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EDUCATION

- B.S., Physics, Yale University, New Haven, CT (USA), 1977
- Ph.D., Geophysical Sciences, The University of Chicago, Chicago, IL (USA), 1981

EMPLOYMENT HISTORY

- Lamont Postdoctoral Fellow, Lamont-Doherty Geological Observatory, Columbia University, 1981-1982
- Research Associate, Lamont-Doherty Geological Observatory, 1982-1983
- Assistant Professor, Department of Geology and Geophysics, Yale University, 1983-1988; Associate Professor, 1988-1995; Professor, 1995-1999
- Directeur de Recherche, Centre National de la Recherche Scientifique, France (at Institut de Physique du Globe de Paris (IPGP) 01/2000-08/2008; at FAST 09/2008-present)

INVITED AND HONORARY POSITIONS

- Alexander von Humboldt Fellow, Max-Planck-Institut für Chemie, Mainz (Germany), 01-12/1991
- Invited professor, Institut de Physique du Globe de Paris, 09-12/1997
- Invited professor, Earthquake Research Institute, University of Tokyo, 02-03/2010
- Rothschild Distinguished Visiting Scholar, University of Cambridge, 02-03/2016
- Simons Fellow, University of Cambridge, 09-12/2017

PROFESSIONAL AND ADMINISTRATIVE SERVICE

- Associate Editor, *Journal of Geophysical Research*, 1990-92
- Director of Graduate Studies, Department of Geology and Geophysics, Yale University, 1992-95 and 1998
- President, Yale College Executive Committee, 1993-94
- US National Science Foundation Review Panel, CSEDI (Cooperative Studies of the Earth's Deep Interior), 1997, 1998, and 2008
- Advisory Editor, *ISIS* (History of Science Society, USA), 2003-2006

- Team leader, Laboratoire de Dynamique des Fluides Géologiques, Institut de Physique du Globe de Paris (09/2006 - 06/2008)
- Director, FAST Laboratory (04/2009 - 12/2013)

PUBLICATIONS

Book

1. Ribe N M (2018) *Theoretical Mantle Dynamics*, Cambridge University Press, in press.

Book chapters

1. Ribe N M, Davaille A, Christensen U (2007) Fluid mechanics of mantle plumes, in *Mantle Plumes - A Multidisciplinary Approach*, eds. J. R. R. Ritter and U. R. Christensen, pp. 1-48, Berlin: Springer
2. Ribe N M (2015) Analytical Approaches to Mantle Dynamics, in *Treatise on Geophysics*, vol. 7, *Mantle Dynamics*, 2nd ed., ed. D. Bercovici, pp. 145-196, Oxford: Elsevier
3. Ribe N M (2008) Mariotte, in *The Dictionary of Seventeenth-Century French Philosophers*, ed. Luc Foisneau, pp. 823-826, London: Thoemmes Continuum.
4. Ribe N M, Habibi M, Bonn D (2012) Liquid rope coiling. *Ann. Rev. Fluid Mech.* **44**, 249-266.

Research articles

1. Richter F M, Ribe N M (1979) On the importance of advection in determining the local isotopic composition of the mantle, *Earth Planet. Sci. Lett.* **43**, 212-222.
2. Watts A B, Bodine J H, Ribe N M (1980) Observations of flexure and the geological evolution of the Pacific Ocean basin, *Nature* **283**, 532-537.
3. Ribe N M (1982) On the interpretation of frequency response functions for oceanic gravity and bathymetry, *Geophys. J. R. astr. Soc.* **70**, 273-294.
4. Ribe N M, Watts, A B (1982) The distribution of intraplate volcanism in the Pacific Ocean basin: a spectral approach, *Geophys. J. R. astr. Soc.* **71**, 333-362.
5. Ribe N M (1983) Diapirism in the Earth's mantle: experiments on the motion of a hot sphere in a fluid with temperature-dependent viscosity, *J. Volcanol. Geotherm. Res.* **16**, 221-245.
6. Watts A B, Ribe N M (1984) On geoid heights and flexure of the lithosphere at seamounts, *J. Geophys. Res.* **89**, 11152-11170.
7. Watts, A B, Horai K-I, Ribe N M (1984) On the determination of the deflection of the vertical using satellite altimetry, *Marine Geodesy* **8**, 85-127.
8. Ribe N M (1985) The generation and composition of partial melts in the Earth's mantle, *Earth Planet. Sci. Lett.* **73**, 361-376.

