Participatory modelling for locally proposed climate change adaptation related to water and agriculture in South Africa

LOTTA ANDERSSON¹, JULIE WILK¹, PHIL GRAHAM¹ & MICHELE WARBURTON²

¹ Swedish Meteorological and Hydrological Institute, SMHI, S-601 76 Norrköping, Sweden
lotta.andersson@smhi.se

² The School of Bioresources Engineering & Environmental Hydrology, BEEH, University of KwaZulu-Natal, Private Bag X01, Scottsville 3209, South Africa

Abstract The participatory modelling project (PAMO) carried out in the Thukela River Basin, South Africa assessed vulnerability to climate variability and change on water resources through direct involvement of affected groups. The aim was to increase stakeholder confidence and ownership, and create a local adaptation plan. Meetings were held with three stakeholder groups: (a) government authorities, research institutes, NGOs, (b) commercial farmers, and (c) small-scale farmers, and complemented with interviews. Based on participants’ requests, modellers compiled regionally dynamically downscaled climate change projections, as well as their hydrological consequences. The project focused on agriculture, water resources/infrastructure and biodiversity. Though many future problems were shared, their pre-conditions for dealing with these were vastly different. Knowledge transfer within and across the farming communities and with government agencies on climate change, adaptation measures, and means to procure financing and permits for measures will aid local initiatives to prepare for climate variability and change.

Key words participatory modelling; climate change; adaptation; water resources; agriculture; catchment modelling; regional dynamic downscaling; RCM3; ACRU; South Africa