Assessment of Runoff Sensitivity to Changes in Precipitation at the Indochina Region

Patinya Hanittinan

Abstract

Reliable assessment of runoff is a key for the prediction and management of freshwater resources. Therefore, hydroclimate forcing datasets, e.g., precipitation and total runoff (ROF) using the output from the multiple-realization, single-model ensemble named "d4PDF", were obtained in this study. Due to lack of direct observation of the ROF, we first evaluated the validity of the present-climate d4PDF precipitation using the Taylor diagram. The model was able to reproduce the extreme indices with a respectable performance regarding pattern correlations (0.6-0.9) and the centered-pattern RMSE (0.5-1). Finally, the runoff sensitivities, which are the relative change in ROF due to the change in various precipitation indices, were discussed. The results showed that the elasticity of runoff to precipitation is greater than unity for 83-95% of land grid cells during annual and wet-season time scale, indicated a faster response of the ROF under changing climate.

Keywords *d4PDF, runoff generation, extreme indices*