

Allen R. M., Allen S., Aranha M., Chung A., Hellweg M., Henson I., Melgar D., Neuhauser D., **Nof R.**, Strauss J., 2015, *Prioritizing earthquake and tsunami alerting efforts*, Lecture S22B-01 (by R. M. Allen). AGU Fall Meeting. San Francisco, CA, USA.

ABSTRACT:

The timeline of hazards associated with earthquakes ranges from seconds for the strong shaking at the epicenter, to minutes for strong shaking at more distant locations in big quakes, to tens of minutes for a local tsunami. Earthquake and tsunami warning systems must therefore include very fast initial alerts, while also taking advantage of available time in bigger and tsunami-generating quakes.

At the UC Berkeley Seismological Laboratory we are developing a suite of algorithms to provide the fullest possible information about earthquake shaking and tsunami inundation from seconds to minutes after a quake. The E-larmS algorithm uses the P-wave to rapidly detect an earthquake and issue a warning. It is currently issuing alerts to test users in as little as 3 sec after the origin time. Development of a new waveform detector may lead to even faster alerts. G-larmS uses permanent deformation estimates from GNSS stations to estimate the geometry and extent of rupture underway providing more accurate ground shaking estimates in big ($M > \sim 7$) earthquakes. It performed well in the M6.0 2014 Napa earthquake. T-larmS is a new algorithm designed to extend alert capabilities to tsunami inundation. Rapid estimates of source characteristics for subduction zones event can not only be used to warn of the shaking hazard, but also the local tsunami inundation hazard.

These algorithms are being developed, implemented and tested with a focus on the western US, but are also now being tested in other parts of the world including Israel, Turkey, Korea and Chile. Beta users in the Bay Area are receiving the alerts and beginning to implement automated actions. They also provide feedback on users needs, which has led to the development of the MyEEW smartphone app. This app allows beta users to receive the alerts on their cell phones. All these efforts feed into our ongoing assessment of directions and priorities for future development and implementation efforts.