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An Assessment of XSEL Bulletin as Produced through the Cross Correlation Technique

The assessment of Cross Correlation bulletin (XSEL) was performed for two data days in October 2018. 208 and 449 events were used for REB and XSEL bulletins, respectively. The objectives were: 1) investigate XSEL new events; 2) assess quality of XSEL. For the first objective, waveform data for the 244 XSEL new events were investigated. Of these 10 (4.1%) were found to build legitimate events. For the second objective, REB and XSEL bulletins were compared. Matched and unmatched events were identified based on the number of common defining phases (≥ 2) and the arrival time differences between common phases (≤ 6 sec). Events not meeting these conditions are considered as unmatched events. The number of matched, unmatched REB and unmatched XSEL were 125, 83 and 324 events, respectively. About 61% of the matched events have location difference < 10 . Arrival time differences between common phases showed that in most cases they were picked earlier in XSEL than in REB. The results indicate that the Cross Correlation technique needs additional criteria to reduce the number of bogus and new seed events; and create proper arrival time picks to produce a bulletin that can be comparable to the REB.

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