Nof R. N., Allen R. M., 2015, *Toward an Earthquake Early Warning System in Israel - Implementing ElarmS for the Israeli Seismic Network*, Poster S33B-2784. AGU Fall Meeting. San Francisco, CA, USA.

ABSTRUCT:

Israel is located adjacent to the Dead Sea Transform (DST) capable of producing earthquakes with maximal magnitudes of M7.5-M7.8 and a recurrence time for a M6 and M7 earthquake on the order of 100 and 1000 years, respectively. The most recent destructive earthquake along the DST was the 1927 M_L 6.2 earthquake near Jericho, leading to 285 deaths and ~1000 injured across the area. The Israeli government is now building an Earthquake Early Warning System (EEWS). The prime objective of this research is to implement and validate the ElarmS EEWS for the Israeli Seismological Network (ISN).

Based on seismic rates along the DST, earthquakes with M>4.5 and M>5.0 are expected to occur every 5yr and 15yr, respectively. Thus, it is essential to use historical data to evaluate ElarmS in addition to analyzing the real-time performance of the system in Israel with smaller magnitude earthquakes. We analyze the system in real-time between April 2015 and July 2015, and analyze the results of replaying historical data from 39 events (M_d>3.0) between January 2012 and May 2015.

Historical playback results show near complete detection of all events. However, ElarmS has a mean underestimation of magnitudes by 1 magnitude order using the magnitude scaling relation developed for California. We find that using a previously determined independent magnitude estimation equation developed for Israel (Sadeh et al., 2014) remove this magnitude offset. Using the adjusted magnitude estimation equation, the real time performance of the system shows a good agreement with catalog magnitudes.

The real-time implementation of ElarmS in Israel is performing well. It issued a warning for the June 27, 2015 M5.5 Nueba earthquake. However, the alert was on 0.6 sec before the arrival of the S-wave at the nearest city of Eilat ~100 km from the epicenter. This was due to the significant latencies (2-4 sec) and long data packets (up to 10 sec) that exist for the ISN which has still to be optimized for EEWS.