

## **Prof. René D. Garreaud**

Associate Professor at Department of Geophysics, Universidad de Chile, Chile

Departamento de Geofísica  
Universidad de Chile  
Blanco Encalada 2002  
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Field of Expertise: Meteorology and climatology

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### **Educational background:**

1999: PhD Atmospheric Sciences, University of Washington, Seattle, USA

1993: MSc. Geophysics, Universidad de Chile

1993: Civil Engineering, Universidad de Chile

*Specialization/Training/Internships related with HE framework:*

MM5 (modelo de simulación numérica de la atmósfera) Tutorial Class. National Center for Atmospheric Research (NCAR), Boulder, USA. July 1996.

Climate and Decision: The Brazilian Experience. Instituto Nacional de Pesquisas Espaciales (INPE), Sao Paulo, Brasil. 23 May-3 April.

### **Professional experience:**

Professor of "Introducción a la Física" (2000-2007), first year course for students at FCFM.

Professor of "Atmósfera, Tiempo y Clima" General formation program, Universidad de Chile, 2005-2007.

Professor of the following courses at the MSc. In Meteorology:

- Meteorología Sinóptica (2001, 2003, 2006, 2008)
- Métodos Climatológicos (2002, 2005, 2007)
- Climatología de Sud América (2001, 2003, 2006, 2008)

Director of 4 MSc. Thesis in Meteorology and co-director de 6 memorias de Ingeniería Civil.

Director of 2 PostDoc positions at DGF: Mark Falvey (2003-2004) and Brad Barret (2007-2008).

Director of the project MECESUP UCH303 "Mejoramiento e integración transversal de la docencia de pregrado en Ciencias de la Tierra". This is a \$450 Million project carried out at the Universidad de Chile (FCFM, FAU, FCA, Programa de Bachillerato) in 2003-2007.

### **Main research activities:**

*CONICYT Peer reviewed Research Projects:*

2006-2008: Climate Variability in Chile: Evaluation, Interpretation and Projections. PI. PBCT-ACT-19.

2005-2006: Intraseasonal rainfall variability in southern Chile. PI. FONDECYT project 1052699.

2002-2004: The Stratocumulus cloud deck off the subtropical west coast of South America: High frequency variability. PI. FONDECYT project 1020833.

2003-2005: Cutt-off lows in western subtropical South America: Climatology, associated mechanisms and their impacts on rainfall. Co-PI. FONDECYT project 1030757.

2000-2001: Forced downslope flow over the Andes in central Chile. PI. FONDECYT project 1000913.

*Extension Project:*

2006-2007: Estudio de Escenarios regionales de Cambio Climático para Chile. Encargado por CONAMA al DGF-UCH.

2006: Estudio de cambios del régimen pluvial en conexión a expansión mina Andina. ARCADIS-Geotecnia.

2003: Estudio CONAMA. Co-investigador de aspectos micro-meteorológicos de la contaminación atmosférica en la ciudad de Santiago. Funding: Comisión Nacional del Medio Ambiente (CONAMA).

2003: Estudio EOLO-II. Co-investigador. Funding: Comisión Nacional de Energía (CNE).

**Selected list of relevant publications:**

Garreaud, R. and M. Falvey, 2008: The coastal winds off western subtropical South America in future climate scenarios. *Int. J. of Climatology*, In Press, April 2008.

Christopher M. Moy, Robert B. Dunbar, Patricio I. Moreno, Jean-Pierre Francois, Rodrigo Villa-Martinez, David M. Mucciarone, Thomas P. Guilderson, and Rene Garreaud, 2007: Isotopic Evidence for Hydrologic Change Related to the Westerlies in SW Patagonia, Chile During the Last Millennium. *Quaternary Science Reviews*. In Press, March 2008.

Garreaud, R., 2007: Precipitation and circulation covariability in the extratropics. *J. of Climate*, 20, 4789-4797

René D. Garreaud, Mathias Vuille, Rosa Compagnucci and José Marengo, 2007: Present-day South American Climate. *PALAEO3 Special Issue (LOTRED South America)*, in press.

