

Sensibility analysis for the inundation tsunami height due to 2018 Sulawesi earthquake and tsunami

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Today's Japan has conducted immediate, wide-area tsunami forecasts using the quantitative tsunami forecasting system that databases results of numerous preliminary tsunami simulations. In the future, in order to conduct more accurate tsunami forecasts, it is necessary to verify the accuracy of the tsunami run-up calculation. However, there were few studies about the variation of run-up tsunami force by calculating on-site. In this study, we conducted the on-site tsunami run-up calculation using the two-dimensional simulator and analyzed the variation of run-up tsunami force.

We focused on the earthquake near Palu, Indonesia on September 28, 2018. We set some tsunami sources based on the results of the field study, (by Arikawa *et al.*) and conducted the 300 cases of two-dimensional tsunami run-up simulations by changing the fault parameters. Next, we investigated statistically the variation of the maximum inundation depth and Froude number at the maximum inundation depth. Using the calculation results of all cases we conducted, we made groups every 0.2m from the small inundation depth and made histograms of the maximum inundation depth and Froude number for each group.

As a result, the average of Froude number increased monotonically as the maximum inundation depth increased, and the variance of Froude number tended to increase about 4 times as the maximum inundation depth increased. This corresponds to a value of Froude number of 1.5 to 2.0 times. This indicates that even if the inundation depth is the same, there is a possibility that there is a difference in tsunami force, so it is necessary to investigate the variance of the Tsunami force in the area where the inundation depth is large. In addition, it is also necessary to further study the variance of the flow velocity in numerical calculation.

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