



Arthur Chapman

Curriculum Vitae

Profession: Water Resources and Climate Change Specialist

Date of Birth: 19 January 1961

Key Qualifications:

- Climate change strategy development
- Assessment of impacts of climate change on water resources
- Assessments of the impacts of land-use change on water resources
- Hydrological risk assessment of planned developments

Experience

Lead: Scientific Outputs on the Regional Climate Change Programme, OneWorld Sustainable Investments: Conceptualize research projects, briefing of research teams and review of research outputs

- Assessment and synthesis of the impacts of climate change in achieving the Millennium Development Goals (MDGs) in four southern African countries;
- Project oversight and contributions to a Transboundary Water Analysis;
- Project oversight and contributions to a research project on local (indigenous) knowledge and management of adaptation;
- Development of climate change and human health research project concepts;
- Project lead on assisting with Angola's First National Communication to the UNFCCC;
- Assessment of the vulnerability of the water resource sector in Uganda to climate change;
- Contributor to an assessment on the impacts of climate on food security in Lesotho;

Climate change impact assessment

- Water sector assessment for the Western Cape Climate Change Strategy and Action Plan, Department of Environment and Development Planning, Western Cape;
- Water resources assessment for the Status Quo report for the Western Cape climate change impacts report, Department of Environment and Development Planning, Western Cape;
- Inputs to the impacts, vulnerability and adaptation to climate change in key South African sectors - Long-term Mitigation Scenario (of carbon emissions) development for the South African government;

Hydrological impact assessment:

- Hydrological risk assessment of major plantations on two major regional aquifers and surface water resources in Uruguay, South America for Forestal Oriental SA, Uruguay;
- Review of the hydrological risk assessment for a proposed nuclear power station;
- Assessment of the payment for environmental services (water) for the Ga-Selati and Sand rivers, Limpopo and Mpumalanga provinces respectively;
- Flood hydrograph modelling in arid zones;
- Application of scenario planning to the invasion processes of alien plant species;
- Hydrological risk assessments of invasive alien vegetation;
- Flood and debris loading on infrastructure assessment, Western Cape;
- Fire danger risk assessment modelling and project development;
- Hydrological risk assessments for a planned major solar thermal electricity generation facility, a fuel pipeline to an open cycle gas turbine, a major mineral sands mining project – KwaZulu Natal coast;
- Water quality impact assessment of a coal mine discard dump;
- Bioclimatic modelling, forestry site/suitability modelling, assessment of the impacts of afforestation in the North-eastern Cape, Mpumalanga;

Lecturing and Teaching positions

- Specialist lecturer and mentor on flood generating mechanisms in the Disaster Management Programme, Environmental and Geographical Sciences, University of Cape Town (2007-current).

Education:

BSc (Hydrology, Geology)	University of Natal (1985)
BSc Hons (Hydrology)	University of Natal (1986)
MSc (Hydrology)	University of KwaZulu-Natal (1990)

Employment Record

2009 -current	OneWorld Sustainable Investments
1990-2009	CSIR Natural Resources and Environment
1989-1990	Department of Water Affairs: Hydrologist

Languages:

English, Afrikaans (Basic)

Publications (Peer reviewed)

BALANCE, A, STEPHENSON, D, CHAPMAN, R.A. and MULLER, J. (2000). A geographic information systems analysis of hydro power potential in South Africa. *J. Hydroinformatics* 02.4 : 247-254.

CHAPMAN, RA, LE MAITRE, DC AND RICHARDSON, DM (2001). Scenario planning: Understanding and managing biological invasions in South Africa. In: McNeely, J.A. (ed.). 2001. *The Great Reshuffling: Human Dimensions of Invasive Alien Species*. Pp. 195 – 208. IUCN, Gland, Switzerland and Cambridge, UK.

CHAPMAN, R.A., MANDERS P. T., SCHOLE, R. J. AND BOSCH J. M. (1995) Who should get the water? Decision support for water resource management. *Wat. Sci. Tech.* 32(5-6): 37-43. (Selected paper from the Kruger Park 1995 River Basin Conference).

LE MAITRE, D.C., CHAPMAN, R. A. AND MIDGLEY, J.J. (1993) Predicting the rate of spread of alien plants in Cape mountains. In: BOUCHER, C. AND MARAIS, C. (Eds.) *Managing Fynbos Catchments for Water. Workshop Proceedings, Stellenbosch, South African, FRD Programme Report Series No. 24., 1995.*

LE MAITRE, D.C., RICHARDSON, D.M. and CHAPMAN, R.A. (2004). Alien plant invasions in South Africa: Driving forces and the human dimension. *South African Journal of Science*, 100: 103-112.