9. Ribe N M (1985) The deformation and compaction of partially molten zones, *Geophys. J. R. astr. Soc.* **83**, 487-501.
10. Ribe N M (1985), Goethe's critique of Newton: a reconsideration, *Stud. Hist. Phil. Sci.* **16**, 315-335.
11. Ribe N M (1987), La critica di Goethe a Newton: una riconsiderazione (Italian translation), *Il Minotauro* **XIV**, 54-68 and **XV**, 55-67.
12. Ribe N M (1986) Melt segregation driven by dynamic forcing, *Geophys. Res. Lett.* **13**, 1462-1465.
13. Ribe N M, Smooke M D (1987) A stagnation-point flow model for melt extraction from a mantle plume, *J. Geophys. Res.* **92**, 6437-6443.
14. Ribe N M (1987) Theory of melt segregation: a review, *J. Volcanol. Geotherm. Res.* **33**, 241-253.
15. Ribe N M (1988) On the dynamics of mid-ocean ridges, *J. Geophys. Res.* **93**, 429-436.
16. Ribe N M (1988) Dynamical geochemistry of the Hawaiian plume, *Earth Planet. Sci. Lett.* **88**, 37-46.
17. Koch D M, Ribe N M (1989) The effect of lateral viscosity variations on surface observables, *Geophys. Res. Lett.* **16**, 535-538.
18. Ribe N M (1989) A continuum theory for lattice preferred orientation, *Geophys. J.* **97**, 199-207.
19. Ribe N M (1989) Mantle flow induced by back-arc spreading, *Geophys. J.* **98**, 85-91.
20. Ribe N M (1989) Seismic anisotropy and mantle flow, *J. Geophys. Res.* **94**, 4213-4223.
21. Ribe N M, Yu Y (1991) A theory for plastic deformation and textural evolution of olivine polycrystals, *J. Geophys. Res.* **96**, 8325-8335.
22. Ribe N M (1992) The dynamics of thin shells with variable viscosity and the origin of toroidal flow in the mantle, *Geophys. J. Int.*, **110**, 537-552.
23. Ribe N M (1992) On the relation between seismic anisotropy and finite strain, *J. Geophys. Res.*, **97**, 8737-8747.
24. Ribe N M, Christensen U R (1994) Three-dimensional modelling of plume-lithosphere interaction, *J. Geophys. Res.* **99**, 669-682.
25. Ribe N M, de Valpine D P (1994) The global distribution of hotspots and instability of D'' , *Geophys. Res. Lett.* **21**, 1507-1510.
26. Ribe N M, Christensen U R, Theissing J (1995) The dynamics of plume-ridge interaction, 1: Ridge-centered plumes, *Earth Planet. Sci. Lett.* **134**, 155-168.
27. Turekian K K, Krishnaswami S, Ribe N M, Reinitz I M (1996) Radioactive disequilibrium among ^{238}U series nuclides in recent volcanic rocks: a model for chronology and mechanism of formation, *Geochem. Int.* **33**, 1-14.

