

Construction of a historical climate database of Indonesia

Raden Dwi Susanto, E-mail: dwi@ldeo.columbia.edu

Abstract

The islands of the Indonesian maritime continent are straddled along the equator, between two continents (Asia and Australia) and two oceans (Pacific and Indian). Due to this unique position, they experience a strong response to monsoon and El Niño-Southern Oscillation (ENSO) climate phenomena. It is well known that the Indonesian region is adversely affected by the climate swings associated with El Nino and La Nina. During El Nino, Indonesia is likely to be impacted by severe drought, with a higher risk of forest fire. On the other hand, during a La Nina phase, Indonesia is likely to have more rain, which could cause flooding. Billion dollar losses have been reported due to these two extreme conditions, which affect all aspects of life: public health, agriculture, forestry, transportation and tourism. The climate variability over the Indonesian region is a very important factor that probably has a strong causal-effect to ENSO and global climate system.

These facts motivated me to start a research with the objective to better describe the spatial and temporal characteristic climate variability over the Indonesian region and its relation to the monsoon and ENSO (El Nino-Southern Oscillation) and also to lower frequency signals such as the Pacific Decadal variability. Because 70% of Indonesian region is covered by ocean, it is expected that ocean-land-atmosphere coupling is very important in this region. In order to achieve this goal, both in situ and satellite data of various ocean-atmosphere parameters must be used. To have a better understanding of the geographical and temporal variability of the climate in the Indonesian region, it is essential to obtain the historical climate data of Indonesia and combine it with modern ocean data.