

Forecasting tsunamis : How numerical modelling can help make the right decisions, and save life

*Conférence de l'Institut Coriolis pour l'Environnement
de l'École Polytechnique*

A catastrophe like the 2004 Indian Ocean tsunami with more than 200.000 casualties is unfortunately not predictable. However, a warning system that is able to forecast the arrival and impact of a tsunami wave following an under-sea earthquake could help to save life, when appropriate evacuation measures were taken. Numerical simulation plays a paramount role in accurate and timely forecasts of tsunami wave behavior, but is useless for early warning without appropriate data. Due to model sensitivity, the management of uncertainties and data scarcity is challenging.

In this presentation the basic principles of tsunami wave generation are introduced. From that, a mathematical model of the phenomenon is derived and validation is carried out. The idea of an early warning approach is demonstrated and the major difficulties apart from the pure mathematical formulation are sketched. It turns out that only a truly multi-disciplinary approach can solve such applied geophysical problems.



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