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Corrigendum to "On the link between stress field and small-scale hydraulic fracture growth in anisotropic rock derived from microseismicity" published in Solid Earth, 9, 39–61, 2018

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An error has been identified in the article "On the link between stress field and small-scale hydraulic fracture growth in anisotropic rock derived from microseismicity" by Gischig et al. (2018; https://doi.org/10.5194/se-9-39-2018). The error was introduced in the computation of the velocity spectra from accelerometer recordings, resulting in reported magnitudes being overestimated. The voltage preamplification of 30 dB between the sensor and AD converter was not considered in the conversion of the waveform data from recorded integer values (counts) to acceleration. Considering the preamplification leads to acceleration time series with amplitudes 31.6 times smaller than used in the previous version of the article. Similarly, the velocity spectra in Fig. 10 are reduced by this factor. Thus, the rough estimates of the maximum-magnitude earthquakes derived from a comparison of theoretical velocity spectra with velocity spectra measured by the accelerometers are also in error. The maximum magnitude lies between -4.0 and -3.0 for a stress drop of 0.1 or 1 MPa. Hence, the relative magnitudes are shifted so that the largest events have an adjusted relative magnitude M_{ra} of about -3.5 (in contrast to $M_{\mathrm{ra}}-2.5$ in the earlier version).

The adjusted relative magnitudes are revised in Figs. 2 and 10. Note that the published seismicity catalogues (https://doi.org/10.3929/ethz-b-000217536) and the magnitudes reported by Jalali et al. (2018) have also been revised. The conclusions of Gischig et al. (2018) remain unaffected by these revised magnitudes. The revised magnitudes are in better agreement with magnitudes reported by Kwiatek et al. (2018) for a comparable hydrofracturing experiment monitored with a similar monitoring system in the Aspö underground mine.

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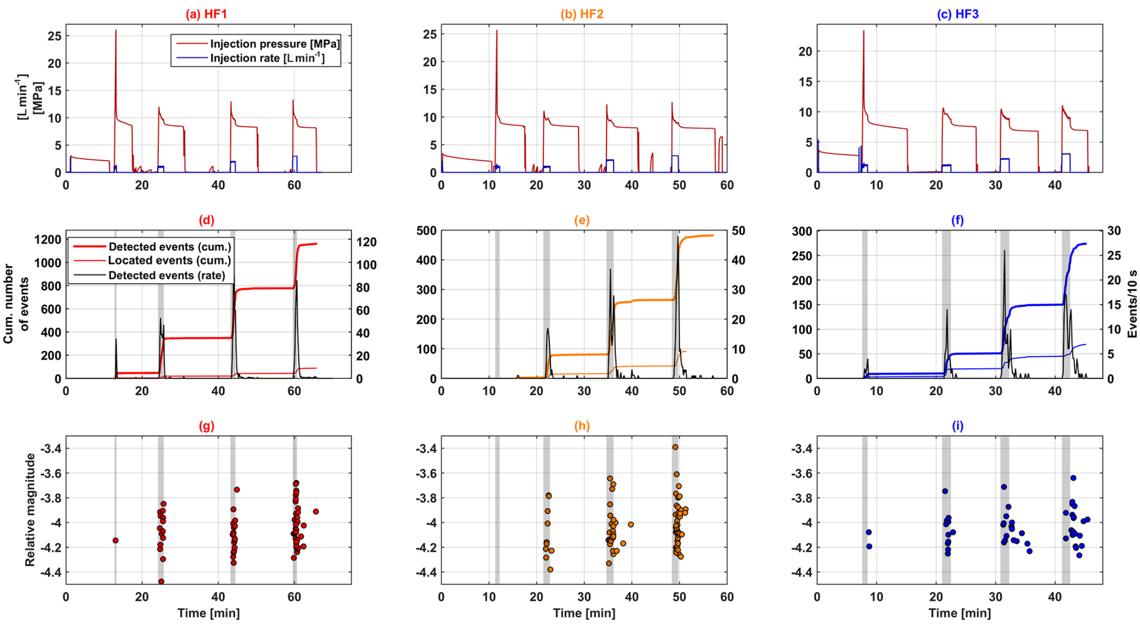

Figure 2. Temporal evolution of seismic events during hydrofracturing tests in SBH-3. Panels **(a)**–**(c)** show injection rate and pressure, **(d)**–**(f)** show the cumulative number of events, and **(g)**–**(i)** show the adjusted relative magnitude. Events occur mostly during injections (gray shaded areas), but some events occur after shut-in. The correction only concerns the vertical axis in panels **(g)**, **(h)** and **(i)**.

