

## CHAPTER 6

### CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 Conclusions

A total of 508 cases from 14 sources of published experimental results have been used to calibrate 8 existing dissipation models. By using the root mean square relative error ( $ER$ ) as a criterion to compare the accuracy of each model, it is found that RS model gives the minimum error, which is equal to 15.85%. The calibration and comparison are also divided into 4 different cases due to beach conditions and 2 wave flume scales, which are plane beach, barred beach, stepped beach, sandy beach, small-scale wave flume and large-scale wave flume experiment. The present dissipation model is developed by including the local slope into the RS model. After calibration, it is found that the present model can improve the accuracy of the energy dissipation rate computation and after compared the accuracy to other dissipation models, it gives the minimum error equal to 14.67%. The present model gives the best prediction for most cases except for the stepped beach which RS model has a better prediction.

Comparison between the model results and the laboratory data showed that the present model gives reasonably accurate predicted wave height for a variety of bottom conditions, i.e., plane, stepped, barred beach, and sandy beach.

The computer program has been written by using the program so called Visual Basic version 6.0 as a computer language due to its flexibility. The program can reduce the time of computation and prevent the human error due to the complexity of the calculation method. Another advantage is that it is able to display the beach profile and wave height transformation.

#### 6.2 Recommendations

Since the mechanism of the wave breaking is very complicate and the difficulty in the formulation of energy dissipation rate, most of the energy dissipation models are based on empirical or semi-empirical formula. The recommendations for further study can be summarized as follows:

1. For further development of the regular wave model, increasing the amount of data to ensure the accuracy and the validity of the prediction results.
2. Develop the irregular wave model from the regular wave model in order to predict the wave height transformation in nature.