

Predicting the next big wave

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UQ engineer Hubert Chanson is working with world experts in coastal and river hydraulics to better predict tsunami damage of coastlines.

"There are a number of models to predict tsunami propagation in deep water but the recent experience and scientific data have shown that most tsunami models poorly predict flooding of coastal plains," Dr Chanson said.

Dr Chanson has teamed up with experts from Japan, California and New Zealand to produce a new mathematical model that will predict tsunami impacts on coastal towns.

Current models underestimated the height of the Boxing Day Tsunami above sea level by up to 20 metres in Western Sumatra and overestimated by as much as 10 metres in Bangladesh.

He has been expanding on existing prediction models and analysing video, photos, surveys and aerial and satellite maps of the Boxing Day Tsunami for his project. And he believed wetlands and coral reefs had probably absorbed much of the tsunami's force in some regions, especially in parts of Bangladesh and in the reef surrounding Mauritius.

A more accurate model which could predict tsunami spread and impact, or even flash flooding, could help emergency services and city planners. Dr Chanson said the two big lessons from the tsunami damage were that key public buildings like hospitals needed to be built on higher ground and that accessible transport had to run to the coast, in case of emergencies.

Dr Chanson and his colleagues are also working on an improved dam spillway which features stepped spilling to dampen the water's destructive force.

Stepped spillways were common in dams a century ago but were abandoned from the 1950s because concrete stepping was too costly. Dr Chanson's stepped spillway could be made out of roller compacted concrete which yields up to 50 percent cheaper construction costs than conventional spillways.

Source: UQ

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