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Education LIVERPOOL UNIVERSITY Liverpool, England
October 1980–May 1983
1983 B. Sc. Honours First Class, Geography

COLUMBIA UNIVERSITY New York, NY
September 1983– February 1990
1985 M. A. in Geological Sciences
1990 M. Phil. in Geological Sciences
1990 Ph. D. in Geological Sciences

Ph.D. Thesis: Modeling sea surface temperature and low level winds in the tropics.
Advisor: Professor Mark Cane.

Employment March 1990–December 1990. Post-Doctoral Research Scientist at Lamont Doherty Geological Observatory of Columbia University, New York.

January 1991–December 1992. Post-Doctoral Research Scientist at The Joint Institute for Study of the Atmosphere and Ocean, University of Washington, Seattle.

January 1993 to December 1993. National Oceanic and Atmospheric Administration Program in Climate and Global Change Postdoctoral Fellow at Lamont Doherty Earth Observatory of Columbia University, New York.

January 1994 to July 1997. Associate Research Scientist at Lamont Doherty Earth Observatory of Columbia University, Palisades, New York.

July 1997 to July 2000. Research Scientist at Lamont Doherty Earth Observatory of Columbia University, Palisades, New York.

July 2000 to September 2008. Doherty Senior Research Scientist at Lamont Doherty Earth Observatory of Columbia University, Palisades, New York.

September 2008 to June 2010 Palisades Geophysical Institute Senior Research Scientist at Lamont Doherty Earth Observatory of Columbia University, Palisades, New York.

July 2010 to present. Palisades Geophysical Institute/Lamont Research Professor at Lamont Doherty Earth Observatory of Columbia University, Palisades, New York.

Research interests

Climate change and variability on seasonal to glacial timescales, tropical forcing of global climate variations, North American drought, tropical atmosphere-ocean interactions, tropical climate change, explaining the causes of regional climates, climate modeling, seasonal to decadal climate prediction, global hydroclimate variability and change.

Professional service

US CLIVAR drought working group member (2006 to present).
Contributing author for Climate Change Science Program Synthesis and Assessment Report, abrupt change chapter (2006 to 2009).
Associate Editor, *Quarterly Journal of the Royal Meteorological Society* (2005 to present)
Member of the American Meteorological Society Committee on Tropical Meteorology and Hurricanes (1995 to 1999).
Member of the CLIVAR Pacific panel (1999 to 2001)

Awards

California Department of Water Resources Climate Science Paper awards for two separate papers, November 2008.
Lamont Director's Award for Outstanding Research Performance, September 2007.
National Oceanic and Atmospheric Administration Program in Climate and Global Change Postdoctoral Fellowship, July 1992.

Professional Associations

Member of the Royal Meteorological Society
Member of the New York Academy of Sciences
Member of The American Meteorological Society.
Member of the AMS Committee on Tropical Meteorology and Hurricanes (1995 to 1999).
Member of the American Geophysical Union.

Graduate students advised (wholly or partially)

Amy Clement, Alessandra Giannini, Arthur Greene, Alicia Karspeck, Julien Emile-Geay, Celine Herweijer, Wenchang Yang, Yutian Wu, Colin Kelley, Joelle Birnberg, Mary Moore, David Wang, John Sawicki.

Postdoctoral fellows mentored

Nili Harnik (Lamont fellowship), Kris Karnauskas (Lamont fellowship), Jason Smerdon (Lamont fellowship), Ben Cook (NOAA fellowship).

Popular articles, un-refereed articles, encyclopedia entries etc.

- R. Seager and B. Cook, 2010: The Dust Bowl, *Encyclopedia of Natural Hazards*, Peter Bobrowsky, Ed., Springer, New York, in review.
- R. Seager, 2008: Setting the record straight on the Gulf Stream and European climate. *The Plantsman*, the quarterly magazine of the Royal Horticultural Society, **7**, 22-27.
- R. Seager, 2007: Making a bad situation worse: Climate change and human-induced aridification of southwestern North America. California Department of Water Resources *California Drought Update*, June 2008.
- Schubert, S., R. Koster, M. Hoerling, R. Seager, D. Lettenmaier, A. Kumar and D. Gutzler, 2007: Predicting drought on seasonal-to-decadal timescales. *Bull. Amer. Meteor. Soc.*, **88**, 1625-1630.
- R. Seager, 2006: The source of Europe's mild climate, *Am. Sci.*, **94**, 334-341.