LE MAITRE, D.C., VAN WILGEN, B.W. CHAPMAN, R.A. AND MCKELLY, D.H. (1996) Invasive plants and water resources in the Western Cape Province, South Africa: modelling the consequences of a lack of management. *Journal of Applied Ecology*, 33: 161-172.

LE MAITRE, DC., VAN WILGEN, BW, GELDERBLOM, CM, BAILEY, CL, CHAPMAN, RA and NEL, JA. (2002) Invasive alien trees and water resources in South Africa: case studies of the costs and benefits of management. *Forest Ecology and Management* 160: 143-159.

LE MAITRE, D.C., VERSFELD, DB and CHAPMAN, R. A. (2000). Technical Note: The impact of invading alien plants on surface water resources in South Africa: A preliminary assessment. *Water SA* 26: 397 – 408.

ROURA-PASCUAL, N. RICHARDSON, D. KRUG, R. BROWN, A. CHAPMAN, R. FORSYTH, G. LE MAITRE, D. ROBERTSON, M. STAFFORD, L. VAN WILGEN, B. WANNENBURGH, A. & WESSELS, N. (2009), 'Ecology and management of alien plant invasions in South African fynbos:Accommodating key complexities in objective decision making', *Biological Conservation* 142, 1595-1604.

VAN WILGEN, B.W., LITTLE, P.R., CHAPMAN, R.A., GÖRGENS, A.H.M., WILLEMS, T. AND MARAIS, C. (1997). The sustainable development of water resources: History, costs and benefits of alien plant control programmes. *S. Afr. J. Sci.* 93:404-411.

VERSFELD,D.B., RICHARDSON, D.M. VAN WILGEN, B.W., CHAPMAN, R.A. AND FORSYTH, G.G. (1992) The climate of Swartboskloof. In: (Eds.) van Wilgen B.W., Richardson, D.M., Kruger, F.J., and van Hensbergen, H.J. *Fire in South African Mountain Fynbos: Ecosystem, community and species response at Swartboskloof. Ecological Studies 93, Springer-Verlag, Berlin Heidelberg.*

Reports

BAILEY, CL, GELDERBLOM, C, LE MAITRE, DC, EVANS, JP, CHAPMAN, RA, VAN WILGEN, B, VINK, ER, MULLER, J, SAVRDA, D, BROWN, PJ (1997). Management Plan for the Upper Wilge River Catchment. Environmentek, CSIR, report number ENV/P/C/97227.

CHAPMAN, R.A. (1991) Water production in the Wolwe river catchment. CSIR Report to Urban's Industries, George, South Africa.

CHAPMAN, R.A. (1996) A cost/benefit analysis of clearing alien invasive vegetation from government water schemes. Draft report to the Department of Water Affairs by Division of Forest Science and Technology, CSIR.

CHAPMAN, RA. (1997) The hydrological impact of current and planned afforestation by North Eastern Cape Forests: Total flow and low flow. CSIR report ENV/S-C 9707, Division of Water, Environment and Forestry Technology, CSIR, Stellenbosch.

CHAPMAN, RA. (2005). Outeniqua Coast Water Resources Assessment: Inception Report: Afforestation and Alien Invading Plants. CSIR Report ENV-S-C 2005-089.

CHAPMAN, RA. (2005). Outeniqua Coast Water Resources Assessment: Final Report: Afforestation and Alien Invading Plants. CSIR Report CSIR/NRE/ECO/ER/2006/0005/C

CHAPMAN, RA. (2006). ESKOM Concentrating Solar Thermal Plant: Hydrology Scoping Report. CSIR Report CSIR/NRE/ECO/ER/2006/0065/C.

CHAPMAN, R.A., GODFREY, L., MEYER, R. AND SCOTT, D.F. (1996) Specialist study on the potential impact of the proposed Iscor Minerals mining project on the water resources in the affected region. Submitted to Environmental Services CSIR by Division of Forest Science and Technology CSIR on behalf of Iscor Mining.

CHAPMAN, RA AND FORSYTH, GG. (2001). Recommendations for property owners and occupiers: reducing fire risk to properties on the urban edge – Cape Peninsula. CSIR Report ENV-S-C 2000-104.

