THE "DRIFT" EFFECT OF AZIMUTH TO SOURCE AS PER THE RECORD OF S-CODA

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The effect of changing the values of calculated azimuth to source during the shift from initial part of the record to S-waves coda - "drift of azimuth" - was revealed as a result of analysis of records of large and intermediate earthquakes obtained from Kazakhstan seismic arrays. Each array consists of 10 borehole seismic stations situated in two circles of 1.5m and 4m diameter. Records of earthquakes originated in Russian and Chinese regions adjacent to Kazakhstan had been analyzed with epicenter distances from 500 to 2000 km. The method of progressive multi channel correlation (PMCC) elaborated by the specialists of CEA/DASE (France) was applied for the analysis. During the analysis it was determined that at some "Source - Seismic Array" traces as of a definite moment at the record corresponding to S-waves coda a regular shift of calculated azimuth values from true azimuth value at virtually permanent apparent velocity is observed. Azimuth drift values increase gradually and may reach 600. Described effect is differently directed at analysis of records of the main shock of Altai earthquake happened on September 27, 2003 with M=7,3 of Borovoye and Karatau seismic arrays. The azimuth increases naturally for Borovoye array (North Kazakhstan) and decreases for Karatau array (South Kazakhstan). Repeated experiments performed for other events on the same traces prove availability of detected event with the exactly same characteristics, thus a conclusion can be made that such effect is stable. At the same time results from other traces are present where azimuth drift is not observed, e.g. at "Altai earthquake epicenter - Makanchi array (East Kazakhstan)" trace. It is known from the publications that similar effect was registered in other parts of the world. Azimuth drift takes place in several definite traces but not observed in other ones. The authors tried to explain the phenomenon by occurrence of specific regions of high-speed anomalies in upper mantle that cause lateral refraction of seismic waves. Seismic array influenced by refraction registers wave arrival not from the azimuth to source but from another one. Such conclusion is reasonable for waves penetrating deeply to the earth (400-600km), e.g. S-wave coda. Also, obtained results help to define the nature of S-wave coda more precisely in intermediate area of epicenter distances.