28. Ribe N M (1996) The dynamics of plume-ridge interaction, 2: Off-ridge plumes, *J. Geophys. Res.* **101**, 16,195–16,204.
29. Ribe N M (1997) Cartesian optics and the mastery of nature, *Isis* **88**, 42–61.
30. Ribe N M, Delattre W L (1998) The dynamics of plume-ridge interaction—III. The effects of ridge migration, *Geophys. J. Int.* **133**, 511–518.
31. Ribe N M (1998) Spouting and planform selection in the Rayleigh-Taylor instability of miscible viscous fluids, *J. Fluid Mech.* **377**, 27–45.
32. Ribe N M, Christensen U R (1999) The dynamical origin of Hawaiian volcanism, *Earth Planet. Sci. Lett.* **171**, 517–531.
33. Cserepes L, Christensen U R, Ribe N M (2000) Geoid height versus topography for a plume model of the Hawaiian swell, *Earth Planet. Sci. Lett.* **178**, 29–38.
34. Lowry A R, Ribe N M, Smith R B (2000) Dynamic elevation of the Cordillera, western United States, *J. Geophys. Res.* **105**, 23,371–23,390.
35. Ribe N M (2001) Stretching and bending of thin viscous sheets, *J. Fluid Mech.* **433**, 135–160.
36. Kaminski E, Ribe N M (2001) A kinematic model for recrystallization and texture development in olivine polycrystals, *Earth Planet. Sci. Lett.* **189**, 253–267.
37. Ribe N M (2002) A general theory for the dynamics of thin viscous sheets, *J. Fluid Mech.* **457**, 255–283.
38. Kaminski E, Ribe N M (2002) Time scales for the evolution of seismic anisotropy in mantle flow, *Geochem. Geophys. Geosyst.* **10.1029/2001GC000222**.
39. Ribe N M, Steinle F (2002) Exploratory experimentation: Goethe, Land, and color theory, *Physics Today* **55/7**, 43–49.
40. Ribe N M (2003) Periodic folding of viscous sheets, *Phys. Rev. E* **68**, 036305 (discussion: 'Liquids fold according to density-viscosity ratio: New theory sheds light on plate tectonics and pancake batter', *Nature Science Update*, 15 September 2003, www.nature.com/nsu/030908/030908-19.html)
41. Ribe N M (2003) Optics, polemics and ethics in Goethe's critique of Newton, *Archives internationales d'histoire des sciences* **53**, 257–263.
42. Ribe N M (2004) Through Thick and Thin (News & Views), *Nature* **427**, 793–795.
43. Kaminski E, Ribe N M, Browaeys J T (2004) D-Rex, a program for calculation of seismic anisotropy in the convective upper mantle, *Geophys. J. Int.* **158**, 744–752.
44. Ribe N M (2004), Coiling of viscous jets. *Proc. R. Soc. Lond. A* **460**, 3223–3239.
45. Maleki M, Habibi M, Golestanian R, Ribe N M, Bonn D (2004) Liquid rope coiling on a solid surface. *Phys. Rev. Lett.* **93**, 214502.

46. Bourdon B, Turner S P, Ribe N M (2005) Partial Melting and upwelling rates beneath the Azores from a U-series perspective, *Earth Planet. Sci. Lett.* **239**, 42–56.
47. Ribe N M, Huppert H E, Hallworth M A, Habibi M, Bonn D (2006) Multiple coexisting states of liquid rope coiling. *J. Fluid Mech.* **555**, 275–297.
48. Ribe N M, Habibi M, Bonn D (2006) Stability of liquid rope coiling. *Phys. Fluids* **18**, 084102.
49. Bourdon B, Ribe N, Stracke A, Saal A E, Turner S P (2006) Dynamics of mantle plumes: insights from U-series geochemistry, *Nature* **444**, 713–717.
50. Ribe N M, Lister J R, Chiu-Webster S (2006) Stability of a dragged viscous thread: onset of ‘stitching’ in a fluid mechanical ‘sewing machine’, *Phys. Fluids* **18**, 124105.
51. Habibi M, Maleki M, Golestanian R, Ribe N, Bonn D (2006) Dynamics of liquid rope coiling, *Phys. Rev. E* **74**, 066306.
52. Ribe N M, Stutzmann E, Ren Y, van der Hilst R (2007). Buckling instabilities of subducted lithosphere beneath the transition zone, *Earth Planet. Sci. Lett.* **254**, 173–179.
53. Habibi M, Ribe N M, Bonn D (2007) Coiling of elastic ropes, *Phys. Rev. Lett.*, **99**, 154302 [press commentary: “Researchers uncover physics of coiling ropes”, <http://www.physorg.com/news112357305.html>; “Unravelling the mysteries of coiling ropes”, <http://physicsworld.com/cws/article/news/31564>, 23/10/2007]
54. Habibi M, Møller P, Ribe N M, Bonn D (2007) Spontaneous generation of spiral waves by a hydrodynamic instability, *Europhys. Lett.* **81**, 38004.
55. Morris S W, Dawes J H P, Ribe N M, Lister J R (2008) Meandering instability of a viscous thread, *Phys. Rev. E* **77**, 066218.
56. Loubet N, Ribe N M, Gamblin Y (2009) Deformation modes of subducted lithosphere at the core-mantle boundary: An experimental investigation, *Geochem. Geophys. Geosyst.*, **10**, Q10004.
57. Ribe N M (2010) Bending mechanics and mode selection in free subduction: a thin-sheet analysis, *Geophys. J. Int.* **180**, 559–576.
58. Habibi M, Rahmani Y, Bonn D, Ribe N M (2010) Buckling of liquid columns, *Phys. Rev. Lett.* **104**, 074301.
59. Asaadi N, Ribe N M, Sobouti F (2011) Inferring nonlinear mantle rheology from the shape of the Hawaiian swell, *Nature* **473**, 501–504.
60. Habibi M, Najafi J, Ribe N M (2011) Pattern formation in a thread falling onto a moving belt: an ‘elastic sewing machine’, *Phys. Rev E* **84**, 016219.
61. Ribe N M (2012) All bent out of shape : Buckling instabilities of sheared fluid layers, *J. Fluid Mech.* **694**, 1–4.
62. Brun P-T, Ribe N M, Audoly B (2012) A numerical investigation of the fluid mechanical sewing machine, *Phys. Fluids* **24**, 043103.