Garreaud, R. and H. Fuenzalida, 2007: The Influence of Andes on cutoff lows: A modeling study. *Mon. Wea. Rev.*, 135, 1596-1613

Falvey, M. and R. Garreaud, 2007: Wintertime Precipitation Episodes in Central Chile: Associated Meteorological Conditions and Orographic Influences. *Journal of Hydrometeorology*, 8, 171-193

Seluchi, M., R. Garreaud, F. Norte and C. Saulo, 2006: Influence of the subtropical Andes on baroclinic waves: A cold-front case study. *Mon. Wea. Rev.*, 134, 3317-3335

Vera, C., W. Higgins, J. Amador, T. Ambrizzi, R. Garreaud, D. Gochis, D. Gutzler, D. Lettenmaier, J. Marengo, C. Mechoso, J. Nogues-Paegle, P.L. Silva Diaz and C. Zhang, 2006: Towards a unified view of the American Monsoon System. *J. of Climate*, 19, 4977-5000.

Garreaud, R., R. Munoz, 2005: The low-level jet off the subtropical west coast of South America: Structure and variability. *Mon. Wea. Rev.*, 133, 2246-2261

Fuenzalida, H., R. Sanchez and R. Garreaud, 2005: A climatology of cut off lows in the Southern Hemisphere. *J. Geophys. Res.* 110, D1801, doi: 10.1029/2005JD005934

Munoz, R. and R. Garreaud, 2005: Dynamics of the low-level jet off the subtropical west coast of South America. *Mon. Wea. Rev.*, 133, 3661-3677

- Falvey, M., and R. Garreaud, 2005: Moisture variability over the South American Altiplano during the SALLJEX observing season. *J. Geophys. Res.*, 110, D22105, doi:10.1029/2005JD006152.
- Garreaud, R., R. Munoz, 2004a: The diurnal cycle of circulation and cloudiness over the subtropical southeast Pacific: A modeling study. *J. of Climate*, 17, 1699-1710
- Rutllant J. and R. Garreaud, 2004: Episodes of strong flow down the western slope of the subtropical Andes. *Mon. Wea. Rev.*, 132, 611-622.
- Garreaud, R. and J. Rutllant, 2003: Coastal lows in north-central Chile: Numerical simulation of a typical case. *Mon. Wea. Rev.*, 131, 891-908.
- Garreaud, R., M. Vuille and A. Clements, 2003: The climate of the Altiplano: Observed current conditions and past change mechanisms. *Paleo3*, 3054, 1-18
- Garreaud, R., J. Rutllant and H. Fuenzalida, 2002: Coastal lows in north-central Chile: Mean structure and evolution. *Mon. Wea. Rev.*, 130, 75-88.
- Rondanelli, R., L. Gallardo and R. Garreaud, 2002: Rapid changes in ozone mixing ratio at Cerro Tololo (30S, 70W, 2200 m) in connection with cutoff lows. *J. Geophys. Res.* 107(D23): 10.1029/2001JDD001334.
- Other Publications and Book Chapters:*
- Garreaud R., y J. Rutllant, 2006: Variabilidad atmosférica de alta frecuencia en el borde oriental del anticiclón del Pacífico sureste. *Revista Chilena de Ciencia y Tecnología del Mar*, 29(1), 5-13.
- Garreaud, R., y M. Seluchi, 2003: Pronóstico de la convección en el Altiplano Sudamericano empleando el modelo regional ETA/CPTEC. *Meteorológica*, 26, 25-38.
- Garreaud, R., 1992: Estimación de la altura de la línea de nieve en cuencas de Chile central. *Revista Chilena de Ingeniería Hidráulica*. 7: 21-32.
- Garreaud, R. D., and P. Aceituno, 2007: Atmospheric circulation over South America: Mean features and variability. Chapter 2 in *The Physical Geography of South America*. T. Veblen, K. Young and A. Orme, Eds. Oxford University Press.
- Garreaud, R. D., y José Rutllant, 2004: Factores meteorológicos de la contaminación atmosférica en Santiago. Capítulo 2 en *Episodios Críticos de Contaminación Atmosférica en Santiago*. R. Morales y C. Gonzalez, Eds. Colección de Química Ambiental, Universidad de Chile. Pp. 9-36.
- Dettinger, M. D., D. S. Battisti, R. D. Garreaud, G. J. McCabe, and C. Bitz, 2001: Inter-hemispheric effects of interannual and interdecadal ENSO-like climate variations on the Americas. Chapter I in *Present and Past Inter-hemispheric climate linkages in the Americas and their societal effects*. V. Markgraf, Ed. Academic Press. Pp. 1-16.