CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Flood is the most common occurrence in the Malaysia and it also known as the worst flood especially in the state of Pahang, Terengganu and Sabah. This event was affecting in term of population, property, financial cost, frequency and social economic damaged. Flood also may cause the death, damaged and destructive. The population in Malaysia about 30 million of people and the area of Malaysia is about 330,000km². In Peninsular Malaysia, the average mean rainfall is 2,400 mm while Sabah is about 2,600 mm and 3,800mm for Sarawak (DID, 2010). Malaysia has 189 basins including Sabah and Sarawak with the average mean rainfall over 2,000 mm to 4,000 mm per year. It is also mostly exposed to the flood event where the basin receives the amount of rainfall that may cause the basin overflow to the surrounding of area. Flood is a natural disaster event and temporary condition whether partial or completes inundation of normally dry land areas from overflow of inland or tidal waters from the unusual and rapid accumulation or runoff of surface waters from any source where flood is occurred from the combination of heavy rainfall that causing the rive or streams to overflow from their banks.
Sabah is the largest state of Malaysia after Sarawak with the area about 73,631 km² with the population about 3,117,405 of people. Sabah is a state enriched with the natural nature but it is also one of the commonly occurs of flood. Kinabatangan, Sabah is have been known as a very serious flooding occurred such as village of Balat, Barek Manis, Tangkulap and Bukit Garam due to human error in term of the development of infrastructure. Every year, people at Kinabatangan faced the same problems where the landslide also occurs and it is the one of effect from flood.

Figure 1.0: Flood Prone Areas in East Malaysia
One of the strategies to reduce the flood is flood forecasting by using some software such as Artificial Neural Network (ANN). The applications of Artificial Neural Network (ANN) become more popular in water resources and have been used in prediction and forecasting of complex nonlinear process (Manish Kumar, Chandra Shekhar, 2014). An Artificial Neural Network is a powerful tool for modeling in hydrology that known as black-box models. In this case study, the hourly water level data is input to determine the outcome output. Artificial Neural Network is a highly non-linear and can capture the complex interactions among input variables in a system without any prior knowledge about the nature of these interactions. The area of study the flood forecasting is carried out at Kinabatangan River by using Artificial Neural Network. The data of rainfall-runoff can be collected from Department of Irrigation and Drainage, Sabah (DID) and the data is taken for hourly water level.