

ABSTRACT
THE EFFECT OF TOPOGRAPHY ON WIND AND RAINFALL
ALL OVER MINDANAO, PHILIPPINES

Perfecto Bojo
University of the Philippines, 2008

Adviser: Dr. Josefina Argete

The effect of topography on wind and rainfall was investigated by applying the technique of dynamical downscaling by means of FNEST simulations on RegCM3. The approach was to conduct a fine-mesh simulation of 5 km grid interval encompassing the region of Mindanao using the output of the coarse-mesh simulation of 20 km grid interval encompassing the region of the Philippine archipelago as the lateral boundary condition. This is called a one-way double nesting. There were two sets of experiments, one is for January 2001-representing the northeast monsoon season; and the other is for July 2001- representing the south west monsoon season. The control of the experiment is the fine-mesh simulation with the presence of the topography and the effect of the topography is accounted by means of the fine-mesh simulation when the topography over the island of Mindanao is reduced to sea level while retaining the surface attributes. The results of the experiments indicate that the topography has a dual effect on rainfall: enhancement of rainfall at the windward side of the mountain and suppressed rainfall at the leeward side. Also, the results of the experiments demonstrate the effect of the topography on wind magnitude and wind direction. The study confirmed the role of geography and topography in shaping the climate of Mindanao.