Geoscientific Instrumentation Methods and Data Systems Discussions

Geosci. Instrum. Method. Data Syst. Discuss., community comment CC1
https://doi.org/10.5194/gi-2021-7-CC1, 2021

Reply on RC4

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Community comment on "Passive seismic experiment “AniMaLS” in the Polish Sudetes (NE Variscides)" by Monika Bociarska et al., Geosci. Instrum. Method. Data Syst. Discuss., https://doi.org/10.5194/gi-2021-7-CC1, 2021

Dear Anonymous Referee,

Taking your last and previous recommendations into account, we changed two relevant fragments of the ms:

FRAGMENT 1, FORMER VERSION:

The measured sensor misorientation is significant for AR07, OSTC and GKP stations, with absolute values in a range of 20°-37°. For most other stations, the values do not exceed the range -7° to +7°. For many stations, the results derived from the three methods are more or less consistent, but with some conspicuous exceptions. It can result from a small amount of recordings used for analysis because of low SNR for several stations. For some permanent stations of the Czech Regional Seismic Network (CHVC, DPC, KRLC, OKC, OSTC and UPC) the orientation angles obtained from direct, high accuracy measurements in field were available (Vecsey L., Institute of Geophysics of Czech Academy of Sciences, personal communication, 2020). They are presented as a reference in Fig. 15. For almost all these stations (except CHVC) our results are in a good agreement (in a ± 2-3° range) to the direct measurements.

FRAGMENT 1, PRESENT (CORRECTED) VERSION:

For many stations, the results derived from the three methods are more or less consistent, but with some conspicuous exceptions. It can result from a small amount of recordings used for analysis because of low SNR for several stations. For some permanent stations of the Czech Regional Seismic Network (CHVC, DPC, KRLC, OKC, OSTC and UPC) the orientation angles obtained from direct, high accuracy gyrocompass measurements in field were available (Vecsey L., Institute of Geophysics of Czech Academy of Sciences, personal communication, 2020). They are presented as a reference in Fig. 15. For almost all these stations (except CHVC) our results are in a good agreement (in a ± 2-3° range) to the gyrocompass measurements.

AND

FRAGMENT 2, FORMER VERSION:

Consequently, for our data, we decided that only results documenting misorientation

above 10° were meaningful, and only for these stations seismograms will be corrected by an appropriate rotation. The values of the misorientation calculated by three methods for all the stations are summarized in the Table 2.

FRAGMENT 2, PRESENT (CORRECTED) VERSION:

For most of the stations, the orientation values obtained from polarization analysis agree, within the error bounds, with the orientations measured directly at the sites with GPS/gyroscope system, as can be seen in the Figure 15 and in the Table 2 (the estimated error bounds for both methods are ~ ±3-7° (largely) and ±2°, respectively). Therefore, we assume that the orientation of these stations determined by GPS/gyroscope can be considered as correct (0° misorientation). However, for five other stations, the polarization analysis results differ significantly from the orientations measured at the sites - AR07, OSTC and GKP (absolute orientation values of ~ 20°-37°), CHVC and OKC (~9°), suggesting that these sensors were incorrectly oriented during installation. The seismograms from these stations need to be rotated to a correct NE coordinate frame before use, and orientation codes in the headers of original (unrotated) data need to be set to Z, 1 and 2 instead of Z, N and E, according to the Standard for the Exchange of Earthquake Data (SEED) definition.

- We hope that these changes comply with your recommendations.