CHATER 5 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Weather disturbances can form in the Gulf of Thailand as a result of collision of two wind streams with different directions. With suitable environmental conditions, the disturbance can be intensified into typhoon. Two such typhoons are Gay (1989) and Vamei (2001). The objective of this research is to develop a mathematical model of tropical cyclone formation in the Gulf of Thailand based on a collision of two wind streams. The proposed model is based on finding the spiral flow patterns of tropical cyclones that agree with the spiral patterns of cloud from satellite images. Parameters in the equation of spiral flow are radius of tropical cyclone, radius of maximum wind (size of the storm eye), maximum wind speed, shape parameter for horizontal wind profile, and wind ratio parameter.

The shape parameter can be determined from the maximum wind speed and a wind speed at another point in the storm. The wind ratio parameter m cannot be computed directly but has to obtained by trial and errors. The appropriate values of m in the Gulf of Thailand is found to be between [-0.20,-0.24]. When all parameters of the model are known, wind speeds in the tropical cyclone can be approximated. Results from application of the model to typhoons Gay and Vamei show that winds from the model have lower speed than observed winds.

The equation for wind direction in the spiral flow is also formulated. In the first step, the wind field around tropical cyclone is generated from the symmetric wind model for stationary cyclone. Second step, the translation vector of the cyclone is combined with the wind field from the symmetric wind model. The result is the asymmetric wind model. Third step, the asymmetric model is then used to generate wind field around the moving tropical cyclone. Fourth step, the deviation angle of the spiral flow from the symmetric wind is calculated. These four steps are applied for all observations. The last step is to find a linear regression between the deviation angle and the radial distance from the storm center. This

regression equation provides the direction of spiral flow that is agree with the spiral flow model. Thus, this regression model can be used to determine the flow pattern in a moving tropical cyclone that is generated in the Gulf of Thailand.

In conclusion, for a tropical cyclone to form in the Gulf of Thailand, a collision of storng northeast monsoon and another wind stream is required.

5.2 Recommendation

1. Only two tropical cyclones are used in this study, because there are the only two storms that are formed in the Gulf of Thailand. Other tropical cyclones that did not form in the Gulf but moved into this area should be included in future studies.
2. The wind speeds obtain form this study are lower than observed wind speeds, a better approximation of wind speed should be formulated.