Global Mobile Tsunami Warning System using AWS—A Life-Saving Platform

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Problem Statement

Tsunamis have been among the most devastating disasters in recent decades. The 2004 Indian Ocean tsunami killed about 230,000 people, while the 2011 Japan tsunami killed 19,000 people. The main challenge for tsunami early warning is the difficulty to process and deliver real-time data during a tsunami emergency.

“An unacceptable 75% false alarm rate has prevailed in the Pacific Ocean”, according to the 2006 U.S. Government Accountability Office report [GAO-06-519].
Proposed Solution

This project demonstrates a mobile tsunami warning system using the GEO-Amazon Web Services to process and deliver NASA real-time data directly to stakeholders and coastal residents for saving lives.
Project Status Update

So far, we have

1. developed a prototype automation system using AWS (Fig. 1)

2. tested the mobile app in real-time for several events (Fig. 2)

3. Established a website to support users:
   
   https://gates.jpl.nasa.gov

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Challenges and Roadblocks

This is the first mobile wireless system for tsunami early warnings in the world. For the first time, we are able to deliver NASA satellite data and research products through GEO-AWS platform directly to coastal communities around the world for reduce the risk from natural hazards, and potentially save lives. Presently, we are working with multi-country partners to overcome the challenges of data inconsistency and acceptance of the new technology.

Figure. Times needed for earthquake source inversion (before & after improvement).
Next Steps and Expected Impact

We will need to:
1. Improve and transfer the prototype system to stakeholders for applications
2. Develop regional systems with enhanced local/national data, operated by local stakeholders.

This GEO-Amazon sponsored mobile tsunami warning system has the potential to impact people’s lives across the globe.

This project enables a mobile tsunami warning for saving lives. Residents living near the ocean and people visiting the beach are potential users of the mobile alert system.

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