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## The TSDHN model: Rapid forecasting of far-field tsunami parameters for Peru

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In this research, we have implemented an automatic application (Model TSDHN) based on a linear tsunami numerical model in real-time to evaluate the parameters of far-field tsunamis that occurred in the Pacific Ocean, such as tsunami travel time and maximum tsunami height in major ports of the Peruvian coast. This model has been calibrated using the observed data from the Chile 2014 tsunami. The computational time on a personal computer Intel i7 with Linux operating system using Intel Fortran parallel programming is around 30 minutes; the same process running on a supercomputer lasts around 2 minutes. Therefore, the usefulness of this application lies in tsunami early warning, due to the tsunami travel time of far-field tsunamis being greater than 5 or 6 hours, and it is possible to conduct the tsunami simulation of the entire process. As a real study case, we have evaluated the 2025 Russia tsunami that occurred in the Kamchatka region, which successfully predicted tsunami arrival times of 17-19 hours and non-destructive wave heights (not greater than 1 m) along the Peruvian coast.

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