



## **Studying the dependence of the tsunami run-up with the source-time function**

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Tsunami modeling usually assumes a non-time dependent generation. The static case is reasonable due to fast earthquake rupture velocity compared with tsunami phase and group velocities. Nevertheless, for slow earthquakes, as tsunami earthquakes, the time source function may play a non-neglecting role.

A New analytical solution for the forced linear shallow water equations is obtained. This analytical result also retrieves the case for static tsunami generation. With this formula, time source can be included and then to verified directly a relation between rise-time and run-up.

For the simple radiation model of a box-car we obtain that run-up decreases with rise time and delays in the arrival times are observed.

With the analytical solution we also can include realistic source-time functions obtained from seismic inversion models, which we test some of the most emblematic tsunamis of the last decades.