LINKING GLOBAL CIRCULATION MODEL SYNOPTICS AND PRECIPITATION FOR WESTERN NORTH AMERICA

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ABSTRACT

Synoptic downscaling from global circulation models (GCMs) has been widely used to develop local and regional-scale future precipitation scenarios under global warming. This paper presents an analysis of the linkages between the Canadian Centre for Climate Modelling and Analysis first version of the Canadian Global Coupled Model (CCCma CGCM1) 2000 model output and local/regional precipitation time series. The GCM 500 hPa geopotential heights were visually classified for Synoptic patterns using a geographical information system. The pattern frequencies were statistically compared with historical data from Chan-non et al. (1993. Monthly, Weather Review 121: 633-647) for the winter period 1961-85, The CGCM1 synoptic frequencies compare favourably with the historical data. and they represent a Substantial improvement over the 1992 Canadian Climate Centre Global Circulation Model Synoptic climatology Output. The CGCM1 output was used to forecast future winter precipitation scenarios for five geographically diverse climate stations in western North America. Copyright (C) 2002 Royal Meteorological Society.

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