

CRISTINA L. ARCHER

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Education

September 1998 – April 2004: Stanford University, Stanford, California.

Ph.D. in Civil and Environmental Engineering. Thesis title: “The Santa Cruz Eddy and U.S. Wind Power.” Research conducted on two topics: (1) study of the formation mechanism of a meso-scale circulation centered over the Monterey Bay (California) with the meteorological model MM5; (2) evaluation of U.S. wind power at 80 m by using a new extrapolation technique based on the least square error approach.

August 1996 - December 1998: San Jose State University, San Jose, California.

M.S. in Meteorology. Thesis title: “MM5 nesting techniques: a winter storm application.” Research conducted with the MM5 model on nesting techniques and winter storm simulations at the Center for Remote Sensing and Technology (CREST) of Lockheed Martin Corporation, Sunnyvale, California.

November 1989 - October 1995: Politecnico di Milano, Milano (Italy).

M.S. in Civil and Environmental Engineering. Thesis title: “Photochemical pollution modeling in a Lombardia area” (in Italian). Research conducted with the CALMET-CALGRID models on photochemical pollution in the Milan area at the CISE Environmental Research Center, Milan, Italy.

Work Experience

August 2008 – currently: Department of Geological and Environmental Sciences, California State University – Chico, Chico, California.

Assistant Professor in Environmental Sciences.

February 2005 – currently: Department of Civil and Environmental Engineering, Stanford University, California.

Consulting Assistant Professor. Research on wind power issues, including benefits of interconnected wind power and off- or near-shore wind distributions.

May 2007 – August 2008: Department of Global Ecology, Carnegie Institution, Stanford, California.

Research Associate. Research on issues related to global climate change, such as effects of landuse on California climate via regional scale modeling, and effects of climate change on jet streams and on surface and upper-level albedo.

February 2005 – May 2007: Bay Area Air Quality Management District, San Francisco, California.

Atmospheric Modeler. Applied research on photochemical pollution in the Bay Area, including meteorological and photochemical modeling, emission inventory, and evaluation of air quality control strategies in support to the District's planning process.

January 2004 – February 2005: Department of Civil and Environmental Engineering, Stanford University, California.

Post-Doctoral Scholar. Research on the evaluation of wind power potential in the U.S. and the rest of the world, by using both observations and modeling results.

January 2000 – May 2004.

Programmer/Consulting Meteorologist. Occasional consulting jobs for Pacific Gas and Electric (PG&E), Planetweather.com, Golden Gate Weather Services, IPS of California, and Qwikcast.com.

July 1996 - September 1998: Lockheed-Martin Corporation, Sunnyvale, California.

Graduate Student Researcher. Investigating feasibility of using satellite data to improve forecasting capability of the MM5 model.

January 1996 - June 1996 Fondazione Lombardia per l'Ambiente, Milano (Italy).

Atmospheric Pollution Modeler. Worked in a team studying ozone effects on forests in Valtellina Valley in Northern Italy.

September 1995 - December 1995 Waste Management, Como (Italy).

Grant Holder. Optimized collection and recycling of urban waste in a Northern Italian city.

Teaching Experience

August 2008 – currently: Department of Geological and Environmental Sciences, California State University – Chico, Chico, California.

Assistant Professor in Environmental Sciences, teaching Earth System Science.

September 2007 – December 2007: Department of Global Ecology, Stanford University, Stanford, California.

Teacher Assistant and Lecturer for the undergraduate class “Energy and the environment on the back of an envelope” (GES37N).

January 2000 - present: Civil and Environmental Engineering Department, Stanford University, Stanford, California, and Meteorology Department, San Jose State University, San Jose, California.

Lecturer of graduate and undergraduate classes in meteorology, air pollution, and climate change. Over 20 lectures taught.

September 1999 - December 1999: Civil and Environmental Engineering Department, Stanford University, Stanford, California.

Teacher Assistant for the undergraduate level class “Weather and Storms” (CEE163).

Awards and Scholarships

October 1996: Award by Regione Lombardia (Milano, Italy) for best thesis in environmental field for academic year 1994-95.

November 1997: AMS / NOAA Scholarship to participate to 78th Annual Meeting of the American Meteorological Society, Phoenix, Arizona, 10-16 January 1998.

Refereed publications

Jiang, Q., J. D. Doyle, T. Haack, M. J. Dvorak, C. L. Archer, and M. Z. Jacobson, 2008: Exploring wind energy potential off the California Coast. *Geophys. Res. Lett.*, doi:10.1029/2008GL034674.

Dvorak, M. J., C. L. Archer, and M. Z. Jacobson, 2008: California offshore wind energy potential. *Wind Energy*. Submitted on 4/15/08.

Archer, C. L., and K. Caldeira, 2008: Historical trends in the jet streams. *Geophys. Res. Lett.*, 35, L08803, doi:10.1029/2008GL033614.

Archer, C. L., and M. Z. Jacobson, 2007: Supplying baseload power and reducing transmissions requirements by interconnecting wind farms. *Journal of Applied Meteorology and Climatology*, 46, 1701-1717.

W. Kempton, C. L. Archer, A. Dhanju, R. W. Garvine, and M. Z. Jacobson, 2007: Large CO₂ reductions via offshore wind power matched to inherent storage in energy end-uses. *Geophysical Research Letters*, 34, L02817, doi:10.1029/2006GL028016.

