Curriculum Vitae

Dr. Martin Stute

Alena Wels Hirschorn '58 and Martin Hirschorn Professor
in Environmental & Applied Sciences
Adjunct Senior Research Scientist, Lamont-Doherty Earth Observatory

October 7, 2021

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Higher Education

July 12, 1989:	Promotionsprüfung (PhD Degree, Physics)
1985-1989:	Dissertation work, University of Heidelberg; Thesis advisors: Prof. Karl Otto Münnich and Prof. Till Kirsten
July 5, 1985:	Diplomprüfung (equivalent to Bachelors and Master's Degree, Physics)
1979-1985:	Study of Physics, University of Münster and University of Heidelberg

Continuing Education

2005	Cutting Edge Workshop on 'Teaching Hydrogeology in the 21st Century
2000	PKAL National Assembly 'Taking responsibility for Leadership', Tucson, AZ
2000	PKAL Summer Institute, Keystone, CO
1999	PKAL workshop 'Building the Quantitative Skills of NonMajors and Majors in Earth and Planetary Science Courses', William & Mary, Williamsburg, VA
1994	NSF/USGS Faculty Enhancement Workshop in Hydrology, Boulder, CO

Professional Experience in Higher Education

Since July 1, 2019	Alena Wels Hirschorn '58 and Martin Hirschorn Professor in Environmental & Applied Sciences
Since 2015	Core faculty member, Lenfest Center for Sustainable Energy, CU
Since July 1, 2009	Adjunct Senior Research Scientist at the Lamont-Doherty Earth Observatory, Columbia University
2007-2012	Ann-Whitney Olin Professor of Environmental Science, BC
Since July 1, 2006	Co-Chair or Chair, Environmental Science Department, BC

Since July 1, 2006:	Professor of Environmental Science, Barnard College
Since January 1, 2004:	Member of the Senior Staff, Lamont-Doherty Earth Observatory
July 1, 2003 to December 31, 2004:	Chair, Environmental Science Department, BC
August 1, 2001 to March 10, 2002:	Visiting Professor at Biosphere 2 Center, Oracle, AZ and at the University of Arizona, Tucson, AZ
July 1, 2000 to June 30, 2006	Associate Professor of Environmental Science (tenured) at Barnard College, CU
July 1,1999-June 30, 2009:	Adjunct Research Scientist at the Lamont-Doherty Earth Observatory, Columbia University
Since July 1,1996:	Member of the Faculty of the Department of Earth and Environmental Science, CU
July 1, 1995 to June 30, 2000:	Assistant Professor of Environmental Science at Barnard College, CU
July 1, 1995 to June 30, 1999:	Adjunct Associate Research Scientist at the Lamont-Doherty Earth Observatory
Dec. 1, 1991 to June 30, 1995:	Associate Research Scientist at the Lamont-Doherty Earth Observatory of Columbia University
Dec, 1, 1989 to Nov. 30, 1991:	Post-Doctoral Research Scientist at the Lamont-Doherty Earth Observatory of Columbia University, New York, supported by a fellowship of the Alexander v. Humboldt Foundation (Feodor Lynen program)
July 15, 1985 to August 31, 1989	Research Assistant, Institut für Umweltphysik, University of Heidelberg, Germany

Academic and Professional Honors

2019:	Alena Wels Hirschorn '58 and Martin Hirschorn Professor in Environmental & Applied Sciences
2019:	Teaching Excellence Award, Barnard College
2007-2012:	Ann-Whitney Olin Professor of Environmental Science
Dec. 1, 1989 to Nov. 30, 1991:	Fellow of the Alexander v. Humboldt Foundation (Feodor Lynen Program)
1989:	Recipient of a DFG (German Science Foundation) post doctoral research fellowship (declined in favor of the A.v.H.fellowship)

Current Memberships in Professional Societies

American Geophysical Union (AGU)
Geochemical Society (GS)
International Association of Hydrological Sciences (IAHS)
American Museum of Natural History, New York (AMNH)
New York Botanical Garden (NYBG)

Teaching Experience

'93,'94,'97,'98,'00,'03,'05,'07 ’10,’12,’15,’19	Hydrology (BC)
'96,'97,'00,'02,'03,'04,’05,’06, ’07,’08,’09,’10,’11,’12,’13,’14,’15,’17,’18,’19,’20,’21	Environmental Research/Senior Seminar I (BC/CU)
'96,'97,'98,'99,'01,'03,'04,'05,’06	Environmental Research/Senior Seminar II (BC/CU)

’07,’08,’10,’11,’12,’13,’14,’15,’16,’18,’19,’20,‘21	
’11,’12,’13,’14,’15,’17,’18,’19	Workshop in Sustainable Development
'16	US Waters & Effects of El Nino
'03	Advanced Seminar in Geochemistry: Case studies in Hydrology (CU)
'02	Death Valley Field trip (BC)
'01, '02	Earth semester (Biosphere 2 Center, Arizona, CU)
'00	Science and Society (CU/BC)
'96,'97,'99	Earth’s Environmental Systems: Climate (BC)
'96	Environmental Case Studies (BC)
'95,'96,'97,'99,'00,'02,'04,’05, ’06,’07,’08,’09,’10	Environmental Data Analysis (BC)
'95	Noble Gases in Rocks (CU)
'95,'03	Environmental Science for Policymakers (CU)
'92	Groundwater Management (CU)
'92,'97,'01,‘08	Isotope Hydrology (CU)
'91	Groundwater Data Processing (CU)
'90	Groundwater Hydrology Summer School (CU)

Mentor, Undergraduate Students, Senior Thesis/Research (50)

Mentor, Undergraduate Students, Summer Research (35)

Mentor, High School Teachers, Summer Research (3)

Mentor, Graduate Students, Masters/PhD (note that CU students are mentored by three-member committees, if not specified, CU students are from the Department of Earth & Environmental Sciences(DEES)) (26)

Member, Masters/Orals/PhD examination/defense Committee for students not directly advised (17)

Mentor, Post-Doctoral (12)

Publications (students are <u>underlined</u>)

