



Robust responses of the terrestrial component of the hydrological cycle to global warming

Michael Roderick (1), Fubao Sun (2), Wee-Ho Lim (2), and Graham Farquhar (2)

(1) Research School of Earth Sciences, The Australian National University, Canberra, Australia

(Michael.Roderick@anu.edu.au), (2) Research School of Biology, The Australian National University, Canberra, Australia

Globally, the mass and energy transfers associated with the hydrologic cycle are dominated by those over oceans. However, the impact of changes is of most interest over land. Of special interest are projections in stream discharge. We use a recently developed analytical framework to examine changes in stream discharge that have been projected by climate models. The framework is based on the long used supply (i.e. precipitation) - demand (i.e. evaporative demand) framework of catchment hydrology pioneered by Budyko. The results show that the climate model output closely follows a Budyko curve, and that the changes in stream discharge also follow those projected by our analytical model. With that result we are able to extract generalisations from the climate model projections about changes in stream discharge.