CHAPMAN, RA, LE MAITRE, DC AND HOLMES, PM. (2000). Robben Island: A baseline terrestrial ecology study and recommendations for vegetation rehabilitation. CSIR report ENV-S-C 99115, Division of Water, Environment and Forestry Technology, CSIR, Stellenbosch.

CHAPMAN, RA., LE MAITRE, D. AND RICHARDSON, D.M. (1995) The costs of exotic plant invasion and its management. Draft report for the RDP Water Conservation Project by Division of Forest Science and Technology, CSIR.

CHAPMAN, RA., LE MAITRE, D. AND RICHARDSON, D.M. (2001). Scenarios for alien invading woody plants. Water Research Commission Report Number 907/1/01, Division of Water, Environment and Forestry Technology, CSIR, Stellenbosch.

CHAPMAN, R.A. MEYER, G. AND SCHOLE, R. J. (1995) Development of an Integrated Catchment Management System for the Crocodile Catchment. Division of Forest Science and Technology, CSIR, Report No. FOR C-223.

CHAPMAN, R.A., MIDGELY, J.J. AND SCOTT, D.F. (1993) Oranjekloof: Flood producing hazards and flood amelioration. Division of Forest Science and Technology, CSIR, Report No. FOR C-196.

CHAPMAN, R.A., PRINSLOO, F.W., SCOTT, D.F. AND LE MAITRE, D.C. (1994) Identification of hydrological risks to the Wemmershoek Vlei and recommendations for monitoring. Division of Forest Science and Technology, CSIR, Report No. FOR C-256.

CHAPMAN, R. A., VAN WILGEN, B. W. (1994) A quantification of the potential impact of alien invasives on water yield in Cape catchments. Division of Forest Science and Technology, CSIR, Report No. FOR DEA-745.

FAIRBANKS, D.H.K. AND CHAPMAN, R.A. (1997). Modelling rainfall surfaces in South Africa: Letaba River catchment study. CSIR STEP report ENV/P/I 97019.

FORSYTH, G.G., VERSFELD, D.B., CHAPMAN, R.A. AND FOWLES, BK. (1997). The Hydrological Implications of Afforestation in the North-eastern Cape: A Survey of Resources and Assessment of the Impacts of Land-use Change. Water Research Commission Report No. 511/1/97. pp xvi + 154.

FORSYTH, GG, VAN WILGEN, BW, RUDDOCK, G, NEL, JL, LE MAITRE, DC, SMITH, N, CULLINAN, C, CHAPMAN, RA. (2000). A Fire Management Plan for the Cape Peninsula

National Park. Report prepared for South African National Parks. CSIR Report ENV-S-C 2000-111.

HASSAN, R., BERNS, J., CHAPMAN, A., SMITH, R., SCOTT, D. AND NTSABA, N. (1995) Economic policies and the environment in South Africa: The case of water resources in Mpumalanga. Report to the Land and Agricultural Policy Centre by Division of Forest Science and Technology, CSIR, Pretoria.

LUGER, LM, CHAPMAN, RA, SCHONEGEVEL, LY, FORSYTH, GG and MEHLOMAKULU, M. (2001). Specifications for a national veld and forest fire information system. CSIR report ENV-S-C 2001-059.

MIDGLEY, G.F., CHAPMAN, R.A., HEWITSON, B., JOHNSTON, P., DE WIT, M., ZIERVOGEL, G., MUKHEIBIR, P., VAN NIEKERK, L., TADROSS, M., VAN WILGEN, B.W., KGOPE, B., MORANT, P.D., THERON, A., SCHOLE, R.J., FORSYTH, G.G. (2005) A Status Quo, Vulnerability and Adaptation Assessment of the Physical and Socio-economic Effects of Climate Change in the Western Cape. Report to the Western Cape Government, Cape Town, South Africa. CSIR Report No. ENV-S-C 2005-073, Stellenbosch

NEL, J., LE MAITRE, D. AND CHAPMAN, A. (1999). Alien plant infestation and associated water use: Wriggleswade and Laing Dams, Eastern Cape. Confidential Report to Ninham Shand. ENV-S-C 99069.

PRINSLOO, F.W, LE MAITRE, D.C. AND CHAPMAN, R.A. (1999). Annual report on the trend in water level fluctuations and a vegetation survey at the Wemmershoek Vlei study area (1998-1999). Confidential Report to SAFCOL.

