

Curriculum Vitae

Full name: James A. Renwick
Present position: Professor of Physical Geography
Present employer: Victoria University of Wellington
Work address: P.O. Box 600, Wellington

Academic qualifications:

1995 PhD Atmospheric Sciences, University of Washington, Seattle
1990 MSc Statistics, Victoria University, Wellington
1977 BSc (Hons) Mathematics, University of Canterbury, Christchurch

Years as a practising researcher: 35

Honours/distinctions/membership of societies, institutions, committees:

Deputy Head, School of Geography, Environment and Earth Sciences, VUW, 2016-
Awarded Marsden Fund grant (\$800,000), 2015-2017
Member, Academic Board, Victoria University of Wellington, 2013-
Member, World Climate Research Programme Joint Scientific Committee, 2013-
Member, World Meteorological Organisation (WMO) Executive Council Panel of Experts on Polar Observations, Research and Services, 2011-
Lead Author, Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report, 2010-2013
Chair, Royal Society NZ Climate Expert Panel, 2011-2015 (member 2006-2015)
Member, Marsden Fund Earth Science and Astronomy assessment panel, 2010-2012
President, New Zealand Association of Scientists, 2009-2011 (Councillor, 2007-2014)
Member, carboNZero Independent Advisory Panel, 2006-2013 (chair 2012-2013)
Contributor towards 2007 Nobel Peace Prize (awarded to IPCC and Albert Gore Jr)
Councillor, Royal Society of New Zealand, 2006-2008
Editor, *Journal of Climate*, 2006-2012
Awarded Marsden Fund grant (\$500,000), 2006-2008
Recipient, Edward Kidson Medal, Meteorological Society of N.Z., 2005
Member, WMO Commission for Climatology Expert Team on Seasonal Forecasting, 2005-2010
Lead Author, IPCC 4th Assessment Report, 2004-2007, and IPCC Technical Paper on Climate Change and Water, 2006-2008.
Member, Editorial Board, *International Journal of Climatology*, 2004-
Sabbatical grant, U.K. Met Office Hadley Centre for Climate Research, 2002
N.Z. focal point, WMO programme on Climate Information & Prediction Services 1999-2009
Committee Member, New Zealand Meteorological Society (President 2000-2002)
Member, American Meteorological Society (on AMS Southern Hemisphere Met/Ocean Committee, 2001-2004)
Member, American Geophysical Union
Member, Royal Society of New Zealand

Professional positions held:

2015- Professor, Physical Geography, VUW, teaching and research in climate dynamics
2012-2014 Associate Professor, Physical Geography, VUW, teaching and research in climate dynamics

2002-2012	Science Leader/Principal Scientist, climate variability and change, leading & managing NIWA climate research
1992-2002	Climate research scientist, NIWA, climate variability research
1996	Visiting scientist, CSIRO Atmospheric Research, Melbourne, climate modelling
1991-1995	PhD student, U. Washington, large-scale atmospheric predictability research
1990	Visiting scientist, CSIRO Atmospheric Research, Melbourne, climate modelling
1982-1991	Research meteorologist, NZ Met. Service, statistical weather prediction research
1978-1981	Weather forecaster, NZ Met. Service, operational weather prediction

Present research/professional speciality:

Dynamics and statistics of the large-scale atmospheric circulation; climate variability, predictability and prediction; climate change; numerical modelling of climate; analysis of large data sets and applied statistical methods; meteorology. Areas of particular expertise include: El Niño-Southern Oscillation (ENSO) dynamics and interactions between tropics and southern hemisphere extra-tropics, the Southern Annular Mode and the Southern Hemisphere westerlies, Antarctic sea ice variability and trends, global climate change and effects on New Zealand, climate prediction, use and interpretation of climate model output, forecast validation, atmospheric blocking.