Archer, C. L., and M. Z. Jacobson, 2006: Comments on “Evaluation of a wind power parameterization using tower observations” by Steven M. Lazarus and Jennifer Bewley. *Journal of Geophysical Research*, 111, D10103, doi:10.1029/2005JD006098.

Archer, C. L., and M. Z. Jacobson, 2005: Evaluation of global wind power. *Journal of Geophysical Research*, 110, doi:10.1029/2004JD005462.

Archer, C. L., M. Z. Jacobson, and F. L. Ludwig, 2005: The Santa Cruz Eddy. Part I: Observations and statistics. *Monthly Weather Review*, 133, 767-782.

Archer, C. L., and M. Z. Jacobson, 2005: The Santa Cruz Eddy. Part II: Mechanisms of formation. *Monthly Weather Review*, 133, 2387-2405.

Archer, C. L., and M. Z. Jacobson, 2003: The spatial and temporal distributions of U.S. winds and wind power at 80 m derived from measurements. *Journal of Geophysical Research*, 108(D9), doi:10.1029/2002JD002076.

Lozej, C., 1997: The modeling tool. *The Ozone Pollution*, I Manuali, **29**, Fondazione Lombardia per l'Ambiente, Milano (Italy), 197-205 (in Italian).

Lozej, C., 1997: The urban landscape impact on photochemical pollution. *The Ozone Pollution*, I Manuali, **29**, Fondazione Lombardia per l'Ambiente, Milano (Italy), 217-219 (in Italian).

Conference papers

Archer, C. L. and K. Caldeira, 2008: Historical trends in the jet streams. 20th Conference on Climate Variability and Change, 88th Annual Meeting of the American Meteorological Society, New Orleans, Louisiana, 20-24 January 2008.

Archer, C. L., and M. Z. Jacobson, 2007: Supplying reliable electricity and reducing transmission requirements by interconnecting wind farms. AGU 2007 Fall Meeting, San Francisco, California, 10-14 December 2007.

Dvorak, M. J., M. Z. Jacobson, and C. L. Archer, 2007: California offshore wind energy potential. Windpower 2007 Conference and Exhibition, June 1-6 2007, Los Angeles, California.

Archer, C. L., P. T. Martien, S.-T. Soong, and S. Tanrikulu, 2006: Comparison of simulated ozone generated with growth-and-control vs. uniformly-reduced emission inventories in California. 14th Joint Conference on the Applications of Air Pollution Meteorology with the Air and Waste Management Association, Atlanta, Georgia, 29 January-2 February 2006.

Su-Tzai Soong, P. T. Martien, C. L. Archer, S. Tanrikulu, J. M. Wilczak, J.-W. Bao, S. A. Michelson, Y. Jia, and C. A. Emery, 2006: Comparison of WRF/CAMx and MM5/CAMx simulations for an ozone episode in California. Eighth Conference on Atmospheric Chemistry, Atlanta, Georgia, 29 January-2 February 2006.

Archer, C. L., and M. Z. Jacobson, 2005: Evaluation of global wind power and interconnected wind farms. AGU 2005 Fall Meeting, San Francisco, California, 5-9 December 2005.

Archer, C. L., and M. Z. Jacobson, 2001: The Santa Cruz Eddy: observations and numerical simulations. Ninth Conference on Mesoscale Processes, Fort Lauderdale, Florida, July 30 - August 3 2001.

Lozej, C., and R. D. Bornstein, 1999: Comparison of nesting techniques within a meteorological model. Air Pollution 99, Stanford University, Stanford, California, 27-29 July 1999.

Lozej, C., and R. D. Bornstein, 1999: Comparison of nesting techniques within MM5: application to a precipitation event over the Western US. Pacific Northwest Weather Workshop, Seattle, Washington, 26-27 February 1999.

Invited talks

Big Wind: Harvesting energy from the sea, the land, and the sky. "This Way to Sustainability" conference, Chico, California, 6-9 November 2008.

The importance of wind power in a clean and renewable future. Energy seminar, Woods Institute for the Environment, Stanford University (California), 16 April 2008.

A quantification of the offshore wind power resource in the Middle Atlantic Bight. Naval Research Laboratory, Monterey (California), 19 July 2007.

How to mitigate wind intermittency? Atmospheric Group Seminar, Stanford University, 30 January 2007.

Evaluation of global wind power. Climate change series, Bay Area Air Quality Management District, 1 August 2006.

Air quality issues in California. EFMH Seminar, Stanford University, 27 February 2006.

Evaluation of global and interconnected wind power. NASA Ames, Moffett Field, California, 12 January 2006.

Evaluation of global wind power. Meteorology Department, San Jose State University, 5 October 2005.

Eddy formation in stratified flow past topography: the Santa Cruz Eddy case. Department of Mechanical Engineering, Santa Clara University, Santa Clara, California, 2 February 2005.

(Cool) data analysis techniques for (hot) atmospheric applications. Lawrence Livermore National Laboratory, Livermore, California, 10 September 2004.

A proposed modeling study of the Santa Cruz Eddy. Naval Research Laboratory, Monterey, California, 1 December 2000.

Computer literacy

Languages: Fortran, Java, C, HTML, SQL, MySQL, Python.

Software packages: Gempak, AVS Express, GrADS, Fieldview, IDL, XV, MatLab, NCL, CDAT.

Models: MM5, RAMS, CALMET, CALGRID, CAMx, NCAR CAM 3.1.

Foreign languages

Italian (mother tongue), English (fluent), French (proficient).

Hobbies

Owner, designer, and administrator of <http://www.meteotime.it>.