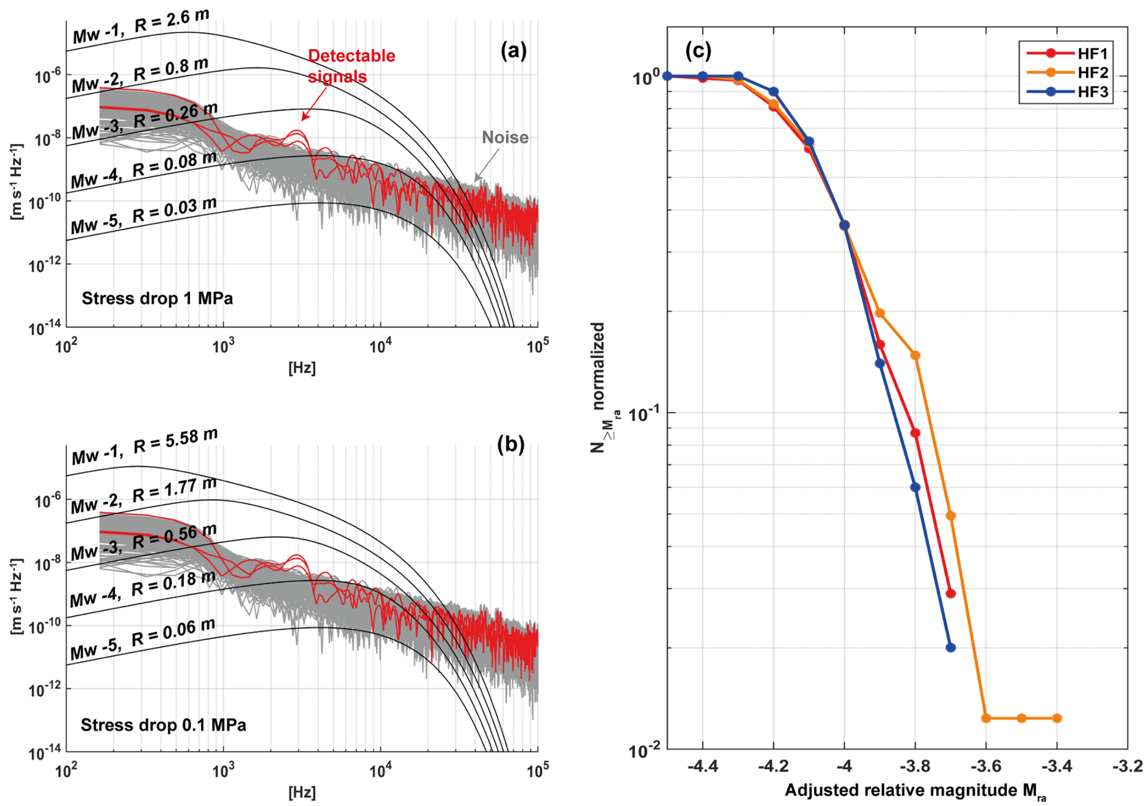

Figure 10. (a, b) Noise spectra of the accelerometer at sensor position S8 (gray) and the spectra of three events detected at the accelerometer (red) slightly emerging above the noise. Superimposed are theoretical spectra for different magnitudes (M_w −5.0 to −1.0). R denotes the corresponding source radii. The stress drop in **(a)** was chosen to be 1 MPa, and in **(b)** it was 0.1 MPa. The detected signals (red) fall in the band between $M_\mathrm{w} - 4.0$ and −3.0 for stress drops of 0.1 or 1 MPa. **(c)** Frequency–magnitude distribution of relative adjusted magnitudes M_ra. These were adjusted so that the maximum magnitude is around $M_\mathrm{ra} - 3.5$, matching a middle value between the approximate maximum-magnitude estimates from panels **(a)** and **(b)**.