

Professor Andrew Sturman
Distinguished New Zealand Geographer Award and Medal 2016

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Citation

Professor Sturman is regarded highly both nationally and internationally as a researcher in meteorology of complex terrain. He has pioneered the use of three-dimensional mathematical models in understanding how the atmosphere is modified by mountainous landscapes, which has many direct applications to human-atmosphere interaction, such as air pollution dispersion, poor air quality, and effects on human health. He has had great success in attracting contestable funding and postgraduate students while effectively disseminating his research to end-users. The impact of his research in New Zealand ranges from providing policy relevant scientific guidance to Regional Councils (such as mitigation of poor air quality) to three-dimensional models for wind resource assessment for a sustainable future (a technique that has now been implemented in many other countries).

Professor Sturman has published 15 books and book chapters. Particularly, he is an author of two books, which are used extensively in teaching; currently he is working on a third book focusing on the impact of climate change on viticulture. Professor Sturman's first book (co-authored with Nigel Tapper), *The weather and climate of Australia and New Zealand*, is an excellent introductory meteorology book for the Southern Hemisphere, which is still highly cited and referred to by undergraduate and postgraduate students in physical geography. He also published *The Physical Environment: a New Zealand Perspective*, co-authored with Rachel Spronken-Smith, in 2001. He has also published 100 international peer-reviewed articles, and 100 technical reports and has presented numerous conference papers. His research leadership includes projects in air pollution meteorology, wind energy resource assessment, climate impacts on dairy cattle, predicting bushfire behaviour, and the development of advanced weather and climate modelling tools to help vineyard regions adapt to climate change. He also has significant consultancy experience in New Zealand and with international research institutions, such as The Foundation for Research, Science and Technology, New Zealand, The Australian Research Council, the Department of Energy, USA, Fonds zur Förderung der wissenschaftlichen Forschung (Austria), and the Qatar National Research Fund.

In 2002, the paper, "Application of back-trajectory techniques to the delimitation of urban clean air zones", published in *Atmospheric Environment*, won Professor Sturman the inaugural Edward Kidson medal from the Meteorological Society of New Zealand. The novel aspects of the research presented in this paper was highly regarded by atmospheric modelling specialists in New Zealand and highlighted a new quantitative method in assessing demarcation zones around urban areas to protect the quality of air.

Professor Andy Sturman's work, from developing new understandings of surface energetics and wind flows in complex terrain, to mapping vineyard microclimates, has had a profound influence on the way climate science is undertaken in New Zealand. It has always been characterized by the highest scientific and theoretical rigor, underpinned by strong technical and practical skills. Professor Andrew Sturman's remarkable career as being distinguished by highly-cited and sustained research in applied climatology as well as exemplary service and leadership to the broader geography community. Not only is he a highly productive scientist, he has established a very strong international profile. This reputation has drawn many distinguished atmospheric scientists to Canterbury on visits, as well as attracted a steady stream of top-notch graduate students, many of whom now occupy positions in academic departments around the world. He is extremely well-funded (including through the Marsden Foundation), a clear mark of his stature in the Atmospheric Science community, and has forged well established and productive connections internationally (including Australia, USA, Canada, France, and UK).

In addition to his research, Professor Sturman has been displayed admirable leadership including spearheading the Centre for Atmospheric Research at Canterbury and most recently as department head during the most trying of times following the Christchurch earthquakes. Perhaps most importantly, Professor Sturman is in the process of doing rigorous, policy-relevant applied science of the highest quality that has elevated the stature of Geography generally and Climatology specifically in New Zealand. He is likely the pre-eminent atmospheric scientist working in New Zealand, and his multi-faceted research has garnered the immense respect of colleagues in other disciplines and non-academic agencies (e.g NZ Meteorological Service and NIWA). This is a remarkable achievement as Climatology was not always viewed with such high esteem.

In his roles in the Department of Geography at the University of Canterbury, over the last 39 years, he has worked with intelligence and effort to develop, support and promote an internationally renowned team of climate researchers. These scientists are now scattered across the globe in major climate science roles, including academic, government policy and consulting. Andy Sturman and his team epitomise the contribution that geographers can make to understanding, and working with, our planet. Their work on wind modelling across complex terrain and wind forecasting has played a major role improving our understanding of weather and climate resources in the New Zealand region and this work is now benefitting the grape agriculture industry globally. This work has also been disseminated through Andy Sturman's co-publication of several significant textbooks, including the abovementioned.

Professor 'Andy' Sturman is one of the most tirelessly and generously collegial people. He has published most of his research, including the bulk of which was initiated and/or funded due to his efforts, with colleagues and graduate students. He has used his international esteem, cutting edge expertise and solid work ethic to help foster and promote the careers of many junior colleagues, never taking advantage of his position to 'use' others, always using his skills and position to help promote others. The number of former students who have successfully pursued a career as geographers and climate scientists is a testament to this success.

Andy Sturman is no 'lone ranger' but rather someone who genuinely enjoys working with, and supporting, colleagues from his own Department, from other institutions around New Zealand, and internationally. And while he has achieved his very significant research and human resource impacts and records, Andy Sturman has always contributed more than his fair share as a Department of Geography teacher and promoter of this discipline. His stellar research record has never been at the expense of fronting up to inspire and foster learning in Canterbury geography students. Year after year, Andy Sturman has always maintained one of the highest teaching workloads in the Geography Department at Canterbury University, volunteering to bridge gaps when needed and taking a lead role in curriculum development over the years. He is always an enthusiastic, motivating, encouraging, honest and ethical teacher and disseminator of geographical ways of thinking about and analysing the world. He is a very popular teacher, very much liked by students, despite the fact that he challenges them to understand the complexity of weather and climate science and wicked problem solving, and he never 'dumbs down' geography. Students willingly stretch themselves in working for Andy Sturman, meeting the challenges he sets them.

Professor Andy Sturman has been a very generous geography colleague in many other ways, quietly contributing significantly on the Department, University, and Royal Society Marsden fronts. He has never been one to complain or seek recognition for the high administrative workloads he has shouldered but has rather got on with the job and offered help and insight to others where possible. In addition to his external Marsden panel review roles, Andy has run University and Geography Marsden advice workshops and provided significant individual mentoring to all of the staff of UC Geography. In 2012 the Department of Geography asked Andy Sturman to apply to be Head of Department, an administrative and management role that he did not hanker after. Despite personal reservations, he accepted this request and role in order to support the Department through the subsequent years of post-earthquake recovery. When confidence within the Department and University was at an all-time low, Andy Sturman's quietly encouraging, honest, open and hard-working approach to leadership helped geographers recover from local disaster and to bring people together again for the common good of Canterbury Geography.