

Hydrological consequences of a changing climate: the Umgeni Water Utility case study

MARK SUMMERTON¹ & ROLAND SCHULZE²

¹ *Umgeni Water, PO Box 9, Pietermaritzburg 3200, South Africa*
mark.summerton@umgeni.co.za

² *School of Bioresources Engineering and Environmental Hydrology, University of KwaZulu-Natal, Private Bag X01, Scottsville 3209, South Africa*

Abstract For effective water resources management, all “stressors” that may impact on balancing future water supply and demand must be assessed. Hydrologists have recently begun making headway towards assessing a previously ignored “stressor”, viz. the impact of a changing climate. At Umgeni Water, a bulk water utility in South Africa, a process has been initiated to quantify potential impacts, initially on strategic catchments using daily physical-conceptual hydrological modelling. Preliminary results based on the Geophysical Fluid Dynamics Laboratory General Circulation Model indicate that streamflow could increase by up to 2.6- and 5.3-fold by the years 2065 and 2100, respectively, mostly in the currently dry winter months. Furthermore, inter-annual variability could decrease. This could increase risks of flooding and compromise dam safety. Should additional streamflow improve water yields, climate change could potentially benefit cash flows by delaying capital expenditure on projects to improve assurance of supply. Regardless, it is imperative that the hydrological consequences of a changing climate be included in water development, disaster risk and system operating plans.

Key words climate change; water resources management and planning; sustainable economic development; *ACRU* agrohydrological model; adaptation; Mgeni catchment in KwaZulu-Natal