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-Truth Historical Data as a Substance for the New Master Event Representation Conception

The efficiency of cross-correlation (CC) and master event technique in CTBT global monitoring was presented at (Bobrov, 2012), (Kitov, 2013). The main CTBT monitoring goal is successful detection and location of clandestine nuclear explosions, so the CC global monitoring should be focused on extraction of such events first of all. As shown in (Bobrov, 2012), using adequate master may increase the number of events in REB up to 70%, while inadequate master may increase the number of bogus events and suppress valid events. In order to enhance the CC technique in given direction, a research conducted on defining the best master as a choice between real master event (explosion, recorded at IMS primary stations), transposed master event (synthesized at primary IMS station based on information from auxiliary station), and fully synthetic event built for primary station (Rozhkov, 2013). We used data from DTRA Verification Database to check the validity of approach. Multichannel seismograms of explosions conducted at different sites recorded at IMS stations analyzed, as well as multichannel seismograms created from the 3C stations. The detection and location results based on real, transposed and synthetic events were compared to make a decision on the most adequate master event representation.

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