Journal Articles - Peer Reviewed

1. Schlosser, P., M. Stute, H. Dörr, C. Sonntag, and K.O. Münnich (1988) Tritium/^{3}He dating of shallow groundwater. *Earth Planet. Sci. Lett.,* 89, 353—362.
2. Schlosser, P., M. Stute, C. Sonntag, and K.O. Münnich (1989) Tritiogenic ^{3}He in shallow groundwater. *Earth Planet. Sci. Lett.,* 94, 245—256.
3. Stute, M. and J. Deák (1989) Environmental isotope study (^{14}C, ^{13}C, ^{18}O, D, noble gases) on deep groundwater circulation systems in Hungary with reference to paleoclimate. *Radiocarbon,* 31, 902—918.
4. Martel, D.J., J. Deák, P. Dövenyi, F. Horváth, R.K. O’Nions, E.R. Oxburgh, L. Stegena, and M. Stute (1989) Leakage of helium from the Pannonian basin. *Nature,* 342, 908-912.
5. Stute, M., C. Sonntag, J. Deák, and P. Schlosser (1992) Helium in deep circulating groundwater in the Great Hungarian Plain: Flow dynamics and crustal and mantle He fluxes. *Geochimica et Cosmochimica Acta,* 56, 2051-2067

6. Stute, M., P. Schlosser, J.F. Clark, and W.S. Broecker (1992) Paleotemperatures in the southwestern United States derived from noble gas measurements in groundwater. *Science,* 256, 1000—1003.
7. Fontes, J.C., M. Stute, P. Schlosser, and W.S. Broecker (1993) Aquifers as archives of paleoclimate. *EOS,* 74, 2 1-22.
8. Ekwurzel, B., P. Schlosser, W.M. Smethie, Jr., L.N. Plummer, E. Busenberg, R.L. Michel, Weppernig, and M. Stute (1994) Dating of shallow groundwater: Comparison of the transient tracers $^{3}H/^{3}He$, Chlorofluorcarbons and ^{85}Kr. *Water Res. Res.,* 30, 1693-1708.
9. Stute, M., J.F. Clark, P. Schlosser, W.S. Broecker, and G. Bonani (1995) A high altitude continental paleotemperature record derived from noble gases dissolved in groundwater from the San Juan Basin, New Mexico. *Quat. Res.,* 43, 209-220. -
10. Torgersen, T., S. Drenkard, M. Stute, P. Schlosser, and A. Shapiro (1995) Mantle helium in ground waters of eastern North America: Time and space constraints on sources. *Geology,* 23, 675-678.
11. Stute, M., M. Forster, H. Frischkorn, A. Serejo, J.F. Clark, P. Schlosser, W.S. Broecker, and G. Bonani (1995) Cooling of tropical Brazil ($5^{0}C$) during the last glacial maximum. *Science,* 269, 379-383.
12. Marcantonio, F., N. Kumar, M. Stute, R.F. Anderson, M. Seidl, P. Schlosser, and A. Mix (1995) A comparative study of accumulation rates derived by Th and He isotope analysis of marine sediments. *Earth and Planetary Science Letters,* 133, 549-555.
13. Clark, J.F., P. Schlosser, M. Stute, and H.J. Simpson (1996) SF_6 – ^{3}He tracer release experiment: A new method of determining longitudinal dispersion coefficients in large rivers. *Environ. Sci and Tech.,* 30, 1527-1532
14. Marcantonio, F., R.F. Anderson, M. Stute, N. Kumar, P. Schlosser, and A. Mix (1996) Extraterrestrial He-3 as a constant-flux tracer for paleoceanographic studies. *Nature,* 383, 705-707.
15. Clark, J.F., M. Stute, P. Schlosser, S. Drenkard, and G. Bonani (1997) An isotope study of the Floridan Aquifer in southeastern Georgia: Implications for groundwater flow and paleoclimate. *Water Res. Res.,* 33, 281-290.
16. Stute, M., J. Deák, K. Revesz, J.K. Böhlke, E. Deseö, R. Weppernig, and P. Schlosser (1997) Tritium/^{3}He dating of river infiltration: An example from the Danube in the Szigetköz area, Hungary. *Ground Water,* 35, 905-911.
17. Böhlke, J.K., K. Révész, E. Busenberg, J. Deák, E. Deseö, and M. Stute (1997) Groundwater record of halocarbon transport by the Danube River. *Env. Sci. Tech.,* 31, 3293-3299.
18. Dunkle-Shapiro, S., P. Schlosser, W.M. Smethie, Jr., M. Stute (1997) The use of $^{3}H \pm$ tritiogenic ^{3}He to determine vertical mixing rate and CFC degradation rates in Framvaren Fjord, Norway. *Marine Chemistry,* 59, 141-157.
19. Dunkle-Shapiro, S., G. Rowe, P. Schlosser, and M. Stute (1998) Tritium-helium 3 dating under complex conditions in hydraulically stressed areas of a buried-valley aquifer. *Water Res. Res.,* 34, 1165-1180.
20. Aeschbach-Hertig, W., P. Schlosser, M. Stute, H.J. Simpson, A. Ludin, and J.F. Clark (1998) A $^{3}H/^{3}He$ study of groundwater flow in a fractured bedrock aquifer. *Ground Water,* 36, 661-670.
21. Marcantonio, F., S. Higgins, R.F. Anderson, M. Stute, P. Schlosser, and E. T. Rasbury (1998) Terrigenous helium in deep-sea sediments. *Geochim. Cosmochim. Acta,* 62, 1535-1543.
22. Dunkle Shapiro, S., G. Rowe, P. Schlosser, A. Ludin, and M. Stute (1998) Tritium helium 3 dating under complex conditions in hydraulically stressed areas of a buried valley aquifer. *Water Res. Res.,* 34, 1165-1180.
23. Loosli, H. H., B. Lehmann, W. Aeschbach-Hertig, R. Kipfer, W.M. Edmunds, L. Eichinger, K. Rozanski, M. Stute, and R. Vaikmae (1998) Tools used to study paleoclimate help in water management. *EOS,* Transactions, American Geophysical Union, 79n., 47, 576 and 582.
24. Maracantonio, F., K.K. Turekian, S. Higgins, R.F. Anderson, M. Stute, and P. Schlosser, (1999) The accretion rate of extraterrestrial ^{3}He based on oceanic ^{230}Th flux and the relation to Os isotope variation over the past 200,000 years in an Indian Ocean core. *Earth and Planet. Sci. Lett.,* 170, 157-168.
25. Farrera, L., S.P. Harrison, P.J. Bartlein, R. Bonneville, M. Bush, J. Guiot, K. Holmgren, G. Hope, D.

Jolly, S.-E. Lauritzen, Y. Ono, S. Pinot, I.C. Prentice, G. Ramstein, M. Stute, U. von Grafenstein, Ge. Yu (1999) Tropical climates at the last glacial maximum: a new synthesis of terrestrial paleoclimatic records. I. Vegetation, lake-levels and geochemistry. *Climate Dynamics,* 15, 823-856.

