



## **Relating variations in runoff to variations in climatic conditions and catchment properties**

Graham Farquhar (1), Fubao Sun (1), Michael Roderick (1,2)

(1) Research School of Biology, Australian National University, Canberra, Australia ([graham.farquhar@anu.edu.au](mailto:graham.farquhar@anu.edu.au), +61-2-6125-4919), (2) Research School of Earth Sciences, Australian National University, Canberra, Australia

We use the Budyko framework to calculate catchment [U+2010] scale evapotranspiration (E) and runoff (Q) as a function of two climatic factors, precipitation (P) and evaporative demand ( $E_o = 0.75$  times the pan evaporation rate), and a third parameter that encodes the catchment properties (n) and modifies how P is partitioned between E and Q. We use examples from the Murray-Darling Basin in Australia, and elsewhere, to examine the effects on run-off of perturbations to the underlying parameters. We include an examination of projections based on Intergovernmental Panel on Climate Change AR4 climate model output. We conclude that the modern version of the Budyko framework is a useful tool for making simple and transparent estimates of changes in water availability.