- Clement, A.C., J. Emile-Geay, R. Seager, M. Cane and M. N. Evans, 2006: Solar forcing of the tropical Pacific climate and impacts over North America for the last millennium. *PAGES News*, **14**, 12-14.
- R. Seager, 2003: Gulf Stream, la fin d'un mythe. *La Recherche*, **361**, 40-45 (In French).

Refereed professional reports

- Cook, E.R., P.J. Bartlein, N. Diffenbaugh, R. Seager, B.N. Shuman, R. S. Webb and C. Woodhouse, 2008, Hydrological variability and change. In *Abrupt Climate Change*, A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. U.S. geological Survey, Reston, VA, pp. 143-257.
- Delworth, T.L., P.U. Clark, M. Holland, W.E. Johns, T. Kuhlbrodt, J. Lynch-Stieglitz, C. Morrill, R. Seager, A.J. Weaver, and R. Zhang, 2008: The potential for abrupt change in the Atlantic Meridional Overturning Circulation. In: *Abrupt Climate Change*. A report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. U.S. Geological Survey, Reston, VA, pp. 258-359.

Publications in preparation

- Seager, R. and N. Naik, 2010: A mechanisms-based approach for distinguishing between naturally occurring extratropical drought and anthropogenic subtropical drying. *J. Climate*, in prep.
- Cook, B., R. Seager and R. Miller, 2010: On the causes, and unlikely reoccurrence of, the early 20th Century North American pluvial. *J. Climate*, in prep.
- D'Arrigo, R., R. Seager, J. Smerdon, A. LeGrande. E. Cook and K. Tsigaridis, 2010: The anomalous winter of 1783-1784: Was the Laki eruption really to blame? in prep.

Refereed publications

- Cook, B., R. Seager and R. Miller, 2010: The causes and dynamics of the early 20th Century North American pluvial. *J. Climate*, submitted.
- Seager, R., N. Naik, W. Baethgen, A. Robertson, Y. Kushnir, J. Nakamura and S. Jurburg, 2010: Tropical oceanic causes of interannual to multidecadal precipitation variability in southeast South America over the past century. *J. Climate*, **23**, 5517-5539.
- Cook, B., E. Cook, K. Achukaitis, R. Seager and R. Miller, 2010: Forced and unforced variability of 20th Century North American droughts and pluvials. *Clim. Dyn.*, doi:10/1007/s00382-010-0897-9.
- Cook, B., R. Seager and R. Miller, 2010: Atmospheric circulation anomalies during two persistent North American droughts: 1932-1939 and 1948-1957. *Clim. Dyn.*, doi:10.1007/s00382-010-0807-1.
- Harnik, N., R. Seager, N. Naik, M. Cane and M. Ting, 2010: The role of linear wave refraction in the transient eddy-mean flow response to tropical Pacific SST anomalies. *Quart. J. Roy. Meteor. Soc.*, in press.