26. S. Pinot, G. Ramstein, S. P. Harrison, I. C. Prentice, J. Guiot, M. Stute, S. Joussaume (1999) Tropical paleoclimates at the Last Glacial Maximum: comparison of Paleoclimate Modeling Intercomparison Project (PMIP) simulations and paleodata *Climate Dynamics,* 15, 857-874.
27. Castro, M.C., M. Stute, and P. Schlosser (2000) Comparison of ^{4}He ages and ^{14}C ages in simple aquifer systems: implications for groundwater flow and chronologies. *Applied Geochemistry,* 15, 1137-1167.
28. Ahsan, H., M. Perrin, A. Rahman, M. Perrin, M. Stute, A. Hasnat, A. van Geen, and J. Graziano (2000) Associations Between Drinking Water and Urinary Arsenic Levels and Skin Lesions In Bangladesh. *J. Occupational and Environmental Medicine*, 42, 1195-1201.
29. Marcantonio F., R.F. Anderson, S. Higgins, M.Q. Fleisher, M. Stute, P. Schlosser (2001) Abrupt intensification of the SW Indian Ocean monsoon during the last deglaciation: constraints from Th, Pa, and He isotopes. *Earth and Planet. Sci. Lett*., 184, 505-5 14.
30. Marcantonio, F., R.F. Anderson, S. Higgins, M. Stute, P. Schlosser, and P. Kubik (2001) Sediment focusing in the central equatorial Pacific Ocean. *Paleooceanography*, 16, 260-267.
31. Aeschbach-Hertig, W., Stute, M., Clark, J.F., Reuter, R.F., and Schlosser, P. (2002) A paleotemperature record derived from dissolved noble gases in groundwater of the Aquia Aquifer (Maryland, USA). *Geochim. et Cosmochim Acta*, 66, 797–817.
32. van Geen, A., H. Ahsan, A. Horneman, R.. K. Dhar, Y. Zheng, A. Z. M. I. Hussain, K. M. Ahmed, A. Gelman, M. Stute, H. J. Simpson, S. Wallace, C. Small, M. F. Parvez, V. Slavkovich, N. J. Lolacono, M. Becker, Z. Cheng, H. Momotaj, M. Shahnewaz, A. A. Seddique, and J. Graziano. (2002) Promotion of well-switching to mitigate the arsenic crisis in Bangladesh. *Bulletin of the World Health Organization*, 80 (9), 732-737.
33. Higgins, S.M., Anderson, R.F., Marcantonio, F., Schlosser, P., and Stute, M. (2002) Sediment focusing creates 100-ka cycles in interplanetary dust accumulation on the Ontong Java Plateau. *Earth and Planet Sci. Lett.* 203 (1), 383-397.
34. Thomas J.M., Hudson G.B., Stute M., and Clark J. (2003) Noble gas loss may indicate groundwater flow across flow barriers in Southern Nevada. *Environmental Geology* 43 (5): 568-579.
35. Santella N., Ho D.T., Schlosser P, and Stute, M. (2003) Distribution of atmospheric SF_6 near a large urban area as recorded in the vadose zone. *Environmental Science and Technology* 37 (6): 1069-1074.
36. van Geen, A., Zheng, Y, Stute, M. , and Ahmed K.M. (2003) Comment on "Arsenic mobility and groundwater extraction in Bangladesh" (II). *Science*, 300 (5619): 584C-584C.
37. van Geen A, Zheng Y, Versteeg R, Stute M, Horneman A, Dhar R, Steckler M, Gelman A, Small C, Ahsan H, Graziano JH, Hussain I, Ahmed KM (2003) Spatial variability of arsenic in 6000 tube wells in a 25 km(2) area of Bangladesh. *Water Res. Res*., 39(5), Art. No. 1140.
38. Lippmann J., Stute M., Torgersen T., Moser, D.P., Hall, J. Lin, L., Borcsik, M., Bellamy, R.E.S., and Onstott, T.C. (2003) Dating ultra-deep mine waters with noble gases and Cl-36, Witwatersrand Basin, South Africa *Geochmica et Cosmochimica Acta,* 67(23): 4597-4619.
39. Zheng, Y., M. Stute, A. van Geen, I. Gavrieli, R. Dhar, H. J. Simpson, P. Schlosser, and K. M. Ahmed (2004) Redox Control of Arsenic Mobilization in Bangladesh Groundwater. *Appl. Geochem.*, 19 (2): 201-214.
40. Siegel, D.I., Lesniak, K.A., Stute, M., Frape, S. (2004) Isotopic geochemistry of the Saratoga Springs: Implications for the origin of solutes and source of carbon dioxide. *Geology*, 32 (3): 257-260.
41. Winckler G., Anderson R.F., Stute M, Schlosser, P. (2004) Does interplanetary dust control 100 kyr glacial cycles? *Quaternary Science Reviews*, 23 (18-19), 1873-1878.
42. Zheng, Y., van Geen, A., Stute, M., Dhar, R., Mo, Z., Cheng, Z., Horneman, A., Gavrieli, I., Simpson, H. J., Versteeg, R., Steckler, M., Grazioli-Venier, A., Goodbred, S., Shahnewaz, M., Shamsudduha, M., Hoque, M. A., and Ahmed, K. M. (2005). Geochemical and hydrogeological contrasts between

shallow and deeper aquifers in two villages of Araihazar, Bangladesh: Implications for deeper aquifers as drinking water sources. Geochimica Et Cosmochimica Acta 69, 5203-5218.

