Geophysical Research Abstracts,
Vol. 10, EGU2008-A-06133, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-06133
EGU General Assembly 2008

Global catchment based comparison of observed and HadGEM modelled precipitation, temperature and Köppen climate type

M. C. Peel (1), T. A. McMahon (1) and I. N. Smith (2)

(1) Department of Civil Environmental Engineering, The University of Melbourne, Victoria, Australia, (2) CSIRO Marine and Atmospheric Research, Aspendale, Victoria, Australia (mpeel@unimelb.edu.au)

Long-term management of water resources systems around the world will increasingly depend upon projections of future climate change from coupled global climate models (CGCM). Whether these projections will be informative to water resources systems managers will rest upon the CGCMs ability to adequately represent the past, present and future hydroclimate at the catchment scale either directly or indirectly via downscaling techniques. Here we present results from a comparison of observed hydroclimate at 686 catchments from around the world with results from the Hadley Centre model HadGEM. The catchment average observations are based on area weighting (Theissen polygons) of precipitation and temperature station records from the GHCN version 2 dataset. The HadGEM model results are drawn from the IPCC AR4 20C3M scenario, which incorporates the observed increase in greenhouse gas concentrations over the 20th century. No downscaling technique was applied to the HadGEM results. The percentage of total catchment area covered by each HadGEM grid cell was used to weight the precipitation and temperature grid cell values to form the catchment average value. Observed and HadGEM catchment values of mean annual precipitation and temperature and Köppen climate type for the period of record available at each catchment where then compared. The model and observations match well across most catchments for mean annual temperature. For mean annual precipitation the match is less satisfactory and for Köppen climate type the distribution of broad climate types is statistically different at the 5% level of significance with HadGEM having more arid

and cold catchments and less tropical and temperate catchments than observed.