

Arthur Chapman

Nationality South African

Education Msc (Hydrology) (1990)
University of Kwa-Zulu Natal

BSc (Hydrology, Geology) Hons
(1986)
University of Natal

Languages English, Afrikaans

Employment record

2015 – current Independent Consultant
(Research, strategy development and implementation)

2009 - 2015 Senior Researcher: Water and Climate
OneWorld Sustainable Investments

1990 - 2009 Research Hydrologist
CSIR Natural Resources and Environment

1989 - 1990 Hydrologist
Department of Water Affairs, South Africa

Relevant professional experience

2015 - Current Independent Consultant

- *Research team leader:* Climate change adaptation strategies in agricultural value chains, southern Mozambique
- *Review Consultant and Advisor:* Mahanadi River basin, Odisha and Chhattisgarh states, eastern India flood early warning systems and protocols / water resource assessments
- *Risk assessment and management strategy:* Robben Island Disaster Management Plan
- *Modelling and analysis:* Groundwater pollution modelling and assessment for a gas field development impact assessment - Cameroon
- *Consultancy – EIA reviews:* Municipal waste incineration at Wellington, Western Cape – health hazards
- *Consultancy – EIA reviews and statistical analysis:* Hydropower development impacts - Boegoeberg Dam, Orange River - hydrology analysis and sediment risk evaluation

2015 - Current *University of Stellenbosch*
Research Alliance for Disaster and Risk Reduction (RADAR)
Flood modelling, research, strategy development and regional flood assessments in the Western Cape, South Africa. Integrative report writer and contributing author on disaster exposure and disaster *post hoc* assessments.

2014 - Current *CDKN, World Bank*
Hydropower and climate change in the Zambezi River Basin
Consultant on a team evaluating hydropower production, irrigation demand and climate changes in the Zambezi River basin. Responsible for assisting with the development of forecasts for population and socio-economic growth, based on different national, regional and global scenarios of change. Population size and models of economic sector structures in an economy are used as inputs to the water and energy demand relationships.

2014 - Current	<p><i>University of Stellenbosch</i> <i>Disaster Management Programme for Sustainable Livelihoods</i> Current mentoring positions in aspects of flood hydrology including extreme value statistics</p>
2012 - Current	<p><i>USAID/Chemonics</i> <i>Resilience in the Limpopo River Basin Program (RESILIM)</i> Programme Leader for five-year project in 6 Southern African countries, evaluating and addressing the challenge of efficient urban water management in the context of changing climate in Africa. Leading the components of the RESILIM programme through: an assessment of the nexus between climate change, water and biodiversity in this area, based on key research outcomes; the development of evidence-based climate change strategies in the Limpopo Basin; and a systems analysis and study to understand how resilience building decisions are made in the Basin.</p>
2013	<p><i>Ministry of Planning and Development, Mozambique</i> <i>Pilot Programme for Climate Resilience (PPCR)</i> <i>An Assessment of Climate Resilient Livelihood Options in Drought Prone Areas - Mozambique</i> Adviser on climate change impacts, vulnerability mapping and livelihoods adaptation options to the PPCR project in Mozambique. Contributing author on these PPCR consultancy reports.</p>
2009 - 2012	<p><i>DFID</i> <i>Southern African Regional Climate Change Programme</i> Lead: Scientific Milestones of the Regional Climate Change Programme (RCCP) managed by OneWorld Sustainable Investments: Conceptualisation of research projects, briefing of research teams and review of research outputs, as well as assessment on the impacts of climate change on transboundary water resources, achieving the MDGs, human health and urban areas across the southern African SADC region. Integrative modelling using a large-scale socio-economic model (International Futures) for forecasting socio-economic change as inputs to regional climate change assessments.</p>
2009 - 2012	<p><i>Government of Uganda - Ministry of Water and Environment</i> <i>Uganda Water resources sector: vulnerability assessment to climate change and adaptation strategy</i> Key author in an assessment of climate change impacts for the water sector in Uganda, with corresponding recommendations on adaptation options</p>
2007 - 2009	<p><i>SSI Consulting Engineers / Worley Parsons / Bolwheki / Eskom</i> <i>Hydrological risk and impact assessment for an EIA (Environmental Impact Assessment) on a concentrated solar thermal plant near Upington and Postmasburg, Northern Cape, South Africa.</i> Hydrological risk and impact assessment for an EIA on a fuel pipeline from Milnerton, Cape Town, to Atlantis. Reviewer of the hydrological component of the Eskom EIA for proposed nuclear power plants site options. Undertook an assessment of the impacts of an abandoned coal mine waste dump, on surface and groundwater quality.</p>
2007 - 2008	<p><i>International Institute for Environment and Development (IIED)</i> Hydrological and land-use assessments of the Ga-Selati and Sand Rivers in the Limpopo and Mupumulanga Provinces respectively, with proposals of options for implementing payment for environmental services (PES).</p>
2007	<p><i>Sishen Iron Ore Company (SIOC), South Africa</i> Hydrological consultant on the development of flood hydrographs for estimating flood peaks and volumes, as inputs to estimates of fluxes to groundwater, using a parsimonious hydrological model – IHACRES.</p>
2006 - 2009	<p><i>Forestal Oriental, Uruguay</i> Hydrological consultant on the assessments of the potential impacts of Forestal Oriental</p>