43. Keimowitz, A. R., Simpson, H. J., Stute, M., Datta, S., Chillrud, S. N., Ross, J., and Tsang, M. (2005). Naturally occurring arsenic: Mobilization at a landfill in Maine and implications for remediation. *Applied Geochemistry* 20, 1985-2002.
44. Keimowitz, A. R., Zheng, Y., Chillrud, S. N., Mailloux, B., Jung, H. B., Stute, M., and Simpson, H. J. (2005). Arsenic redistribution between sediments and water near a highly contaminated source. *Environmental Science & Technology* 39, 8606-8613.
45. Class, C., Goldstein, S.L., Stute, M., Kurz, M.D. and Schlosser, P. (2005). Grand Comore Island: A well-constrained "low $^{3}He/^{4}He$" mantle plume. *Earth and Planetary Science Letters*, 233(3-4): 391-409
46. Ahmed, M. F., Ahuja, S., Alauddin, M., Hug, S. J., Lloyd, J. R., Pfaff, A., Pichler, T., Saltikov, C., Stute, M., and van Geen, A. (2006). Epidemiology - Ensuring safe drinking water in Bangladesh. *Science* 314, 1687-1688.
47. Camprubi, A., Chomiak, B. A., Villanueva-Estrada, R. E., Canals, A., Norman, D. I., Cardellach, E., and Stute, M. (2006). Fluid sources for the La Guitarra epithermal deposit (Temascaltepec district, Mexico): Volatile and helium isotope analyses in fluid inclusions. *Chemical Geology* 231, 252-284.
48. Matter, J. M., Goldberg, D. S., Morin, R. H., and Stute, M. (2006). Contact zone permeability at intrusion boundaries: new results from hydraulic testing and geophysical logging in the Newark Rift Basin, New York, USA. *Hydrogeology Journal* 14, 689-699.
49. Santella, N., Schlosser, P., Smethie, W. M., Ho, D. T., and Stute, M. (2006). Seasonal variability and long term trends of chlorofluorocarbon mixing ratios in the unsaturated zone. *Environmental Science & Technology* 40, 4414-4420.
50. van Geen, A., Zheng, Y., Cheng, Z., Aziz, Z., Horneman, A., Dhar, R. K., Mailloux, B., Stute, M., Weinman, B., Goodbred, S., Seddique, A. A., Hope, M. A., and Ahmed, K. M. (2006). A transect of groundwater and sediment properties in Araihazar, Bangladesh: Further evidence of decoupling between As and Fe mobilization. *Chemical Geology* 228, 85-96.
51. Keimowitz, A. R., B. J. Mailloux, P. Cole, M. Stute, H. J. Simpson & S. N. Chillrud, (2007) Laboratory investigations of enhanced sulfate reduction as a groundwater arsenic remediation strategy. *Environ. Sci. Technol*. 41: 6718-6724.
52. Stute, M., Y. Zheng, P. Schlosser, A. Horneman, R. K. Dhar, S. Datta, M. A. Hoque, A. A. Seddique, M. Shamsudduha, K. M. Ahmed & A. van Geen, (2007) Hydrological control of As concentrations in Bangladesh groundwater. *Water Resour. Res.* 43, doi: 10.1029/2005WR004499.
53. Horneman, A., M. Stute, P. Schlosser, W. Smethie, N. Santella, D. T. Ho, B. Mailloux, E. Gorman, Y. Zheng & A. van Geen, (2008) Degradation rates of CFC-11, CFC-12 and CFC-113 in anoxic shallow aquifers of Araihazar, Bangladesh. *Journal of Contaminant Hydrology* 97: 27-41.
54. Santella, N., D. T. Ho, P. Schlosser & M. Stute, (2008) Widespread elevated atmospheric SF6 mixing ratios in the Northeastern United States: Implications for groundwater dating. *J. Hydrol*. 349: 139-146.
55. van Geen, A., Y. Zheng, S. Goodbred, A. Horneman, Z. Aziz, Z. Cheng, M. Stute, B. Mailloux, B. Weinman, M. A. Hoque, A. A. Seddique, M. S. Hossain, S. H. Chowdhury & K. M. Ahmed, (2008) Flushing history as a hydrogeological control on the regional distribution of arsenic in shallow groundwater of the Bengal Basin. *Environ. Sci. Technol*. 42: 2283-2288.
56. Aziz, Z., A. van Geen, R. Versteeg, A. Horneman, Y. Zheng, S. Goodbred, M. Steckler, M. Stute, B. Weinman, I. Gavrieli, M.A. Hoque, M. Shamsudduha, and K.M. Ahmed (2008) Impact of local recharge on arsenic concentrations in shallow aquifers inferred from the electromagnetic conductivity of soils in Araihazar, Bangladesh. *Water Resources Research*, 44.
57. Dhar R.K., Y. Zheng, M. Stute, A. van Geen , Z. Cheng, M. Shanewaz, M. Shamsudduha, M.A. Hoque MA, M.W. Rahman, K.M. Ahmed (2008) Temporal variability of groundwater chemistry in shallow and deep aquifers of Araihazar, Bangladesh. Journal of Contaminant Hydrology, 99, 97-111.
58. Loose, B., M. Stute, P. Alexander, and W. M. Smethie (2009) Design and deployment of a portable

membrane equilibrator for sampling aqueous dissolved gases, *Water Resources Research*, 45, doi:10.1029/2008WR006969.
59. Datta, S., Mailloux, B., Jung, H. B., Hoque, M. A., Stute, M., Ahmed, K. M., and Zheng, Y. (2009) Redox trapping of arsenic during groundwater discharge in sediments from the Meghna riverbank in Bangladesh, *Proc. Natl. Acad. Sci*. U. S. A. 106, 16930-16935.
60. Matter, J.M., Broecker, W.S., Stute, M., Gislason, S.R., Oelkers, E.H., Stefánsson, A., Wolff-Boenisch, D., Gunnlaugsson, E., Axelsson, G. and Björnsson, G., (2009) Permanent carbon dioxide storage into basalt: the CarbFix pilot project, Iceland. *Energy Procedia*, 1(1), pp.3641-3646.
61. Gislason, S.R., Wolff-Boenisch, D., Stefansson, A., Oelkers, E.H., Gunnlaugsson, E., Holmfridur S., Sigfusson, B., Broecker, W.S., Matter, J.M., Stute, M. Axelsson, G.,Fredrikson, T. (2010) Mineral sequestration of carbon dioxide in basalt: A pre-injection overview of the CarbFix project. International Journal of Greenhouse Gas Control, *International Journal of Greenhouse Gas Control*, 4, 3, 537-545.
62. Morrissey, S. K., Clark, J. F., Bennett, M., Richardson, E., and Stute, M. (2010) Groundwater reorganization in the Floridan aquifer following Holocene sea-level rise, *Nature Geoscience* 3, 683-687.
63. Wovkulich, K., Mailloux, B. J., Lacko, A., Keimowitz, A. R., Stute, M., Simpson, H. J., and Chillrud, S. N. (2010) Chemical treatments for mobilizing arsenic from contaminated aquifer solids to accelerate remediation, *Appl. Geochem. 25*, 1500-1509.
64. Matter, J.M., Broecker, W.S., Gislason, S.R., Gunnlaugsson, E., Oelkers, E.H., Stute, M., Sigurdardóttir, H., Stefansson, A., Alfreðsson, H.A., Aradóttir, E.S. and Axelsson, G., 2011. The CarbFix Pilot Project–storing carbon dioxide in basalt. Energy Procedia, 4, pp.5579-5585.
65. Wovkulich, K., Stute, M., Protus, T. J., Mailloux, B. J., and Chillrud, S. N. (2011) Injection System for Multiwell Injection Using a Single Pump, *Ground Water Monitoring And Remediation* 31, 79-85.
66. Ali, S., Stute, M., Torgersen, T., Winckler, G., and Kennedy, B. M. (2011) Helium measurements of pore fluids obtained from the San Andreas Fault Observatory at Depth (SAFOD, USA) drill cores, *Hydrogeology Journal* 19, 237-247.
67. Radloff, K.A. Zheng, Y., Michael, H., Stute, M., B. Bostick, B., Mihajlov, I., Bounds, M., Huq, M. R., Choudhury, I., Rahman, M.W., Schlosser, P., Ahmed, K.M., van Geen, A. (2011) Arsenic sorption in deep aquifers supports growth of drinking water supply, but not irrigation, in Bangladesh. *Nature Geoscience,* 4, 11, 793-798.
68. Arslan, S., Yazicigil, H., Stute, M., Schlosser, P. (2013) Environmental isotopes and noble gases in the deep aquifer system of Kazan Trona Ore Field, Ankara, central Turkey and links to paleoclimate. *Quaternary Research*, 79, 292-303.
69. Mailloux, B.J., Trembath-Reichert, E., Cheung, J., Watson, M., Stute, M., Freyer, G., Ferguson, A.S., Ahmed, K.M., Alam, M.J., Bucholz, B.A., Thomas, J., Layton, A.C., Zheng, Y., Bostik, B.C., van Geen, A. (2013) Advection of surface-derived organic carbon fuels microbial reduction in Bangladesh groundwater. *Proceedings National Academy of Sciences*, 110, 5331-5335.
70. Yang, Q., Matter, J., Stute, M., Takahashi, T., O'Mullan, G., Umemoto, K., Clauson, K., Dueker, M. E., Zakharova, N., Goddard, J., and Goldberg, D. (2014) Groundwater hydrogeochemistry in injection experiments simulating CO_2 leakage from geological storage reservoir: *International Journal of Greenhouse Gas Control*, v. 26, p. 193-203.
71. Arslan, S., Yazicigil, H., Stute, M., Schlosser, P., and Smethie, W. M. (2015) Analysis of groundwater dynamics in the complex aquifer system of Kazan Trona, Turkey, using environmental tracers and noble gases. *Hydrogeology Journal*, v. 23, no. 1, p. 175-194.
72. O'Mullan, G., Dueker, M. E., Clauson, K., Yang, Q., Umemoto, K., Zakharova, N., Matter, J., Stute, M., Takahashi, T., and Goldberg, D. (2015) Microbial Stimulation and Succession following a Test Well Injection Simulating CO2 Leakage into a Shallow Newark Basin Aquifer. *Plos One*, v. 10, no. 1.
73. Yang, Q., Culbertson, C. W., Nielsen, M. G., Schalk, C. W., Johnson, C. D., Marvinney, R. G., Stute, M., and Zheng, Y. (2015) Flow and sorption controls of groundwater arsenic in individual boreholes from bedrock aquifers in central Maine, USA. *Science of the Total Environment*, v. 505, p. 1291-1307.