- Seager, R. and G. Vecchi, 2010: Global warming and the 21st century climate of southwestern North America. *Proc. Nat. Acad. Sci.*, in press.
- Kushnir, Y., R. Seager, M. Ting, N. Naik and J. Nakamura, 2010: Mechanisms of tropical Atlantic SST influence on North American hydroclimate variability. *J. Climate*, in press.
- Seager, R., N. Naik and G. Vecchi, 2010: Thermodynamic and dynamic causes of large-scale changes in the hydrological cycle in response to global warming. *J. Climate*, **23**, 4651-4668.
- Seager, R., Y. Kushnir, J. Nakamura, M. Ting and N. Naik, 2010: Northern hemisphere winter snow anomalies: ENSO, NAO and winter of 2009/10. *Geophys. Res. Lett.*, **37**, doi:10.1029/2010GL043830.
- Wu, Y., M. Ting, R. Seager, H.-P. Huang and M. Cane, 2010: Changes in storm tracks and energy transports in a warmer climate simulated by the GFDL CM2.1 model. *Clim. Dyn.*, doi:10.1007/s00382-010-0776-4.
- Burgman, R., R. Seager, A. C. Clement and C. Herweijer, 2010: Role of tropical Pacific SSTs in global medieval hydroclimate: A modeling study. *Geophys. Res. Lett.*, **37**, doi:10.1029/2009GL042239.
- Seager, R., N. Naik, M. Ting, N. Harnik, M. Cane and Y. Kushnir, 2010: Adjustment of the atmospheric circulation to tropical Pacific SST anomalies: Variability of transient eddy propagation in the Pacific North-America sector. *Quart. J. Royal Meteor. Soc.*, **136**, 277-296.
- Schubert, S. and 32 others (incl. R. Seager), 2009: A U.S. CLIVAR project to assess and compare the responses of global climate models to drought-related SST forcing patterns: Overview and results. *J. Climate*, **22**, 5251-5272
- Cook, E. R., R. Seager, R. R. Heim, R. S. Vose, C. Herweijer, C. Woodhouse, 2009: Megadroughts in North America: Placing IPCC projections of hydroclimatic change in a long term paleoclimatic context. *J. Quat. Sci.*, **25**, 48-61..
- Cook, B., R. Miller and R. Seager, 2009, Amplification of the North American Dust Bowl drought through human-induced land surface degradation. *Proc. Nat. Acad. Sci.*, **106**, 4997-5001.
- Seager, R., A. Tzanova and J. Nakamura 2009: Drought in the southeastern United States: Causes, variability over the last millennium and the potential for near future hydroclimate change. *J. Climate*, **22**, 5021-5045.
- Stahle, D.W., E. R. Cook, J. Villanueva Diaz, F. K. Fye, D. J. Burnette, R. D. Griffin, R. Acuña-Soto, R. Seager and R. R. Heim, 2009: Early 21st Century drought in Mexico. EOS Transactions of the American Geophysical Union, **90**, 89-90.
- Ting, M., Y. Kushnir, R. Seager, C. Li, 2009: Forced and internal 20th Century SST changes in the North Atlantic. *J. Climate*, **22**, 1469-1481.
- Karneuskas, K., R. Seager, A. Kaplan, Y. Kushnir and M. A. Cane, 2009: Observed strengthening of the zonal sea surface temperature gradient across the equatorial Pacific Ocean, *J. Climate*, **22**, 4316-4321.
- Seager, R., M. Ting, M. Davis, M. Cane, N. Naik, J. Miller, C. Li, E.R. Cook and D.W. Stahle, 2009: Mexican drought: An observational, modeling and tree ring reconstruction study of variability and climate change. *Atmosfera*, bf 22, 1-31.
- Cook, B., R. Miller and R. Seager, 2008: Dust and sea surface temperature forcing of the 1930s 'Dust Bowl' drought. *Geophys. Res. Lett.*, **35**, doi:10.1029/2008GL033486.

