

# **Curriculum Vitae**

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## **QUALIFICATIONS**

Personal strengths include sound problem-solving and research abilities. I have a clear vision of goals to be reached and an understanding of how this can be done using available resources. I have successfully implemented a number of forecasting systems, suited to local capabilities and managed the short- and medium-range forecast system programme at the South African Weather Service (SAWS). This work has assisted in building the numerical weather prediction capacity of the SAWS to a world-class standard.

My work is recognised nationally and internationally and I am often invited to attend workshops as an expert in the field of numerical weather prediction. During 1999 I was invited to take part in a four-year, multi-million Rand project consisting of a consortium of institutes throughout South Africa to improve seasonal forecasting capacity in southern Africa through research and numerical modelling. I represented the South African Weather Service as a consortium member of a project to develop and demonstrate a Dynamical Air Pollution Prediction System (DAPPS). I also head the SAWS commitment to the international THORPEX programme which aims to improve medium-range forecasts through various techniques related to numerical modelling. I am a member of the council of the South African Society for Atmospheric Sciences, a member of the Global Integrated Forecast System – THORPEX Intergrated Global Grand Ensemble (GIFS-TIGGE) Working Group and also a member of the Working Group of the Limited Area Modelling sub-component of GIFS-TIGGE.

I have more than fifteen years experience in presenting lectures and training courses. I have lectured university undergraduate and honours students for degrees in Atmospheric Sciences and trained people from countries throughout the SADC region in the methods related to dynamical extended-range prediction. I have always been willing to share my expertise with colleagues in terms of assistance in their daily tasks and in skills transfer. This has been done as part of an in-house mentorship programme. I have also initiated and managed a comprehensive in-house training programme where I have equipped junior staff in my group with knowledge and skills to perform their daily work.

## **WORK HISTORY**

*1993-2001 Meteorologist, South African Weather Service*

I have been instrumental in the development of the dynamical extended-range forecasting programme at the Weather Service. This system has enabled the

Weather Service to issue forecasts of daily conditions up to two-weeks ahead, and monthly and seasonal average conditions for the next month and season. I was also one of the pioneers who initiated the operational LOGIC office through which these products are disseminated which has now officially become part of the forecast section.

*2002-2002 Post-Doctoral secondment to the University of Cape Town*

I have been seconded to work on a DACST-funded seasonal forecasting project at the University of Cape Town for a year. This opportunity has allowed me to interact with top South African scientists and several visiting scientists from around the world. I have also been exposed to work and people in related disciplines, which widens my vision to include aspects related to environmental science and human interaction with the environment.

*2003-2007 Specialist Scientist and Project Manager, South African Weather Service*

I have been tasked to jointly head the projects of the Prediction Research component of the Weather Service, particularly in the numerical weather prediction component where I have significant experience. As part of this function I act as a mentor for younger scientists in their careers and present a comprehensive programme of in-house training to facilitate skills transfer and improve capacity building. My most recent project has been leading the installation of a version of the United Kingdom Met Office Unified Model on the SAWS supercomputer. This state-of-the-art model is highly skilful in weather prediction at the short-range. I continue to study atmospheric predictability problems and have done significant work on a medium-range ensemble forecast system that is used operationally in the SAWS forecast offices.

## **EDUCATION**

*1989-1992* B.Sc. (Meteorology), University of Pretoria

*1993-1994* B.Sc. (Hons) (Meteorology), University of Pretoria

*1996-1998* M.Sc., University of the Witwatersrand, Johannesburg

*1999-2002* Ph.D., University of Cape Town

## **SKILLS**

My ability to understand and explain concepts to other people has aided me in undertaking various training and lecturing activities. I have lectured under- and post-graduate courses at the Universities of Pretoria and Cape Town. I have presented many in-house courses at the South Africa Weather Service. This skill enables me to be a valuable player in skills transfer and capacity building programmes.

I have 16 years experience working with computers and my particular strength is developing operational systems on mainframes. I am skilled at using word-processors, spreadsheets, web-page creation, FORTRAN, and C programming languages and the GrADS graphical user interface system. I have mastered UNIX, LINUX, Windows operating systems with some experience in UNIX and LINUX system administration. I have also helped provide many IT-related solutions to unique and specific needs within the research and development section, such as a cost-effective on-line storage disk facility, convenient printing facilities and the installation of various utilities to facilitate the day-to-day functioning of my work environment and those around me. I also developed a very popular web-based display system for the medium-range ensemble forecasts.