Number of refereed publications: 93

Number of significant publications not included in the above: 40

List of major achievements:

1. Major publications (in the last five years, in descending chronological order).

Gibson, P. B., S. E. Perkins, and J. A. Renwick, 2016: Projected changes in synoptic weather patterns over New Zealand examined through self-organising maps. *International Journal of Climatology*, in press.

Jara, I. A., R. M. Newnham, M. Vandergoes, C. Foster, D. Lowe, J. M. Wilmshurst, P. I. Moreno, and J. A. Renwick, 2016: Pollen-climate reconstruction from the New Zealand treeline (41°S) reveals low and high latitude teleconnections over the last 16,000 years. *Climates of the Past*, in press.

Jones, J. M., S. T. Gille, H. Goosse, N. J. Abram, P. O. Canziani, D. J. Charman, K. R. Clem, X. Crosta, C. d. Lavergne, I. Eisenman, M. H. England, R. L. Fogt, L. M. Frankcombe, G. J. Marshall, V. Masson-Delmotte, A. K. Morrison, A. J. Orsi, M. N. Raphael, J. A. Renwick, D. P. Schneider, G. R. Simpkins, E. J. Steig, B. Stenni, D. Swingedouw, and T. R. Vance, 2016: Assessing recent trends in high-latitude Southern Hemisphere climate. *Nature Climate Change*, in press.

Mekonnen, A., J. A. Renwick, and A. Sánchez-Lugo [Eds.], 2016: Regional Climates [Chapter 7 in "State of the Climate in 2015"]. *Bulletin of the American Meteorological Society*, in press.

Rana, S., J. McGregor, and J. Renwick, 2016: Wintertime precipitation climatology and ENSO sensitivity in precipitation datasets over central southwest Asia. *International Journal of Climatology*, in press.

Clem, K. R., and J. A. Renwick, 2015: Austral spring Southern Hemisphere circulation and temperature changes and links to the SPCZ. *Journal of Climate*, doi: 10.1175/jcli-d-15-0125.1.

Diamond, H. J., and J. A. Renwick, 2015: The climatological relationship between tropical cyclones in the southwest pacific and the Madden-Julian Oscillation. *International Journal of Climatology*, **35**, doi: 10.1002/joc.4012, 676-686.

