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SOURCE PARAMETERS OF THE WEAK SEISMICITY OCCURRED CLOSE TO THE COLLALTO GAS STORAGE (NORTHEASTERN ITALY)

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Since 2012, OGS has been involved in monitoring and studying the microseismicity possibly induced by the gas storage activities located at Collalto, nearby the town of Treviso in Northeastern Italy – (hereinafter RSC). In this context, a reliable estimate of the moment magnitude (Mw) associated with other source parameters for local events, even the smaller ones, becomes essential for better understanding the dynamic of the monitored faults and the discrimination between induced and natural earthquakes. To this purpose, we apply the procedure developed by Zollo et al. (2014, JGR doi:10.1002/2013JB010116), a parametric inversion approach for the estimation of seismic source parameters which exploits both signals recorded on the horizontal components for the S waves and, separately, the vertical ones for the P waves. In particular, the adopted approach exploits standard seismological models to separate the source spectrum from the contributions due to the propagation effects (inelastic attenuation and geometrical spreading) and site effects. The inversion analysis consists of an initial iterative multi-steps procedure during which different values for the attenuation and the parameter that controls the decay of the source

spectra at high frequencies for all source-receiver pairs are tested. In the following step, once the attenuation and site effects are removed from the experimental spectra, the inversion goal is to retrieve for each seismic event the seismic moment and the corner frequency, which in turn are used to calculate the source radius and the static stress drop according to a selected dynamic source model, as well as the radiated seismic energy. Finally, from the estimated source parameters, the apparent stress drop and the seismic efficiency, which can be a proxy for the radiated seismic energy connected to the stress released by the earthquake, are derived. This procedure is applied to 30 earthquakes occurred in the period 2012-2016 spanning in the local magnitude range 1