



Deutscher Tropentag, October 8-10, 2003, Göttingen

“Technological and Institutional Innovations
for Sustainable Rural Development”

Rainfall Variability Studies in South Sulawesi Using Regional Climate Model REMO

DODO GUNAWAN, GODE GRAVENHORST

Georg-August-Universität Göttingen, Institute of Bioclimatology, Germany

Abstract

The regional climate model REMO has been applied to study rainfall variability in South Sulawesi, Indonesia by comparing model data with observations. During the period 1979–1993 data correlation was 0.82. A high correlation (more than 0.90) was obtained during El Niño year 1987. At the La Niña year 1988/1989, the results of REMO simulation under estimates the observation data. The pattern of rainfall variability related to ENSO phenomena was similar to observations. Rainfall at El Niño year is lower than average while at La Niña year rainfall is higher than average. The lower rainfall as an impact of El Niño and the higher rainfall as an impact of La Niña occur simulated and measured during dry season, whereas the rainfall during the wet season is not altered significantly. Rainfall amount can, therefore, be looked upon as a successful indicator of the model.

The model domain for this study includes Sulawesi (Celebes island), the east part of Kalimantan (Borneo island) and Maluku island. The borders of the model domain at the left corner is 117° E; 7° S and at the right corner is 129° E; 3° N. Input data used for running REMO 1/6° come from the output of the same model at 1/2° resolution. In turn, REMO 1/2° uses input data from ECMWF Re Analyses or ERA15 data (15 years period from 1979–1993). According to the period of ERA15 data, the rainfall simulation in South Sulawesi are conducted for this period. For this validation purpose, the rainfall data are obtained from meteorological, climatological and geophysical stations network belonging to the Indonesian Bureau of Meteorology and Geophysics (BMG). Other data were obtained from rain gauge and climate stations operated by several institutions (Agriculture Department, irrigation section of Department of Public Work) beyond these of BMG.

Keywords: El Niño, La Niña, Rainfall variability, rainfall simulation, Sulawesi