- Diamond, H. J., and J. A. Renwick, 2015: The climatological relationship between tropical cyclones in the southwest Pacific and the southern annular mode. *International Journal of Climatology*, **35**, doi: 10.1002/joc.4007, 613-623.
- Fiddes, S. L., A. B. Pezza, and J. Renwick, 2015: Significant extra-tropical anomalies in the lead up to the Black Saturday fires. *International Journal of Climatology*, doi: 10.1002/joc.4387.
- Mekonnen, A., J. A. Renwick, and A. Sánchez-Lugo [Eds.], 2015: Regional Climates [Chapter 7 in "State of the Climate in 2014"]. *Bulletin of the American Meteorological Society*, **96**, doi: 10.1175/2015BAMSStateoftheClimate.
- Rana, S., J. McGregor, and J. Renwick, 2015: Precipitation seasonality over the Indian Subcontinent: An evaluation of gauge, reanalyses, and satellite retrievals. *Journal of Hydrometeorology*, **16**, doi: 10.1175/JHM-D-14-0106.1, 631-651.
- Salmond, J. A., K. N. Dirks, S. Fiddes, A. Pezza, N. Talbot, J. Scarfe, J. Renwick, and J. Petersen, 2015: A climatological analysis of the incidence of brown haze in Auckland, New Zealand. *International Journal of Climatology*, doi: 10.1002/joc.4509.
- Harrington, L., and J. A. Renwick, 2014: Secular changes in New Zealand rainfall characteristics 1950-2009. *Weather and Climate*, **34**, 50-59.
- Nguyen, Q., J. A. Renwick, and J. McGregor, 2014: Variations of monsoon rainfall: A simple unified index. *Geophysical Research Letters*, **41**, doi: 10.1002/2013GL058155, 575-581.
- Nguyen, Q., J. A. Renwick, and J. McGregor, 2014: Variations of surface temperature and rainfall in Vietnam from 1971 to 2010. *International Journal of Climatology*, doi: 10.1002/joc.3684.
- Revell, C. G., S. Ready, J. Renwick, and H. J. Diamond, 2014: A case study of Tropical Cyclone Wilma, January 2011. *Weather and Climate*, **34**, 20-35.
- Sánchez-Lugo, A., J. A. Renwick, W. M. Thiaw, and S. J. Weaver [Eds.], 2014: Regional Climates [Chapter 7 in "State of the Climate in 2013"]. *Bulletin of the American Meteorological Society*, **95**, S157-S213.
- Ackerley, D., A. Lorrey, J. Renwick, S. J. Phipps, S. Wagner, and A. Fowler, 2013: High-resolution modelling of mid-Holocene New Zealand climate 6000 yr BP. *The Holocene*, doi: 10.1177/0959683613484612.
- Christensen, J. H., K. K. Kumar, E. Aldrian, S.-I. An, I. F. A. Cavalcanti, M. de Castro, W. Dong, P. Goswami, A. Hall, J. K. Kanyanga, A. Kitoh, J. Kossin, N.-C. Lau, J. Renwick, D. Stephenson, S.-P. Xie, and T. Zhou, 2013: Climate Phenomena and their Relevance for Future Regional Climate Change. *Chapter 14 in Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, T. F. Stocker, and Coauthors, Eds., Cambridge University Press, 1217-1308.
- Cohen, L., S. Dean, and J. Renwick, 2013: Synoptic weather types for the Ross Sea region, Antarctica. *Journal of Climate*, **26**, doi: 10.1175/jcli-d-11-00690.1, 636-649.
- Diamond, H. J., A. M. Lorrey, and J. A. Renwick, 2013: A southwest Pacific tropical cyclone climatology and linkages to the El Niño–Southern Oscillation. *Journal of Climate*, **26**, doi: 10.1175/jcli-d-12-00077.1, 3-25.
- Lorrey, A., G. Griffiths, N. Fauchereau, H. Diamond, P. Chappell, and J. Renwick, 2013: An extra-tropical cyclone climatology for Auckland, New Zealand. *International Journal of Climatology*, doi: 10.1002/joc.3753.
- Lorrey, A., N. Fauchereau, C. Stanton, P. Chappell, S. Phipps, A. Mackintosh, J. Renwick, I. Goodwin, and A. Fowler, 2013: The Little Ice Age climate of New Zealand reconstructed

from Southern Alps cirque glaciers: a synoptic type approach. *Climate Dynamics*, doi: 10.1007/s00382-013-1876-8, 1-22.

- Parsons, S., A. McDonald, and J. Renwick, 2013: The use of synoptic climatology with general circulation models over New Zealand. *International Journal of Climatology*, in press.
- Sánchez-Lugo, A., J. A. Renwick, W. M. Thiaw, and S. J. Weaver [Eds.], 2013: Regional Climates [Section 7 in "State of the Climate in 2012"]. *Bulletin of the American Meteorological Society*, **94**, doi: 10.1175/2013BAMSStateoftheClimate.1, S1-S258.
- Lorrey, A. M., G. A. Dalu, J. A. Renwick, H. Diamond, and M. Gaetani, 2012: Reconstructing the South Pacific Convergence Zone position during the pre-satellite era: a La Niña case study. *Monthly Weather Review*, **140**, 3653-3668.
- Fogt, R. L., J. M. Jones, and J. Renwick, 2012: Seasonal Zonal Asymmetries in the Southern Annular Mode and Their Impact on Regional Temperature Anomalies. *Journal of Climate*, **25**, doi:10.1175/jcli-d-11-00474.1, 6253-6270.
- Lorrey, A. M., M. Vandergoes, P. Almond, J. Renwick, T. Stephens, H. Bostock, A. Mackintosh, R. Newnham, P. W. Williams, D. Ackerley, H. Neil, and A. M. Fowler, 2012: Palaeocirculation across New Zealand during the last glacial maximum at ~21 ka. *Quaternary Science Reviews*, **36**, doi:10.1016/j.quascirev.2011.09.025, 189-213.
- Renwick, J. A., A. Kohout, and S. Dean, 2012: Atmospheric forcing of Antarctic sea ice on intraseasonal time scales. *Journal of Climate*, **25**, 5962-5975.
- Renwick [Ed.], J. A., 2012: Regional Climates [Section 7 in "State of the Climate in 2011"]. *Bull. Amer. Meteor. Soc.*, **93**, S173-S235.

