

GNSS Tsunami Early Warning: Implementing the Sendai Framework for Disaster Risk Reduction

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The GTEWS 2017 workshop reported that Global Navigation Satellite Systems (GNSS) will enhance tsunami early warning systems with an accurate and sustainable system that could bring additional economic benefits to coastal societies and island nations of the Indo-Pacific region. GNSS analysis systems can provide an accurate estimate of earthquake magnitude and the associated finite fault displacement within 2 minutes of a major earthquake. This information can be used to predict the likelihood and the scale of a resulting tsunami within 5 minutes of the earthquake occurrence. Within ten to fifteen minutes of the earthquake occurrence, GNSS based ionospheric imaging can identify and track tsunami development from onset to propagation across the ocean basin. Implementation of GNSS Tsunami Early Warning Sensor (GTEWS) enhancement to existing systems will bring accuracy, affordability and sustainability to tsunami risk reduction for the Indo-Pacific.

Though seventeen agencies of twelve nations have endorsed GTEWS enhancement within the Global Geodetic Observing Systems Geohazards Initiative, there is much to be done to take full advantage of this new technology for the Indo-Pacific region. The challenges to GTEWS implementation include national policies on data sharing, commercial and agency programmatic decisions, communications and computing resource allocations, and the technical challenges of integrating GTEWS into existing tsunami warning systems. The Group on Earth Observations has adopted GTEWS enhancement as a goal of its Geodesy4Sendai community activity in response to the UNDRR call to implement the recommendations of the Sendai Framework for Disaster Risk Reduction. This presentation will discuss the recommendations of the GTEWS 2017 workshop and the follow-on GTEWS 2020 workshop focused upon the implementation of GTEWS for the Indo-Pacific.

Reference: GTEWS 2017 Workshop Report, 2019, LaBrecque, J.; Rundle, J. et al. Global navigation satellite system enhancement for tsunami early warning systems. Contributing Paper to GAR 2019 (<https://www.preventionweb.net/publications/view/66779>)

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