We present a new approach to data processing, which reduces the time it takes for Earthquake Early Warning (EEW) parameters to reach an alarm center.

Usually data generated by a field digitizer are bundled into packets. Once a packet is "full", it will be sent to the acquisition computer in the data center. From there data are transferred to processing computers, where the parameters critical for EEW are computed. Depending on the structure of the packets, the design of the telemetry network, the way data are handled within a data center and the algorithms used, it can take up to tens of seconds between the detection of an earthquake and the availability of EEW parameters.

To reduce this time we have developed a new way to calculate the parameters, by making full use of the processing capabilities of the digital signal processors (DSP) within our Guralp DM-24 family of digitizers. We have reprogrammed and augmented them to continuously calculate a string of EEW parameters at the remote location. We have made provisions, that user defined code can be programmed onto the DSP in order to optimize the calculation of EEW parameters. The calculated values are immediately transmitted to the data center via a priority telemetry protocol, without the need for bundling them into large packets. At the data center, these values can be immediately used in displays and also to trigger a preset level of alarms. We will present data from EEW systems, where this concept has been realized.