plantations on the Guarani and other regional aquifers, as well as the development of a hydrological monitoring programme (surface and groundwater) for the plantations.

2005 - 2007 *Government of the Western Cape (South Africa)*
 Assessment of the hydrological and water resource components of a strategy and adaptation plan for mitigating the impacts of climate change in the Western Cape.
 Assessment of the potential impacts of climate change on the water resources and other sectors for a baseline report that served as inputs to a climate change strategy document.

1990 - 2009 *CSIR Natural Resources and Environment*
 Various

- Hydrological consultant evaluating the impacts of plantations in and near to wetland areas of Forestal Oriental plantations and impacts on the Guarani and other regional aquifers, Uruguay (2006 – 2009)
- Hydrological consultant on flood routing through the Orangetkloof wetland, Cape Town, South Africa.
- Hydrological consultant on identifying hydrological risks to the Wemmershoek Vlei (wetland), including loss of sub-surface flows (with flow and groundwater monitoring, (Franschoek, Western Cape, South Africa)
- Hydrological consultant on numerous Environmental Impacts Assessments
- Hydrological consultant for evaluating the ability to release water for Payment for Environmental Services for Ga-Selati and Sand rivers, Limpopo and Mpumalanga provinces respectively,
- Flood hydrograph modelling in arid zones, extreme value statistical evaluations, bioclimatic modelling

Selected Publications

Spalding-Fecher, R. Chapman, RA. Yamba, F. Walimwipi, H. Kling, H. Tembo, B. Nyambe, I. & Cuamba, B. (2014). *The impact of climate change and irrigation development on hydropower in the Zambezi River Basin*. Manuscript submitted for publication. Copy on file with author.

de Waal, J. Chapman, RA. & Kemp, J. (2014). *Extreme Rainfall Distributions: Analysing change in the Western Cape*. Manuscript submitted for publication. Copy on file with author.

Petrie, B., Chapman, A., Midgley, A., Parker, R. (2014). *Risk, Vulnerability and Resilience in the Limpopo River Basin System: climate change, water and biodiversity – a synthesis*. For the Resilience in the Limpopo River Program (RESILIM), USAID. OneWorld Sustainable Investments, Cape Town, South Africa.

Petrie, B, Chapman, RA, Midgley, SJE, Martin, L. in press. 2014. *What does climate change mean in the Limpopo River basin: political, socio-economic and biophysical perspectives*. For the Resilience in the Limpopo River Program (RESILIM), USAID. OneWorld Sustainable Investments, Cape Town, South Africa.

Chapman, RA. (2013). Options for Adaptations at Scale in the Limpopo River Basin: A conceptual assessment, Technical report, OneWorld Sustainable Investments, Cape Town.

Croxton, S. Petrie, B. Chapman, RA. & Midgley, S. (2013). *Assessment of Climate Resilient Livelihood Options in Drought Prone Areas of Mozambique*. Project No.P125225. Report prepared by OneWorld Sustainable Investments, Cape Town, South Africa for the Ministry of Planning and Development and Ministry for

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We build resilient futures

Coordination of Environmental Affairs, Government of the Republic of Mozambique.