- Seager, R., R. Burgman, Y. Kushnir, A. C. Clement, E. R. Cook, N. Naik and J. Miller, 2008: Tropical Pacific forcing of North American Medieval megadroughts; Testing the concept with an atmosphere model forced by coral-reconstructed SSTs *J. Climate*, **21**, 6175-6190.
- Seager, R., Y. Kushnir, M. Ting, M. Cane, N. Naik and J. Miller, 2008: Would advance knowledge of 1930s SSTs have allowed prediction of the Dust Bowl drought? *J. Climate*, **21**, 3261-3281
- Emile-Geay, J., R. Seager, M. A. Cane, G. H. Haug and E. R. Cook 2008: Volcanoes and ENSO over the last millennium, *J. Climate*, **21**, 3134-3138.
- Herweijer, C. and R. Seager, 2008: The global footprint of persistent extra-tropical drought in the instrumental era. *Int. J. Climatol.*, doi:10.1002/joc.1590.
- Murtugudde, R., R. Seager and P. Thoppil, 2008: Arabian Sea response to monsoon variations. *Paleoceanogr.*, **22**, doi:10.1029/2007PA001467.
- Seager, R., M. Ting, I. M. Held, Y. Kushnir, J. Lu, G. Vecchi, H.-P. Huang, N. Harnik, A. Leetmaa, N.-C. Lau, C. Li, J. Velez and N. Naik, 2007: Model projections of an imminent transition to a more arid climate in southwestern North America, *Science*, **316**, 1181-1184.
- Seager, R., N. E. Graham, C. Herweijer, A. Gordon, Y. Kushnir and E. Cook, 2007: Blueprints for Medieval hydroclimate. *Quat. Sci. Rev.*, **26**, 2322-2336.
- Emile-Geay, J., M.A. Cane, R. Seager, A. Kaplan and P. Almasi, 2007: El Niño as a mediator of the solar influence on climate, *Paleoceanogr.*, **22**, doi:10.1029/2006PA001304.
- Seager, R., 2007: The turn of the century North American drought: Global context, dynamics and past analogues. *J. Climate*, **20**, 5527-5552.
- Herweijer, C., R. Seager and E. R. Cook, 2007: North American droughts of the last millennium from a gridded network of tree ring data. *J. Climate*, **20**, 1353-1376.
- Cook, E.R., R. Seager, M.A. Cane and D. W. Stahle, 2007: North American droughts: reconstructions, causes and consequences. *Earth Sci. Rev.*, **81**, 93-134.
- Seager, R. and D. S. Battisti, 2007: Challenges to our understanding of the general circulation: Abrupt climate change. *The General Circulation of the Atmosphere*, T. P. Schneider and A.S. Sobel, Eds., Princeton University Press, pp 331-371.
- Herweijer, C., R. Seager and E. R. Cook, 2006: North American Droughts of the mid to late Nineteenth Century: A history, model simulation and implications for Medieval megadrought. *The Holocene*, **16**, 159-171.
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- Seager, R., Y. Kushnir, C. Herweijer, N. Naik and J. Velez, 2005: Modeling of tropical forcing of persistent droughts and pluvials over western North America: 1856-2000. *J. Climate*, **18**, 4068-4091.
- Clement, A. C., R. Seager and R. Murtugudde, 2005: Why are there tropical warm pools? *J. Climate*, **18**, 5294-5311.
- Hazeleger, W., C. Severijns, R. Seager and F. Molteni, 2005: Tropical Pacific-driven decadal energy transport variability. *J. Climate*, **18**, 2037-2051.
- Herweijer, C., R. Seager and M. Winton, 2005: Why ocean heat transport warms the global mean climate. *Tellus*, **57A**, 662-675.
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- Seager, R., N. Harnik, Y. Kushnir, W. A. Robinson and J. Miller, 2003: Mechanisms of hemispherically symmetric climate variability. *J. Climate*, **16**, 2960-2978.
- Seager, R., R. Murtugudde, N. Naik, A. Clement, N. Gordon and J. Miller, 2003: Air-sea interaction and the seasonal cycle of the subtropical anticyclones. *J. Climate*, **16**, 1948-1966.
- Kushnir, Y., R. Seager, J. Miller and J. Chiang, 2002: A simple model of tropical Atlantic decadal climate variability. *Geophys. Res. Letters*, **29**, 10.1029/2002GLO15874.
- Greene, A. M., Seager, R. and W. S. Broecker, 2002: Tropical snowline depression at the Last Glacial Maximum: comparison of coral and groundwater records. *J. Geophys. Res.-Atmospheres*, 10.1029/2001JD000670.
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- Seager, R., Y. Kushnir, N. Naik, M. A. Cane and J. Miller 2001: Wind-driven shifts in the latitude of the Kuroshio-Oyashio extension and generation of SST anomalies on decadal timescales. *J. Climate*, **14**, 4249-4265.
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- Giannini, A., J. C. H. Chiang, M. A. Cane, Y. Kushnir and R. Seager, 2001: The ENSO teleconnection to the tropical Atlantic Ocean: contributions of the remote and local SSTs to rainfall variability in the tropical Americas. *J. Climate*, **14**, 4530-4544.
- Seager, R., Y. Kushnir, P. Chang, N. Naik, J. Miller and W. Hazeleger, 2001: Looking for the role of the ocean in tropical Atlantic decadal climate variability. *J. Climate*, **14**, 638-655.
- Hazeleger, W., R. Seager, M. Visbeck, N. Naik and K. Rodgers, 2001: On the impact of the mid-latitude stormtrack on the upper Pacific. *J. Phys. Oceanogr.*, **31**, 616-636.
- Clement, A. C., R. Seager and M. A. Cane, 2000: Suppression of El Niño during the mid-Holocene by changes in the Earth's orbit. *Paleoceanogr.*, **15**, 731-737.
- Seager, R., Y. Kushnir, M. Visbeck, N. Naik, J. Miller, G. Krahnmann and H. Cullen, 2000: Causes of Atlantic Ocean climate variability between 1958 and 1998. *J. Climate*, **13**, 2845-2862.
- Seager R., Clement, A. C. and M. A. Cane, 2000: Glacial cooling in the tropics: exploring the roles of tropospheric water vapor, surface wind speed and boundary layer processes. *J. Atmos. Sci.*, **57**, 2144-2157.

- Clement, A. C., R. Seager and M. A. Cane, 1999: Orbital controls on ENSO and the tropical climate. *Paleoceanogr.*, **14**, 441-456.
- Clement, A. C. and R. Seager, 1999: Climate and the tropical oceans. *J. Climate*, **12**, 3383-3401.
- Clement, A. C., M. A. Cane and R. Seager, 1998: Patterns and mechanisms of Twentieth Century climate change. *World Resource Review*, **10**, 161-185.
- Cane, M. A., A. C. Clement, A. Kaplan, Y. Kushnir, R. Murtugudde, D. Pozdnyakov, R. Seager and S. E. Zebiak, 1997: Twentieth century sea surface temperature trends. *Science*, **275**, 957-960.
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