## Annexure I: Publications

- 1994 Tennant, W.J. and J. van Heerden, 1994, The influence of orography and local sea-surface temperature anomalies on the development of the 1987 Natal floods: a general circulation model study, *S. Afr. J. Sci.*, **90**, 45 - 49.
- 1996 Tennant, W.J., 1996, Influence of Indian Ocean sea-surface temperature anomalies on the general circulation of southern Africa, *S. Afr. J. Sci.*, **92**, 289 - 295.
- 1997 Tennant, W.J., 1997: Monthly Forecasting in South Africa. *Fifth Conf. on Southern Hemisphere Meteorology and Oceanography*, Pretoria, South Africa, In: Preprints Amer. Meteorol. Soc., 154 - 155.
- 1997 Tennant, W. J., H. A. Riphagen, J. D. Gertenbach, M. P. de Villiers and K. J. Rae, **1997**. The effect of radiosonde and buoy reduction on numerical prediction products at The South African Weather Bureau. Preprints: Proc. CGC/WMO Workshop, Impact of Various Observing Systems on Numerical Weather Prediction, Geneva, 7-9 April 1997 (Jean Pailleux, ed.), World Weather Watch Technical Report No. 18, WMO/TD No.868, 165-183.
- 1997 Tennant, W.J., 1997, Recent Advances in One-month Forecasts in South Africa, PWPR Rep. Series project No. 11, **WMO/TD - No. 881**, pp 74 - 79.
- 1999 Tennant, W.J., 1999, Numerical forecasting of monthly climate over South Africa, *Int. J. Climatol.*, **19**, 1319-1336.
- 2000 Landman, W.A and W.J. Tennant, 2000, Statistical downscaling of monthly forecasts, *Int. J. Climatol.*, **20**, 1521 - 1532.
- 2000 Tennant, W.J., 2000: Applications of Ensemble Forecasting Products for Medium-Range Forecasts. IN: Commission for Basic Systems OPAG on Data Processing and Forecasting Systems. Proceedings of workshop on use of Ensemble Prediction, Beijing, 16-20 October 2000. WMO, World Weather Watch - Tech. Rep. 21, WMO/TD 1065.
- 2001 Landman, W.A, S.J. Mason, P.D. Tyson and W.J. Tennant, 2001, Retro-active Skill of Multi-tiered Forecasts of Summer Rainfall over Southern Africa, *Int. J. Climatol.*, **21**, 1 - 19.
- 2001 Landman, W.A., S.J. Mason, P.D. Tyson, and W.J. Tennant, 2001: Statistical downscaling of GCM simulations to streamflow. *Journal of Hydrology*, **252**, 221-236.
- 2001 Sperber, K.R., C. Brankovic, M. Deque, C.S. Frederiksen, R. Graham, A. Kitoh, C. Kobayashi, T. Palmer, K. Puri, W. Tennant and E. Volodin, 2001. Dynamical Seasonal Predictability of the Asian Summer Monsoon. *Mon. Wea. Rev.*, **129**, 2226 - 2248.
- 2002 Tennant, W.J. and B.C. Hewitson, 2002: Intra-Seasonal Rainfall Characteristics and their Importance to the Seasonal Prediction Problem, *Int. J. Climatol.*, **22**, 1033-1048.
- 2003 Tennant, W.J., 2003: An Assessment of 13-year GCM simulations. *Mon. Wea. Rev.*, **131**, 1975-1991.
- 2004 Tennant, W.J., 2004: Considerations when using pre-1979 NCEP/NCAR reanalyses in the southern hemisphere. *Geophys. Res. Lett.*, **31**, L11112, doi:10.1029/2004GL019751.
- 2004 Johnston P.A., E.R.M. Archer, C.H. Vogel, C.N. Bezuidenhout, W.J. Tennant and R. Kuschke, 2004: Review of seasonal forecasting in South Africa: product to end-user of the 1990s. *Clim. Res.*, **28**, 67-82.
- 2005 Tennant W.J. And C.J.C. Reason, 2005: Associations between the Global Energy Cycle and Regional Rainfall in South Africa and Southwest Australia. *J. Clim.*, **18**, 3032-3047.
- 2006 Reason, CJC, Landman, WA and Tennant WJ, 2006: Seasonal to decadal predictability / prediction of southern African climate and its links with variability of the Atlantic. *Bull. Amer. Meteorol. Soc.*, **87**, 941-955.
- 2007 Tennant WJ, Toth Z, Rae KJ, 2007: Application of the NCEP Ensemble Prediction System to Medium-range Forecasting in South Africa: New Products, Benefits and Challenges. *Weather and Forecasting*, **22**, 18-35.

