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Teleseismic Event Detection Capability of the Auxiliary IMS Station VRAC (AS26)

Detection capability of the station VRAC were evaluated using comparison of seismic event bulletins containing the results of data processing carried out in the Czech NDC and REB-bulletins of IDC. The detection threshold is linked with roll-off effect in the earthquake frequency magnitude distribution. For the estimation of value of magnitude mb connected with the roll-off effect, various parameters were calculated in respect of epicentral distance (in the case of 2D analyses) and in respect of coordinates of epicentral areas on map. Parameter Mmf (most frequent magnitude for selected data subset) undervalues searched threshold, on the contrary, parameter M100con (magnitude, for which VRAC station has detected all events listed in REB-bulletin) is usually higher than detection threshold. There were also calculated percentage of events listed in REB-bulletins and detected by VRAC station for several various ranges of magnitude and results were plotted in the graphs and contoured maps. Results of statistical evaluation of detectability of station VRAC show that the detection threshold (mb of reliably detected events) varies between 4.4 and 4.8 for epicentral distances from 10° to 70°. Important fact is relatively good capability for epicentral distances from 143° to 150° because of caustic zone of PKP waves.

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