74. Blard, P.H., Balco, G., Burnard, P.G., Farley, K.A., Fenton, C.R., Friedrich, R., Jull, A.J.T., Niedermann, S., Pik, R., Schaefer, J.M., Scott, E.M., Shuster, D.L., Stuart, F.M., Stute, M., Tibari, B., Winckler, G. and Zimmermann, L. (2015) An inter-laboratory comparison of cosmogenic He-3 and radiogenic He-4 in the CRONUS-P pyroxene standard. *Quaternary Geochronology* 26, 11-19.
75. Jemielita, T., Gerton, G.L., Neidell, M., Chillrud, S., Yan, B.Z., Stute, M., Howarth, M., Saberi, P., Fausti, N., Penning, T.M., Roy, J., Propert, K.J. and Panettieri, R.A. (2015) Unconventional Gas and Oil Drilling Is Associated with Increased Hospital Utilization Rates. *Plos One* 10, 7, e0131093.
76. Seltzer, A.M., Stute, M., Morgenstern, U., Stewart, M.K. and Schaefer, J.M. (2015) Mean annual temperature in New Zealand during the last glacial maximum derived from dissolved noble gases in groundwater. *Earth Planet. Sci. Lett.* 431, 206-216.
77. Sigfusson, B., Gislason, S.R., Matter, J.M., Stute, M., Gunnlaugsson, E., Gunnarsson, I., Aradottir, E.S., Sigurdardottir, H., Mesfin, K., Alfredsson, H.A., Wolff-Boenisch, D., Arnarsson, M.T. and Oelkers, E.H. (2015) Solving the carbon-dioxide buoyancy challenge: The design and field testing of a dissolved CO_2 injection system. *International Journal of Greenhouse Gas Control* 37, 213-219.
78. Yang, Q., Matter, J., Takahashi, T., Stute, M., O'Mullan, G., Clauson, K., Umemoto, K. and Goldberg, D. (2015). Groundwater geochemistry in bench experiments simulating CO_2 leakage from geological storage in the Newark Basin. *International Journal of Greenhouse Gas Control*, 42, pp.98-108.
79. Sun, J., Chillrud, S.N., Mailloux, B.J., Stute, M., Singh, R., Dong, H., Lepre, C.J. and Bostick, B.C., (2016) Enhanced and stabilized arsenic retention in microcosms through the microbial oxidation of ferrous iron by nitrate. *Chemosphere*, 144, pp.1106-1115.
80. Carson, C.G., Stute, M., Ji, Y., Polle, R., Reboul, A. and Lackner, K.S. (2016). Invalidation of the intracavity optogalvanic method for radiocarbon detection. *Radiocarbon*, 58(01), pp.213-225.
81. Mihajlov, I., Stute, M., Schlosser, P., Mailloux, B.J., Zheng, Y., Choudhury, I., Ahmed, K.M. and van Geen, A. (2016) Recharge of low-arsenic aquifers tapped by community wells in Araihazar, Bangladesh, inferred from environmental isotopes. *Water Resources Research*, 52(5), 3324-3349.
82. Matter, JM., Stute, M., Snæbjörnsdottir, SÓ, Oelkers, E.H., Gislason, SR, Aradottir, ES., Sigfusson, B., Gunnarsson, I., Sigurdardottir, H., Gunnlaugsson, E., Axelsson, G., Alfredsson, HA, Wolff-Boenisch, D., Mesfin, K., Fernandez de la Reguera Taya, D., Hall, J., Dideriksen, K., Broecker, W.S. (2016) Rapid carbon mineralization for permanent disposal of anthropogenic carbon dioxide emissions. *Science*, 352 (6291), 1312-1314
83. Zakharova, N.V., Goldberg, D.S., Olsen, P.E., Kent, D.V., Morgan, S., Yang, Q., Stute, M. and Matter, J.M. (2016) New insights into lithology and hydrogeology of the northern Newark Rift Basin. *Geochemistry Geophysics Geosystems* 17, 2070-2094.
84. Yan, B., Stute, M., Panettieri, R., Ross, J., Mailloux, B., Neidell, M., Soares, L.; Howarth, M., Liu, X.; Saberi, P., Chillrud, S. N. (2017) Association of groundwater constituents with topography and distance to unconventional gas wells in NE Pennsylvania. *Science of the Total Environment*, 577 , 195-201.
85. Priestley, S.C., Love, A.J., Post, V., Shand, P., Wohling, D., Kipfer, R., Payne, T.E., Stute, M. and Tyroller, L. (2017) Environmental tracers in groundwaters and porewaters to understand groundwater movement through an argillaceous aquitard, in: Marques, J.M., Chambel, A. (Eds.), 15th Water-Rock Interaction International Symposium, Wri-15, pp. 420-423.
86. Radloff, K.A., Zheng, Y., Stute, M., Weinman, B., Bostick, B., Mihajlov, I., Bounds, M., Rahman, M.M., Huq, M.R., Ahmed, K.M. and Schlosser, P. (2017). Reversible adsorption and flushing of arsenic in a shallow, Holocene aquifer of Bangladesh. *Applied Geochemistry*, 77, 142-157.
87. Snaebjornsdottir, S.O., Oelkers, E.H., Mesfin, K., Aradottir, E.S., Dideriksen, K., Gunnarsson, I., Gunnlaugsson, E., Matter, J.M., Stute, M. and Gislason, S.R. (2017) The chemistry and saturation states of subsurface fluids during the in situ mineralisation of CO2 and H2S at the CarbFix site in SW-Iceland. *International Journal of Greenhouse Gas Control,* 58, 87-102.
88. Trias, R., Ménez, B., Campion, P., Zivanovic, Y., Lecourt, L., Lecoeuvre, A., Schmitt-Kopplin, P., Uhl, J., Gislason, S.R., Alfreðsson, H.A., Mesfin, K.G., Snæbjörnsdóttir, S. Ó, Aradóttir, E.S., Gunnarsson, I., Matter, J.M., Stute, M., Oelkers, E.H. & Gérard, E. (2017) High reactivity of deep biota under

