipley, S. Gulick, G. Moore, S. Kuromoto, and Y. Nakamura, Evolution of the Nankai Trough décollement from the trench into the seismogenic zone: Inferences from three-dimensional seismic reflection imaging, *Geology*, 32, 4, 273–276, 2004.

Tréhu, A.M., G. Bohrmann, F.R. Rack, T.S. Collett, D.S. Goldberg, P. E. Long, A.V. Milkov, M. Riedel, P. Schultheiss, M.E. Torres, N.L. Bangs, S.R. Barr, W.S. Borowski, G.E. Claypool, M.E. Delwiche, G.R. Dickens, E. Gracia, G. Guerin, M. Holland, J.E. Johnson, Y-J. Lee, C-S. Liu, X. Su, B. Teichert, H. Tomaru, M. Vanneste, M. Watanabe, J.L. Weinberger, Three-dimensional distribution of gas hydrate beneath the seafloor: constraints from ODP Leg 204, *EPSL*, 222, 845–862, 2004.

Heffernan, A.S., Moore, J.C., Bangs, N.L., Moore, G.F., and Shipley, T.H., in press. Initial deformation in a subduction thrust system: polygonal normal faulting in the incoming sedimentary sequence of the Nankai subduction zone, southwestern Japan, application to the exploration of sedimentary basins. In Davies, R.J., et al. (Eds.), *3D Seismic Technology: Application to the Exploration of Sedimentary Basin*. Geol. Soc. London Memoir, 29, 143-148, 2004.

## 2003

Bangs, N., Geophysical Site Characterization and Needs (GeoSCAN) Workshop, JOI/USSAC Newsletter, v. 16, n. 2, 22–23, 2003.

Christeson, G. L., N. L. Bangs, and T. H. Shipley, Deep Structure of an Island Arc Backstop, Lesser Antilles Subduction Zone, *J. Geophys. Res.*, 108(B7), 2327, doi:10.1029/2002JB002243, 2003.

Bangs, N. L., G. L. Christeson, and T. H. Shipley, The role of the island arc backstop in shaping the Lesser Antilles subduction zone, submitted to *J. Geophys. Res.*, 108(B7), 2358, doi:10.1029/2002JB002040, 2003.

## 2002

Tréhu, A., M., N.L. Bangs, M.A. Arsenault, G. Bohrmann, C. Goldfinger, J.E. Johnson, Y. Nakamura, M.E. Torres, Complex subsurface plumbing beneath the southern Hydrate Ridge, Oregon continental margin, from high-resolution 3D seismic reflection and OBS data, *Fourth Int. Conf. Gas Hydrates*: Yokohama, Japan, 19023, 90-96, 2002.

Lizarralde, D., W. S. Holbrook, S. McGeary, N. Bangs, and J. Diebold, Crustal Construction of a Volcanic Arc, Wide-Angle Seismic Results from the Western Alaska Peninsula, *J. of Geophys. Res.*, 107,8, 2002.

DiLeonardo, C.G., Moore, J.C., Nissen, S. and Bangs, N.L., 2002. Control of internal structure and fluid-migration pathways within the Barbados Ridge décollement zone by strike-slip faulting: Evidence from coherence and three-dimensional seismic amplitude imaging. *GSA Bulletin*, 114(1): 51-63.

## 2001

Moore, G.F., Taira, A., Bangs, N.L., Kuramoto, S., Shipley, T.H., Alex, C.M., Gulick, S.S., Hills, D.J., Ike, T., Ito, S., Leslie, S.C., McCutcheon, A.J., Mochizuki, K., Morita, S., Nakamura, Y., Park, J.O.,

Taylor, B.L., Toyama, G., Yagi, H., and Zhao, Z., 2001, Data report: Structural setting of the Leg 190 Muroto transect. In Moore, G.F., Taira, A., Klaus, A., et al., Proc. ODP, Init. Repts., 190, 1-14 [CD-ROM]. Available from: Ocean Drilling Program, Texas A&M

## 2000

Zhao, Z., G. F. Moore, N. L. Bangs, and T. H. Shipley, Spatial variations of the decollement/protodecollement zone and their implications: A 3-D seismic inversion study of the northern Barbados accretionary prism, *Island Arc*, 9, 219-236, 2000.

Shipley, T.H., Bangs, N.L. and Henning, A.T., Sediment Velocity Estimation Using Iterative 3-D Migrations of Short Offset Seismic Reflection Data in Deep Water, *Marine Geophysical Researches*, 20, 479-494, 2000.

## 1999

Shipley, T. H., N. L. Bangs, and G. F. Moore, Shallow aseismic portion of the Barbados plate boundary, *Proc., Workshop on Recurrence of Great Interplate Earthquakes and Its Mechanism*, Sci. and Tech. Agency, Kochi, Japan, 91-96, 1999

Bangs, N. L., T. H. Shipley, J. C. Moore, and G. F. Moore, Fluid accumulation and channeling along the northern Barbados Ridge décollement thrust, *J. Geophys. Res.*, 104, 20, 399 - 20,414, 1999.

Holbrook, S. W., D. Lizarralde, S. McGeary, N. Bangs, Structure and composition of the Aleutian Island Arc and implications for continental crustal growth, *Geology*, 27, 31-34, 1999.

## 1998

Moore, J. C, A Klaus, N L Bangs, B A Bekins, C J Buecker, W Brueckmann, S N Erickson, O Hansen, T Horton, P Ireland, C O Major, G F Moore, S Peacock, S Saito, E J Sreaton, Elizabeth, J W Shimeld, P H Stauffer, T Taymaz, P A Teas, T Tokunaga, Consolidation patterns during initiation and evolution of a plate-boundary decollement zone; northern Barbados accretionary prism, *Geology (Boulder)*, 26 (9), p. 811-814, 1998.

