CHAPTER 5 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The objective of this research is to simulate tropical cyclone formation in the Gulf of Thailand based on bogus wind and a shallow water model. Intensification of tropical cyclones GAY (8929) and VAMEI (0126) from tropical storm to typhoon is simulated in terms of vorticity of the storms. The bogus wind of tropical cyclone is generated using an asymmetric wind model (AWM). A shallow water model called the single level primitive equation (SILEPE) model is used in the simulation, with wind and geopotential height at 850 hPa as the model variables. Weak observed winds of the storms are enhanced with AWM before using as the initial data for SILEPE model.

After the bogus winds generated by AWM is insert into the original initial condition, the linear balance equation is applied to maintain the balance between the wind field and geopotential height. Another intensity factor in a tropical cyclone formation is very strong wind related to the vorticity of the storm. In this research, the northeast monsoon wind is also enhanced. Northeast monsoon winds during the intensification of the storms are enhanced based on the observed maximum wind speeds of the storms. Results of the simulations show that northeast monsoon wind accelerates the intensification of the vorticity of GAY and VAMEI.

Comparisons between the intensification of GAY and VAMEI and other 2 typhoons over the Northwest Pacific Ocean (CHANTHU (0405) and MUIFA (0425)) which are not influenced by the northeast monsoon wind show that the vorticity intensification of GAY and VAMEI is faster than those of CHANTHU and MUIFA. Thus, the northeast monsoon wind influences the development of GAY and VAMEI.

5.2 Recommendation

In this research, only wind and geopotential height at 850 hPa level are used in the simulations. The reason is the convenient comparison between the model run at 850 hPa and the observed data at the surface. The other levels that should be used in future studies are 700 hPa and 500 hPa which can provide 3 dimensional characteristics of the storm. Additional simulation of tropical cyclone formation should be performed over Northwest Pacific Ocean for better understanding of the intensification of the storms.