anthropogenic CO2 injection into basalt. *Nature Communications*, 8(1), 1063.

89. Priestley, S.C., Kleinig, T., Love, A.J., Post, V.E., Shand, P., Smith, S.D., Stute, M., Wallis, I. and Wohling, D.L., (2018). Corrigendum to "Palaeohydrogeology and Transport Parameters Derived from ^{4}He and Cl Profiles in Aquitard Pore Waters in a Large Multilayer Aquifer System, Central Australia". *Geofluids*, 2018.
90. Goldberg, D., Aston, L., Bonneville, A., Demirkanli, I., Evans, C., Fisher, A., Garcia, H., Gerrard, M., Heesemann, M., Hnottavange-Telleen, K. and Hsu, E., Malinverno, C., Moran, K., Park, A-H A., Scherwath, M., Slagle, A., Stute, M., Weathers, T., White, M., White, M. (2018). Geological storage of CO_2 in sub-seafloor basalt: the CarbonSAFE pre-feasibility study offshore Washington State and British Columbia. *Energy Procedia*, 146, pp.158-165.
91. Gunnarsson, I., Aradóttir, E.S., Oelkers, E.H., Clark, D.E., Arnarson, M.Þ., Sigfússon, B., Snæbjörnsdóttir, S.Ó., Matter, J.M., Stute, M., Júlíusson, B.M. and Gíslason, S.R., (2018). The rapid and cost-effective capture and subsurface mineral storage of carbon and sulfur at the CarbFix2 site. *International Journal of Greenhouse Gas Control*, 79, pp.117-126.
92. Oelkers, E.H., Butcher, R., Pogge von Strandmann, P.A., Schuessler, J.A., von Blanckenburg, F., Snæbjörnsdóttir, S.Ó., Mesfin, K., Aradóttir, E.S., Gunnarsson, I., Sigfússon, B. and Gunnlaugsson, E., Matter, J., Stute, M., Gislasson, S.R. (2019). Using stable Mg isotope signatures to assess the fate of magnesium during the in situ mineralisation of CO_2 and H_2S at the CarbFix site in SW-Iceland. *Geochimica et Cosmochimica Acta*, 245, pp.542-555.
93. Vankeuren, A. N. P., Matter, J. M., Stute, M., & Kelemen, P. B. (2019). Multitracer determination of apparent groundwater ages in peridotite aquifers within the Samail ophiolite, Sultanate of Oman. *Earth and Planetary Science Letters*, 516, 37-48.
94. Seltzer, A. M., Ng, J., Danskin, W. R., Kulongoski, J. T., Gannon, R. S., Stute, M., & Severinghaus, J. P. (2019). Deglacial water-table decline in Southern California recorded by noble gas isotopes. *Nature Communications,* 10(1), 1-6.
95. Mihajlov, I., Mozumder, M.R.H., Bostick, B.C., Stute, M., Mailloux, B.J., Knappett, P.S., Choudhury, I., Ahmed, K.M., Schlosser, P. and van Geen, A. (2020). Arsenic contamination of Bangladesh aquifers exacerbated by clay layers. *Nature Communications*, 11(1), pp.1-9.
96. Mozumder, M. R. H., Michael, H. A., Mihajlov, I., Khan, M. R., Knappett, P. S. K., Bostick, B. C., Mailloux, B. J., Ahmed, K. M., Choudhury, I., Koffman. T., Ellis, T., Whaley-Martin, K., San Pedro, R., Slater, G., Stute, M., Schlosser, P. van Geen, A. (2020). Origin of groundwater arsenic in a rural Pleistocene aquifer in Bangladesh depressurized by distal municipal pumping. *Water Resources Research*, 56(7), e2020WR027178.
97. Nothaft, D., Templeton, A.S., Boyd, E., Matter, J., Stute, M., Paukert Vankeuren, A.N. (2021) Aqueous geochemical and microbial variation across discrete depth intervals in a peridotite aquifer assessed using a packer system in the Samail Ophiolite, Oman. *Geophysical Research Letters – Biogeosciences*, in press.
98. Seltzer, A.M., Ng, J., Aeschbach, W., Kipfer, R., Kulongoski, J.T., Severinghaus, J.P., Stute, M. (2021) Widespread 6ºC Cooling on Land During the Last Glacial. *Nature*, 593(7858), 228-232

Chapters in Books - Peer Reviewed

1. Stute, M. and C. Sonntag (1992) Paleotemperatures derived from noble gases dissolved in groundwater and relation to soil temperature. *Isotopes of noble gases as tracers in environmental studies,* IAEA, Vienna, 111-122.
2. Dörr, H, P. Schlosser, M. Stute, and C. Sonntag (1992) Tritium and ^{3}He measurements as calibration data for ground water transport models. In: *Progress in hydrochemistry,* G. Matthess, F.H. Frimmel, P. Hirsch, H.D. Schulz, and H.E. Usdowski (ed.), SpringerVerlag, Berlin, 461-466.
3. Stute, M. and P. Schlosser (1993) Principles and Applications of the Noble Gas Paleothermometer. *AGU Monograph on 'Climate Change in Continental Isotopic Records', Geophysical Monograph,* 78,

89-100.

