The detection capability of the International Monitoring System (IMS) is investigated by comparing cataloged data from regional and local networks to IMS data. The study has been focused on the northern Honshu local network, in Japan, and the ANSS network, in the United States. The minimum magnitude for a IMS event detection is 2.5, whereas for local network events, it can be as small as 1.5. The main objective of this study is to determine the detection capabilities of these two networks. The data used in this study were obtained from the IMS and ANSS networks between 01/01/2001 through 12/31/2008. The bounds on residual, and differences in arrival time, azimuth, and slowness (with their uncertainties), the signal-to-noise ratio, and the origin and phase (from REB). Arrival time detections at the relevant array data processing centers are made when the signal-to-noise ratio is greater than 1.5 and the origin and phase are determined within the corresponding number of WRA detections. The local network events were not detected (Table 1); the apparent local magnitude detection threshold of the ANSS array for the local magnitude 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

CONCLUSIONS

The study of the arrival time residuals, ray parameter difference, and azimuth difference for each array with a quantile rank, on the order of 0.1, 0.3, and 0.5, respectively, showed a significant number of events were not detected by the ANSS network and a significant number of WRA detections occurred in the ANSS network. For those events larger enough in time, the residual and differences in arrival time, azimuth, and slowness (with their uncertainties), the signal-to-noise ratio, and the origin and phase (from REB). Arrival time detections at the relevant array data processing centers are made when the signal-to-noise ratio is greater than 1.5 and the origin and phase are determined within the corresponding number of WRA detections. The local network events were not detected (Table 1); the apparent local magnitude detection threshold of the ANSS array for the local magnitude 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

The CONCLUSIONS are that the array operational period of the ANSS network for phase arrivals from the offshore northern California region is in the local magnitude range 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

The CONCLUSIONS are that the array operational period of the ANSS network for phase arrivals from the offshore northern California region is in the local magnitude range 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

The CONCLUSIONS are that the array operational period of the ANSS network for phase arrivals from the offshore northern California region is in the local magnitude range 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

The CONCLUSIONS are that the array operational period of the ANSS network for phase arrivals from the offshore northern California region is in the local magnitude range 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

The CONCLUSIONS are that the array operational period of the ANSS network for phase arrivals from the offshore northern California region is in the local magnitude range 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

The CONCLUSIONS are that the array operational period of the ANSS network for phase arrivals from the offshore northern California region is in the local magnitude range 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

The CONCLUSIONS are that the array operational period of the ANSS network for phase arrivals from the offshore northern California region is in the local magnitude range 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

The CONCLUSIONS are that the array operational period of the ANSS network for phase arrivals from the offshore northern California region is in the local magnitude range 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

The CONCLUSIONS are that the array operational period of the ANSS network for phase arrivals from the offshore northern California region is in the local magnitude range 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.

The CONCLUSIONS are that the array operational period of the ANSS network for phase arrivals from the offshore northern California region is in the local magnitude range 3.7 to 3.8 below which the number of undetected events is not likely to be valid associations, but are difficult to screen out. There were 64 MKAR phase detections at WRA that fell within the residual ray parameter and azimuth difference bounds for valid phase detection, but could not be associated with a local network event within the bounds of the study area.