## Annexure II: Work presented at the following Conferences and Workshops

1992	South African Society for Atmospheric Sciences (SASAS) conference in Pretoria, October 1992
1992	SACCAIM workshop at WITS University, October 1992
1993	Weather Bureau Colloquium, October 1993
1993	Fifth modelling workshop on parameterization of physical processes at Melbourne, Australia, November 1993
1994	SASAS conference in Pretoria, October 1994
1995	IGBP Conference in Pretoria, April 1995
1995	Weather Bureau Colloquium, May 1995
1995	IGBP conference at the CSIR, Pretoria, April 1995
1995	IUGG conference at Boulder, Co, July 1995
1995	Weather Bureau Colloquium, August 1995
1996	Workshop on Drought Cycles Risk at ESKOM, April 1996
1996	The 11 <sup>th</sup> Conference on Numerical Weather Prediction in Norfolk, Va, August 1996
1996	Workshop on the Use and Benefits of seasonal outlooks at the University of Pretoria, August 1996
1996	Follow-up workshop on Drought Cycles Risk at ESKOM, September 1996
1996	Workshop on Reducing Climate-related vulnerability in southern Africa at Victoria Falls, Zimbabwe, October 1996
1996	SASAS conference at Cape Town, November 1996
1997	Workshop on the Impact of Observing systems on numerical forecasts at Geneva, Switzerland, April 1997
1997	Fifth International Conference on Southern Hemisphere Meteorology and Oceanography, Pretoria, April 1997
1997	Workshop on Water Resource Management at Pretoria, April 1997
1997	Drought Cycles Risk workshop at ESKOM, April 1997
1997	WMO workshop on Dynamical Extended Range Forecast in Toulouse, France, November 1997
1998	Workshop on 'Applications of Satellite Measurements in Climate predictions' at the CSIR, Pretoria, September 1998
1998	SASAS conference in Pretoria, October 1998
1999	Seasonal Outlook workshop at TRI, ESKOM, August 1999
1999	Second Southern Africa Regional Forecast Outlook Forum, Maputo, Mozambique, September 1999
1999	UNESCO conference at CSIR, Pretoria, September 1999
2000	WMO Workshop on Use of Ensemble Prediction, Beijing, 16-20 October 2000.
2001	SASAS conference in Cape Town, September 2001 <b>(Received award for the most outstanding presentation)</b>
2002	European Geophysical Society XXVII Annual conference in Nice, France, 22-26 April 2002.
2002	SASAS conference in Pretoria, August 2002
2003	International Conference on Southern Hemisphere Meteorology and Oceanography in Wellington, New Zealand, 24-28 March 2003
2003	SASAS conference in Pretoria, August 2003
2004	CLIVAR Atlantic Climate Variability, Reading, UK, 19-22 April 2004
2004	IMSC/SASAS conference in Cape Town, May 2004
2004	THORPEX 1 <sup>st</sup> Science Symposium, Montreal, 6-10 December 2004
2005	1st Workshop on the THORPEX Grand Global Ensemble (TIGGE) at ECMWF, Reading, UK from 1-3 March 2005.
2005	SASAS conference in Richards Bay, September 2005
2006	Southern Hemisphere THORPEX Regional Committee and Pre_CAS Workshop, Cape Town 13-15 February 2006
2006	THORPEX Working Group meetings and workshop, Reading 20-24 March 2006
2006	SASAS conference in Bloemfontein, September 2006
2006	BMRC Annual Modelling workshop, November 2006, Melbourne, Australia
2006	Second THORPEX International Science Symposium, December 2006, Landshut, Germany