4. Stute, M. (1996) Glacial Epoch. *McGraw-Hill Yearbook of Science and Technology,* McGraw-Hill, New York, 227-229.
5. Stute, M. and P. Schlosser (1999) Atmospheric noble gases. In: *Environmental tracers in subsurface hydrology,* Cook, P.G., and Herczeg, A.L. (ed.), Kluwer, Boston, 349-377.
6. Bush, M.B., M. Stute, M.P. Ledru, H. Behling, P.A. Colinvaux, P.E. De Oliveira, E.C. Grimm, H. Hooghiemstra, S. Haberle, B.W. Leyden, M.L. Salgado-Labouriau, R. Webb (2001) Paleotemperature estimates for the lowland Americas between 30^0S and 30^0N at the last glacial maximum. In: Interhemispheric Climate Linkages, V. Markgraf (ed.), Academic Press, San Diego, 293-306.
7. Kipfer R., Aeschbach-Hertig W., Peeters F., and Stute, M. (2002) Noble gases in lakes and ground waters. *Rev. Mineral. Geochem* 47, 615-700.
8. Torgersen, T. and Stute, M. (2012) Helium (and other noble gases) as a tool for the understanding long time-scale groundwater transport. In: Dating old Groundwater: A Guidebook. IAEA, Vienna, 196-233.

Conference Proceedings

1. Deák, J., M. Stute, J. Rudolph, and C. Sonntag (1987) Determination of the flow regime of Quaternary and Pliocene layers in the Great Hungarian Plain (Hungary) by D, ~ ^{14}C and noble gas measurements. In: *Isotope Techniques in Water Resources Development,* IAEA, Vienna, 1987, 335-350.
2. Weise, S.M., P. Faber, and M. Stute (1992) Neon-21 – A possible tool for dating very old groundwater? In: *Isotope Techniques in Water Resources Development 1991,* IAEA, Vienna, 1992, 179-188.
3. Stute, M., J.F. Clark, F.M. Phillips, and D. Elmore (1993) Reconstruction of late glacial climates from the groundwater archive: C1 and ^{36}C1 in the Carrizo aquifer, Texas. In: *Isotope techniques in studying past and current environmental changes in the hydrosphere and the atmosphere,* IAEA, Vienna, 259—270.
4. Clark, J.F., P. Schlosser, H.J. Simpson, M. Stute, R. Wanninkhof, and D.T. Ho (1995) Relationship between gas transfer velocities and wind speeds in the tidal Hudson river determined by the dual tracer technique. In: 'Air-Water Gas Transfer', Proceedings of the third international symposium on air-water gas transfer, B. Jaehne and E.C. Monahan, editors, AEON Verlag & Studio, Hanau, Germany, 785-800.
5. Stute, M. (1997) Were the tropics significantly cooler during the Last Glacial Maximum? In: *Hydrologie et Géochimie Isotopique,* C. Causse and F. Gasse, ed., Orstrom, Paris, 219-228.
6. Stute, M, and A.S. Talma (1998) Glacial temperatures and moisture transport regimes reconstructed from noble gases and 0-18, Stampriet aquifer, Namibia. In: *Isotope techniques in the study of environmental change,* IAEA, Vienna, 307-318.
7. Schlosser, P., S.D. Shapiro, M. Stute, W. Aeschbach-Hertig, N. Plummer, and E. Busenberg (1998) Tritium/^{3}He measurements in young groundwater. In: *Isotope techniques in the study of environmental change,* IAEA, Vienna, 165-189.
8. Stute, M., and P. Schlosser (2000) Tritium/^{3}He measurements as calibration tools in groundwater transport modeling. In: Tracers and Modelling in Hydrogeology (A. Dassargues, ed.) IAHS Publication no 262, 33-38.
9. Schlosser, P., S.D. Shapiro, M. Stute, and L.N. Plummer (2000) Tritium/He-3 measurements in young groundwater : progress in applications to complex hydrogeologic systems. In: Tracers and Modelling in Hydrogeology (A. Dassargues, ed.) IAHS Publication no 262, 481-486.
10. Stute, M. (2000) ^{3}H in precipitation in Bangladesh. In: Proceedings of the KTH Stockholm and Dhaka University As in drinking water meeting, Feb. 1999, Dhaka, Bangladesh.
11. Keimowitz, A. R., H. J. Simpson, S. N. Chillrud, M. Stute, M. Tsang, S. Datta and J. Ross (2005) Oxidation of groundwater arsenic and iron. In: Advances in Arsenic Research: Integration of Experimental and Observational Studies and Implications for Mitigation. ACS Symposium Series, vol. 915. P. A. O'Day, D. Vlassopoulos, D. Meng and L. G. Benning, Eds. American Chemical Society:

Washington, DC.

Other

1. Brandt-Rauf, P., J. Graziano, and M. Stute (1999) A Multidisciplinary approach to the Arsenic calamity in Bangladesh. *Earth Matters,* Columbia University, Fall 1999, 29-33.

Research Interests

Global change: climate change during the last 40,000 years and in the near future; Hydrology and climate; groundwater as an archive of paleoclimate, in particular: paleotemperatures based on concentrations of dissolved noble gases; dynamics of groundwater flow on all time scales by using noble gases of tritiogenic, radiogenic and nucleogenic origin and other tracers in groundwater; processes in the unsaturated zone: composition of ground gases, thermodynamics; surface water-groundwater interactions; water-air gas exchange; water/rock interactions, surface exposure dating with cosmogenic nuclides; accumulation rates of ocean sediments; interplanetary dust particles; mathematical modeling of tracer distributions in natural systems, arsenic contamination of groundwater, CO_2 sequestration, instrument development for sampling and measurement of environmental tracers, multidisciplinary approaches in environmental sciences.

