

Tsunami Early Warning Interface

A study of the upstream-downstream interface in end-to-end tsunami early warning and mitigation systems

After the Indian Ocean Tsunami in 2004, tsunami preparedness has become a significant aspect in the research and practise of disaster resilience. As a result, a tsunami early warning and mitigation system was introduced in the Indian ocean region for the first time and the system became fully operational in 2013.

These systems typically entail upstream and downstream processes. After the detection of tsunami by the warning centre, the regional tsunami service provider communicates the warning to national tsunami warning centre (NTWC) in each country. This is the upstream end of the mechanism. The downstream process occurs at the national and local levels in which evacuation decision and the warning are disseminated to the community.

Between these upstream and downstream processes, there occurs a phase where the received warning information is conveyed through the formal authorities and decision to evacuate is taken. This can be termed as the 'interface'. In individual countries, the systems by which the information is disseminated from national point to individual communities vary significantly.

Due to the complex nature of different administrative systems, it is difficult to understand who takes the decision to evacuate, at which point, and how is it taken and disseminated to the community. The decision can be taken either at the national level or regional level, before the order for evacuation is given to the community.

The channels by which the information is shared and the structure of hierarchy of decision making vary across and within the countries vary significantly depending on social, economic, political and cultural context. However, it is important that these factors need to be understood for the early warning mechanism to work efficiently. Discrepancies of flow of information among different countries and also within a certain country could make it difficult for the local and international stake holders to act promptly in an emergency situation, which can ultimately put the communities in danger.

This research study aims to understand the technical, legal and socio-cultural complexities that occur at the interface between upstream and downstream mechanisms of the tsunami early warning system. The research questions specifically addressed by the study are:

1. How the early warning interface can be defined?
2. Who are the key actors involved in issuing the warning, conveying the warning and order for evacuation (understanding the current status)?
3. What are the decision making structures involved in issuing the warning, conveying the warning and order for evacuation (understanding the current status)?
4. What are the complexities, strengths and shortcomings of the process?
5. How to overcome the shortcomings and strengthen the interface mechanism?

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