Northeast monsoon in Southeast Asia sometimes seriously affects this region, in particular, as heavy rainfall events in Vietnam, southern Thailand, Malaysia, Philippines, and Indonesia. Under MAHASRI (Monsoon Asian Hydro-Atmosphere Scientific Research and prediction Initiative) within GEWEX/WCRP, we have tried to reveal the mechanism of heavy rainfall in northeast monsoon season over Southeast Asia by installing own observation network, and/or by conducting intensive upper air observation, and/or by rainfall data collection from these countries including data rescue for the old document data. In this presentation, rainfall variations in various time-scales in Southeast Asian northeast monsoon will be introduced. In particular, the Tropical Climate Variability Research Program, Institute for Global Change/JAMSTEC has conducted intensive observations in 2010 over central Vietnam and Philippines named as Vietnam Philippines Rainfall Experiment (VPREX) contributing to the AMY 2007-2012 (Asian Monsoon Years) and MAHASRI. The intensive observations are just corresponding to the mature phase of La Nina in 2010 and we observed some of the heavy rainfall events in central Vietnam. The early results of these observations as well as long-term changes in rainfall characteristics will be introduced. They have been supported by the Japan Earth Observation System Promotion Program (JEPP) and the Data Integration and Analysis System (DIAS) from the Ministry of Education, Culture, Sports, Science and Technology, Japan, by the Global Environment Research Fund (B-061 and B-092) from the Ministry of the Environment, Japan, and by the Grant-in-Aid for Scientific Research, Japan Society for the Promotion of Science.