Field Projects

Over the last years, I conducted several extensive field programs in groundwater hydrology at the following locations: Bad Oeynhausen (Germany), Bocholt (Germany), Great Hungarian Plain, Gulf coast plain (Texas), San Juan Basin (New Mexico), Aquia aquifer (Maryland), Piaui Province (Brazil), Perth and Otway Basins (Australia), Kalahan (Namibia), Aveiro (Portugal), Mekong Delta (Vietnam), Rio Guayas Delta (Ecuador), Black Rock Forest, NY, Saratoga Springs, NY, Ganges-Brahmaputra Delta, Bangladesh, Sao Paulo State, Brazil, Iceland, southern Maine, southern New Jersey, Montana, and Oman. I also participated in a three-month long oceanographic expedition to Wilkes Land, Anarctica (WLEX 95), and directed the tracer program.

Invited Presentations

2020 Invited talk, Barnard Alumnae Association, West Palm Beach, FL (Climate Change)
2019 Invited speaker and Panel Chair, Stamford, CT (Global Warming: Confronting the Challenge)
2019 Invited speaker, Math for America, New York, NY (Physical flow and transport models)
2019 Invited speaker, Washington and Lee, Lexington, VA (had to cancel)
2018 Invited speaker, Nanjing, University, China (Putting away CO_2 for good: carbon sequestration in basalts)
2018 Invited speaker, University of Science and Technology of China, Hefei, China (Ar-39 as tracer for changes in ocean circulation and determination of geochemical reaction rates in groundwater)
2018 Invited speaker, Math for America, New York, NY (Water Flow and Transport Models for the Classroom)
2017 Keynote speaker, Goldschmidt 2017, Paris, France (Trends in Environmental Tracer Applications)
2017 Invited speaker, Deutsches Geoforschungszentrum, Potsdam, Germany (Putting away CO_2 for good: carbon sequestration in basalts)
2017 Invited speaker, ETH/EAWAG Zuerich, Switzerland (Putting away CO_2 for good: carbon sequestration in basalts)
2017 Invited speaker, University of Heidelberg, Germany (Putting away CO_2 for good: carbon sequestration in basalts)
2016 Invited speaker, Flinders University, Adelaide, Australia ((Putting away CO_2 for good: carbon sequestration in basalts)

2016 Invited speaker, GNS Science, Lower Hutt, New Zealand (Putting away CO_2 for good: carbon sequestration in basalts)
2014 Keynote speaker, Goldschmidt 2014, Sacrameto, CA (Multidisciplinary approaches for understanding regional aquifer systems)
2009 Keynote speaker, Goldschmidt 2009, Davos, Switzerland (Environmental tracers in hydrogeology: Principles, applications, and challenges)
2009 AGU Chapman Conference, Siem Reap, Cambodia (Environmental Tracer Applications in Floodplain Aquifers with Elevated Arsenic Concentrations)
2008 St. Louis University, St. Louis (Arsenic!)
2007 MINOGA conference, Potsdam, Germany (Environmental Tracer Applications in Bangladesh)
2006 American Chemical Society, Atlanta (Hydrology and Arsenic mobilization in Bangladesh)
2006 NIEHS Superfund Annual Meeting, New York City (Hydrological Investigations at Pump & Treat Superfund Sites)
2004 New Jersey Department of Environmental Protection (Vineland Superfund Site: Arsenic mobilization, transport and treatment issues)
2003 Carnegie Institution, Washington, D.C. (Dating ultra-deep mine waters with noble gases and Cl-36, Witwatersrand Basin, South Africa)
2000 University of Arizona, Tucson, AZ (Arsenic mobilization in reducing groundwaters in Bangladesh and at a Superfund site in Maine)
2002 University of Tübingen, Germany (Principles and applications of noble gases in groundwater)
2002 International Atomic Energy Agency, Vienna (Austria) (Application of environmental tracers ($^3H/^3He$ and SF_6) in groundwater contaminant transport)
2002 University of Bremen, Germany (Groundwater as archive of paleoclimate, principles and applications)
2002 Environmental Research Institute, Halle/Leipzig, Germany (Application of environmental tracers ($^3H/^3He$ and SF_6) in groundwater contaminant transport)
2002 Ludwigs-Maximilians University, Munich, Germany (Groundwater as archive of paleoclimate, principles and applications)
2000 Yale University, New Haven, (Climate signals of the last ice age in groundwater)
1999 University of Bayreuth, Germany (Application of natural and anthropogenic tracers (^3H, noble gases, ^{14}C, $^{18}0$, and CFCs) in hydrogeology)
1999 German Physical Society, Heidelberg, Germany (Tracer techniques in hydrology, ground and surface waters)
1999 Closter Nature Center, N.J. (Noble gases in groundwater: water resources and paleoclimate)
1999 University of Dhaka/Bangladesh Medical Society, Dhaka, Bangladesh ($^3H/^3He$ dating of groundwater in Bangladesh)
1997 PMIP, Lawrence Livermore National Lab, CA (Tropical Palaeoclimates at the Last Glacial Maximum: A New Synthesis of Terrestrial Data)
1997 Lund University, Lund, Sweden (Glacial climate conditions in the tropics derived from the groundwater archive)
1997 European Pollen Data Base, Aries, France (Tropical paleotempertures derived from noble gases dissolved in groundwater)
1997 Penn State University, State College, PA (Glacial temperautres reconstructed from noble gases dissolved in groundwater)
1996 PAGES-PEPIII meeting, Paris, France (Groundwater as archive of paleoclimate)
1996 CEEA, Quito, Ecuador (Paleoclimate in the Americas reconstructed from noble gases dissolved in groundwater)
1996 RPI, Albany (Paleoclimate lessons from old groundwater)
1996 Geotop, Montreal (Paleoclimate lessons from old groundwater)
1996 Vrije Universiteit, Amsterdam (Reconstruction of glacial climate from noble gases in

groundwater and ocean sediments)
1995 ETH Zurich, Switzerland (Climate signals of the last ice age in groundwater)
1995 MIT, Boston (Noble gases in groundwater: implications for flow dynamics and paleoclimate)
1994 Long Island Geologists ($^3H/^3He$ dating of shallow groundwater)
1994 SUNY Stonybrook (Noble gases in groundwater - implications for flow dynamics and paleoclimate)
1994 CSIRO Adelaide, Australia (Paleoclimate lessons from groundwater)
1993 Yale University, New Haven (Paleotemperatures derived from noble gases dissolved in groundwater)
1992 Harvard University, Boston (Paleoclimate lessons derived from groundwater)
1992 New Mexico Tech, Socorro, NM (Paleoclimate in the southeastern United States derived from noble gases dissolved in groundwater)
1989 International Atomic Energy Agency, Vienna, Consultant meeting (Paleotemperatures derived from noble gases dissolved in groundwater and relation to soil temperature)
1989 University of Bern, Switzerland (Noble gases in groundwater - determination of paleotemperatures and investigation of the dynamics of groundwater flow systems)