## 1997

Bangs, N. L., and S. C. Cande, Episodic development of a convergent margin inferred from structures and processes along the Southern Chile margin, *Tectonics*, 16, 489 - 503, 1997.

## 1996

Brown, K.M., N.L. Bangs, P. Froelich, and K. Kvenvolden, The nature, distribution, and origin of gas hydrate in the Chile Triple Junction region, *Earth and Planetary Science Letters*, 139, 471-483, 1996.

Bangs, N. L., T. H. Shipley, and G.F. Moore, Elevated fluid pressure and fault zone dilation inferred from seismic models of the northern Barbados Ridge décollement, *J. of Geophys. Res.*, 101, 627-642, 1996.

## 1995

Moore, G.F., Z. Zhao, T.H. Shipley, N. Bangs, and J.C. Moore, Structural setting of the Leg 156 area, Northern Barbados Ridge accretionary prism: *In* Shipley, T. H., Ogawa, Y., Blum, P., et al., *Proceedings Ocean Drilling Program Init. Repts.*, v. 156, College Station, Texas (Ocean Drilling Program), 13-27, 1995.

Bangs, N.L. and K.M. Brown, Regional heat flow in the vicinity of the Chile triple junction constrained by the depth of the bottom simulating reflection, *In* Lewis, S.D., Behrmann, J.H., Musgrave, R.J., and Cande, S.C. (Eds.), *Proc. ODP, Sci. Results*, 141: College Station, TX (Ocean Drilling Program), 253-258, 1995.

Brown, K. M., and N.L. Bangs, Thermal regime of the Chile Triple Junction: Constraints provided by downhole temperature measurements and gas hydrate distribution, *In* Lewis, S.D., Behrmann, J.H., Musgrave, R.J., and Cande, S.C. (Eds.), *Proc. ODP, Sci. Results*, 141: College Station, TX (Ocean Drilling Program), 259-275, 1995.

Bangs, N.L.B., D.S. Sawyer and X. Golovchenko, The cause of the bottom-simulating reflection in the vicinity of the Chile Triple Junction, *In* Lewis, S.D., Behrmann, J.H., Musgrave, R.J., and Cande, S.C. (Eds.), *Proc. ODP, Sci. Results*, 141: College Station, TX (Ocean Drilling Program), 243-252, 1995.

Brown, K. M., N. Bangs, K. Marsaglia, P. N. Froelich, Y. Zheng, B. M. Didyk, D. Prior, E.L. Richford, M. Torres, V. B. Kurnosov, N. Lindsley-Griffin, S. Osozawa, and A. Waseda, A summary of ODP Leg 141 hydrogeologic, geochemical, and thermal results, *In* Lewis, S.D., Behrmann, J.H., Musgrave, R.J., and Cande, S.C. (Eds.), *Proc. ODP, Sci. Results*, 141: College Station, TX (Ocean Drilling Program), 363-372, 1995.

## **1994**

Behrmann JH, Lewis SD, Cande SC, Musgrave R, Bangs N, Boden P, Brown K, Collombat H, Didenko AN, Didyk BM, Froelich PN, Golovchenko X, Forsythe R, Kurnosov V, Lindsley Griffin N, Marsaglia K, Osozawa S, Prior D, Sawyer D, Scholl D, Spiegler D, Strand K, Takahashi K, Torres M, Vegafandez M, Vergara H, Wasada A, Tectonics and Geology of Spreading Ridge Subduction at the Chile Triple Junction - A Synthesis of Results from Leg-141 of the Ocean Drilling Program, *Geologische Rundschau*, 83 (4): 832-852, 1994.

Shipley, T.H., G.F. Moore, N.L. Bangs, J.C. Moore, and P.L. Stoffa, Seismically inferred dilatancy distribution, northern Barbados Ridge décollement: Implications for fluid migration and fault strength, *Geology*, 22, 411-414, 1994.

Sawyer, D. S., N. L. Bangs, and X. Golovchenko, Deconvoluting ODP Temperature Logging Tool Data to Improve Borehole Temperature Estimates: Chile Triple Junction, *J. Geophys. Res.*, 99(B6), 11,995-12,003, 1994.

## **1993**

Bangs, N.L.B., D.S. Sawyer, and X. Golovchenko, Free gas at the base of the gas hydrate zone in the vicinity of the Chile Triple Junction, *Geology*, 21, 905-908, 1993.

## **1992**

Bangs, N.L.B., S.C. Cande, S.D. Lewis, and J. J. Miller, Structural framework of the Chile margin at the Chile Ridge collision zone: *In* Behrmann, J.H., S.D. Lewis, R. J. Musgrave et al., *Proceedings Ocean Drilling Program Init. Repts.*, v. 141, College Station, Texas (Ocean Drilling Program), 11-21, 1992.

## **1991**

Bangs, N. and G.K. Westbrook, Seismic modeling of the décollement zone at the base of the Barbados Ridge accretionary complex, *J. of Geophys. Res.*, 96, 3853-3866, 1991.

## **1990**

Bangs, N., G.K. Westbrook, J.W. Ladd, P. Buhl, Seismic velocities from the Barbados Ridge Complex: Indicators of high pore-fluid pressure in an accretionary complex, *J. of Geophys. Res.*, 95, 8767 - 8782, 1990.

## **1988**

Westbrook, G.K., J.W. Ladd, P. Buhl, N. Bangs, and G. Tiley, Cross section of an accretionary wedge: Barbados Ridge Complex, *Geology*, 16, 631-635, 1988.