2. Major achievements in commercial, social and environmental areas.

Science communications and outreach

I give frequent presentations to industry, community, and public groups on climate change and effects on New Zealand and make regular media appearances on climate variability and change matters. Since June 2015, I participated in 51 media interviews (across television, radio, and print media), gave 23 talks to public or business groups and participated in seven science conferences, a total of 81 appearances.

From early in 2015, I have been using social media more consistently for science communication. Since June 2015, I sent (or retweeted) 798 tweets, gained 451 new followers and had 6339 visits to my twitter page. Approximately two thirds of my tweets concern climate science or science in general. I also post regularly on Facebook but statistics are not readily available. I am an occasional contributor to the hot-topic.co.nz blog site.

I provide advice when requested to Government Ministers, government agencies, and MPs around climate variability & change. I am a member of the Ministry for the Environment Technical Advisory Group on Atmosphere and Climate monitoring and reporting.

Applied research

I have done considerable work on the effects of climate on sectors of the economy, particularly agriculture, fisheries, and energy. I led a major project for MPI on the effects of global warming on the primary sector in NZ. I helped establish links between climate variability and several New Zealand marine species and helped explain marked year-to-year variations in commercial fish catches of significant economic importance. I led NIWA 6-year programme to determine climate-

related risks to the energy sector, particularly with regard to hydro power security of supply. I played major role in advancing our understanding of the effects of climate variability on the risk of rural fires around New Zealand.

Fundamental research

I have played a leading role over the last 20 years in understanding observed climate variability and change in the New Zealand region and across the Southern Hemisphere. Key findings relating to ENSO (El Niño-Southern Oscillation) effects on Southern Hemisphere blocking and impacts on Antarctic sea ice, role of Rossby wave propagation, fluctuation in strength of the westerly wind circulation. This work ties together atmospheric, oceanic and Antarctic climate in a poorly-understood region (southern ocean) of great importance for global climate.

I have extensive experience using dynamical climate models for regional climate and climate change simulation, simulating past and possible future climates, including a three month sabbatical in the UK to develop regional model configurations for New Zealand. I became involved in the IPCC process as a contributor during the Third Assessment Report (2001), a Lead Author for the 4th Assessment Report (2007) and for follow-up Technical Paper on Climate Change and Water (2008), and Lead Author for the 5th Assessment Report (2013).

I was a lead author of NIWA seasonal climate outlook statements, 1999-2012. I have fifteen years' experience in statistical climate prediction, built on earlier experience in short-term weather prediction.

I have strong links to earth sciences research groups at Canterbury and Auckland universities, including co-supervision of PhD students. I maintain close links to research groups in Australia, UK, and the USA. I was twice a visiting scientist at CSIRO Atmospheric Research, Melbourne, studying climate change modelling for New Zealand; a sabbatical visit to UK Met Office Hadley Centre for Climate Prediction and Research, developing regional climate modelling for New Zealand. I have on-going links with Atmospheric Sciences department, University of Washington, Seattle (following PhD research), and links with researchers at National Center for Atmospheric Research, Boulder, Colorado, on tropical-extratropical interactions and southwest Pacific climate.