

PARALLEL SESSION C : IMPACTS AND APPLICATIONS
C3: REGIONAL SCALE HYDROCLIMATE: FROM OBSERVATIONS TO
MODELLING TO APPLICATIONS

Estimating change in future streamflow based on a limited sample of
different downscaling products

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For many geographical regions outside Europe and US, downscaled data to support climate change impact analysis are still limited, particularly when requiring downscaled information over large regions that is internally consistent across multiple variables. This is certainly a challenge for streamflow projections, as most hydrological rainfall-runoff models require information about areal potential evaporation and rainfall over a specified spatial domain (catchments or river basins).

Within the Victorian Climate Initiative (VicCI), pros and cons of different regionally available downscaling products are assessed for the production of streamflow projections. VicCI is a regional climate initiative launched by the Victorian State of Australia that is tasked to provide knowledge that leads to improved forecasts of water availability in the short term and improved risk assessment on water supplies due to medium to long term changes in the climate.

The majority of existing regional streamflow projections in Australia use climate change information from empirically scaled observational time series, where observations are scaled using scaling factors from global climate models. This approach is easily implemented and can consider the full range of outputs from global climate models. Within VicCI, we investigate if downscaled products can provide added value to the estimation of the regional climate change signal, particularly in areas with marked relief such as the Victorian Alps. All regionally available downscaled data sets are considered, representing different complexity and includes both statistical and dynamical downscaling techniques. Here, we discuss challenges encountered and how to phrase policy guidance for regional water supply projections based on the entire suite of outputs.

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