63. Li Z, Ribe N M (2012) Dynamics of free subduction from 3-D boundary-element modeling, *J. Geophys. Res.* **117**, B06408.
64. Cadio C, Ballmer M, Panet I, Diament M, Ribe N (2012) New constraints on the origin of the Hawaiian swell from wavelet analysis of the geoid to topography ratio, *Earth Planet. Sci. Lett.* **359-360**, 40-54.
65. Javadi A, Eggers J, Bonn D, Habibi M, Ribe N M (2013) Delayed capillary breakup of falling viscous threads, *Phys. Rev. Lett.* **110**, 144501
66. Ribe N M, Davaille A (2013) Dynamical similarity and density (non-) proportionality in experimental tectonics, *Tectonophysics.* **608**, 1371-1379
67. Agrusta R, Arcay D, Tommasi A, Davaille A, Ribe N, Gerya T (2013) Small-scale convection in a plume-fed low-viscosity layer beneath a moving plate, *Geophys. J. Int.* **194**, 591-610
68. Di Leo J F, Walker A M, Li Z.-H., Wookey J, Ribe N M, Kendall J-M, Tommasi A (2013) Development of texture and seismic anisotropy during the onset of subduction, *Geochem. Geophys. Geosyst.*, **15**, 192-212
69. Li Z, Di Leo, J F, Ribe, N M. (2104) Subduction-induced mantle flow, finite strain, and seismic anisotropy: Numerical modeling, *J. Geophys. Res.* **119**, 5052-5076
70. Habibi M, Hosseini S M, Khatami M H, Ribe N M (2104) Liquid supercoiling, *Phys. Fluids* **26**, 024101
71. Brun P-T, Ribe N M, Audoly B (2014). An introduction to the dynamics of the lasso, *Proc. R. Soc. London A* **470**, 20140512.
72. Brun P-T, Audoly B, Ribe N M, Eaves T S, Lister J R (2015). Liquid ropes: A geometrical model for thin viscous jet instabilities, *Phys. Rev. Lett.* **114**, 174501
73. Goulding N J, Ribe N M, Castelnau O, Walker A M, Wookey J (2015) Analytical parametrization of self-consistent polycrystal mechanics: Fast calculation of upper mantle anisotropy, *Geophys. J. Int.* **203**, 334-350
74. Xu B, Ribe N M (2016) A hybrid boundary-integral/thin-sheet equation for subduction modelling, *Geophys. J. Int.* **206**, 1552-1562.
75. Ribe N M (2017) Liquid rope coiling: a synoptic view, *J. Fluid Mech.* **812**, R2.

Popularizing articles

1. Ribe N M, Habibi M, Bonn D, Stutzmann E (2008) Instabilités de flambage dans les fluides visqueux : du laboratoire au manteau terrestre, *Reflète de la physique*, n° 11, October 2008, 9-12.
2. Ribe N M, Habibi M, Bonn D. The liquid rope trick, *Scientific American*, February 2014, 66-71.