SCOTT, D.F. AND CHAPMAN, R.A. (1996) Hydrological implications of proposed additional afforestation at Uitsoek Plantation. Report to SAFCOL by the Division of Forest Science and Technology, CSIR, Jonkershoek Forestry Research Centre.

SCOTT, D.F. AND CHAPMAN, R.A. (1997) The effects of afforestation in Quaternary Catchment T35G on low flows. CSIR report ENV/S - C 97077.

SCOTT, D.F., LE MAITRE, D, CHAPMAN, R.A. AND GELDERBLUM, CM. (1999) Keurbooms catchment: Assessment of the hydrological impact of aliens plant infestations. CSIR report ENV/S-C 98098. Division of Water, Environment and Forestry Technology, CSIR, Stellenbosch.

STRYDOM H, CHAPMAN R. A. AND LOUW J H. (1994). Site classification and evaluation of Ceylon Plantation, Block H, Eastern Transvaal. FOR DEA 00817.

VERSFELD, D.B., BAILEY, C.L., EUSTON-BROWN, D.I.W., BROWN, P.J., CHAPMAN, R.A. and LE MAITRE, .D.C. (1997). A Reconnaissance and Problem Scoping of Alien Invasive Plants and Other Land-use Factors in Catchments Supplying Rand Water. Report Number ENV/P/C 97031 Environmentek, CSIR, Pretoria.

VERSFELD, D.B. and CHAPMAN, R.A. (1998). Scoping for sustainable arid zone forestry on the West Coast of South Africa. CSIR Report ENV/S-C 98072.

VERSFELD, D.B., MAITRE, .D.C. and CHAPMAN, R.A. (1998). Alien Invading Plants and Water Resources in South Africa: A Preliminary Assessment. Water Research Commission Report No. TT 99/98.

Van Wilgen, B.W. Bridgett, J. Jayiya, T. Forsyth, G.G. and Chapman, R.A. (2003) The selection of a Fire Danger Rating Model to underpin a national fire danger rating system for South Africa. CSIR Report ENV-S-C 2003-090, Stellenbosch, South Africa.

Web-based Publications

Chapman, R.A. (2009) On the road to Copenhagen: the state of Climate Change Policy in Southern Africa. Heinrich Böll Stiftung Southern Africa: <http://www.boell.org.za/web/144-465.html>

Conference Proceedings

CHAPMAN, R.A. (1991) Complementary relationship modelling of evaporation from South African reservoirs. Proceedings of the fifth South African National Hydrological Symposium, University of Stellenbosch, November 1991, 4B3-1 to 4B3-7.

CHAPMAN, R.A. AND SCHULZE, R.E. (1989) Evaporative losses from wetlands: First results from Ntabamhlope. In: (Eds.) Kienzle, S. and Maaren, H. Proceedings of the Fourth South African National Hydrological Symposium, University of Pretoria, November 1989, 84-90.

CHAPMAN, R.A., SCOTT, D.F. AND LE MAITRE, D.C. (1993) Hydrological impacts of aliens in fynbos catchments. In: BOUCHER, C. AND MARAIS, C. (Eds.) Managing Fynbos Catchments for Water. Workshop Proceedings, Stellenbosch, South African, FRD Programme Report Series No. 24., 1995.

CHAPMAN, R.A., VERSFELD, D.B. (1995) Invasive vegetation and water resources: The consequences of a lack of management to the water resources of the Western Cape. Proceedings of the Seventh South African National Hydrology Symposium, Grahamstown, September 1995.

LE MAITRE, D.C., CHAPMAN, R. A. AND MIDGLEY, J.J. (1993) Predicting the rate of spread of alien plants in Cape mountains. In: BOUCHER, C. AND MARAIS, C. (Eds.) Managing Fynbos Catchments for Water. Workshop Proceedings, Stellenbosch, South African, FRD Programme Report Series No. 24., 1995.

LE MAITRE, D, VERSFELD, D AND CHAPMAN RA. (1999). The impact of invading alien plants on surface water resources in South Africa: A preliminary assessment. Conference Proceedings. Ninth South African National Hydrology Symposium.

VAN WILGEN, BW, LARSEN, EJ, MARAIS, C, GÖRGENS, AHM, CHAPMAN, RA, WILLEMS, T AND LITTLE, PR. (1999). The importance of alien plant invasions for water resource planning in the fynbos catchment areas of the Western and Eastern Cape. Conference Proceedings. Ninth South African National Hydrology Symposium.