CHAPTER 5
CONCLUSIONS

This study highlighted a comparison between the Diffusive and Fully-Dynamic SWE for the tsunami modeling using the freeware HEC-RAS 6.1. Based on the results and findings of this study, some conclusions can be drawn as follows:

1. HEC-RAS 6.1 is in general capable of performing the tsunami simulation and successfully produced stable numerical results for all grid sizes using both Diffusive and Fully-Dynamic SWE.
2. Indeed, the results still deviate from the benchmark data for both equations in some scopes. The inaccuracy can specifically be seen in the wave arrival time with the detected delay of up to 20 minutes.
3. The inaccuracy of the results is possibly caused by the sub-grid approach method used in HEC-RAS 6.1 in calculating the mesh, by which this approach may not be suitable for tsunami simulations. Thus, it is suggested to use another numerical approach (non-sub-grid approach) in order to achieve model accuracy in modeling tsunami cases.
4. The most significant difference between the two equations can be seen in the velocity propagation from the boundary condition line to the coast. The maximum velocity is mainly concentrated behind the breakwater using the Fully-Dynamic SWE, whereas with the Diffusive SWE it is concentrated at the harbor entrance.
5. Implementing the smaller grid size on the model changes the results insignificantly but increases the computational cost exponentially. Hence, choosing the right grid is critical regarding time efficiency.

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