

HyBMG a Statistical PC Based Climate Model

Bridging a Gap between High Technologies Required – Providing High Resolution Climate Prediction in Sub Provinces Scales

Abstract

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Political changes related to decentralization and regional autonomy in Indonesia strongly influence the ways and means adopted in developing the most appropriate climate knowledge-action information system. A national program was initiated to develop a climate information system which is intended largely to provide high resolution climate information to support climate-related decision making processes at sub-provinces (regency) scales.

Climate variability and climate predictions are likely to have different effects on different regions, sectors, and actors. Agriculture sector is the most need climate prediction; for field trainers and farmers, knowing “how about rainfall in the next month or next year” is the important thing to increase their productivities. Local governments are also depending on climate prediction to make a program and decision.

Providing high resolution climate information needs climate models. Currently, most of climate model base on high perform computer even PC Cluster or super computer which are expensive technologies. HyBMG is developed to bridge a gap between providing high resolution climate prediction in sub-provinces scales and high technologies requires.

HyBMG (Hybrid BMG) is a PC-based windows application interface that is built under MATLAB (MATrix LABoratory) software. Related to the term of “Hybrid”, HyBMG is a compilation of non-conventional statistical models, combining newly developed time series forecasting techniques based on neural network (ANFIS), wavelet transform, Auto Regressive Integrated Moving Average (ARIMA) and non-linear dynamics (chaos theory). In this case, time series is specified for the rainfall time series data and HyBMG is used for long-range forecasting. It also includes validation procedures related the uses of the software.

In particular, the purpose of HyBMG is for the user simply needs in using several forecasting techniques in a single stand-alone application. It means that the user can use several forecasting techniques with the same input data and get the result (forecast) and then do validation easily using a user-friendly interface.