

SUPPLEMENTAL MATERIAL FOR

SUPPLEMENTARY TO MANUSCRIPT “EMPIRICAL AMPLIFICATION FACTORS FOR SEISMIC MICROZONATION STUDIES IN VOLCANIC REGIONS: THE STUDY CASE OF MT. ETNA” (ITALY)

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Table S1. List of stations considered in this study. The last column (×) identifies stations for which amplification factors were estimated using both the $\delta S2S$ and GIT approaches. See Fig. 3 for location.

Network code	Station ID	Lat(°N)	Long(°E)	AF available from both $\delta S2S$ and GIT
1J	FX04	37.426	15.043	×
1J	FX06	37.522	15.003	×
1J	FX07	37.552	15.145	×
1J	FX08	37.735	15.201	×
1J	FX09	37.820	15.266	×
7C	SPAOL	37.549	15.071	×
IT	BNT	37.781	14.844	
IT	CAT	37.447	15.046	
IT	PTR	37.562	14.908	

Network code	Station ID	Lat(°N)	Long(°E)	AF available from both δS_2S and GIT
IT	SVN	37.683	15.130	
IT	TAO	37.852	15.286	
IV	ECBD	37.780	15.086	×
IV	ECHR	37.686	14.913	×
IV	ECNE	37.765	15.002	×
IV	ECPN	37.744	14.986	×
IV	ECTS	37.882	15.121	
IV	ECZM	37.731	14.904	×
IV	EFIU	37.789	15.210	×
IV	EMAS	37.579	15.053	×
IV	EMCN	37.791	15.034	×
IV	EMFO	37.736	15.090	×
IV	EMFS	37.719	14.998	×
IV	EMNR	37.817	15.026	×
IV	EMPL	37.679	14.970	
IV	EMSA	37.498	14.945	×
IV	EMSG	37.821	14.949	
IV	ENIC	37.631	15.022	×
IV	EPDN	37.766	15.017	×
IV	EPIT	37.811	15.057	×
IV	EPMN	37.820	15.177	×
IV	EPOZ	37.672	15.188	×
IV	EPZF	37.824	14.857	×
IV	ESAL	37.755	15.134	×

Empirical Amplification Factors at Mt. Etna

Network code	Station ID	Lat(°N)	Long(°E)	AF available from both $\delta S2S$ and GIT
IV	ESCV	37.747	14.815	
IV	ESLN	37.693	14.974	×
IV	ESML	37.618	14.879	×
IV	ESPC	37.692	15.027	
IV	ESVO	37.773	14.947	×
IV	EVRN	37.689	15.136	×
IV	EPLC	37.765	14.986	
MZ(15)	ET01	37.570	15.026	
MZ(15)	ET02	37.567	15.006	
MZ(15)	ET03	37.521	15.007	
MZ(15)	ET04	37.598	15.108	
MZ(15)	ET05	37.583	15.140	
MZ(15)	ET06	37.561	15.062	
MZ(15)	ET07	37.557	15.076	
MZ(15)	ET08	37.581	15.101	
MZ(15)	ET09	37.795	15.147	
MZ(15)	ET10	37.739	15.147	
MZ(15)	ET11	37.618	14.887	
MZ(15)	ET12	37.516	14.963	
MZ(15)	ET13	37.639	14.942	
MZ(15)	ET15	37.602	15.060	
MZ(15)	ET16	37.841	15.144	
MZ(15)	ET17	37.823	15.231	
MZ(15)	ET18	37.722	15.116	

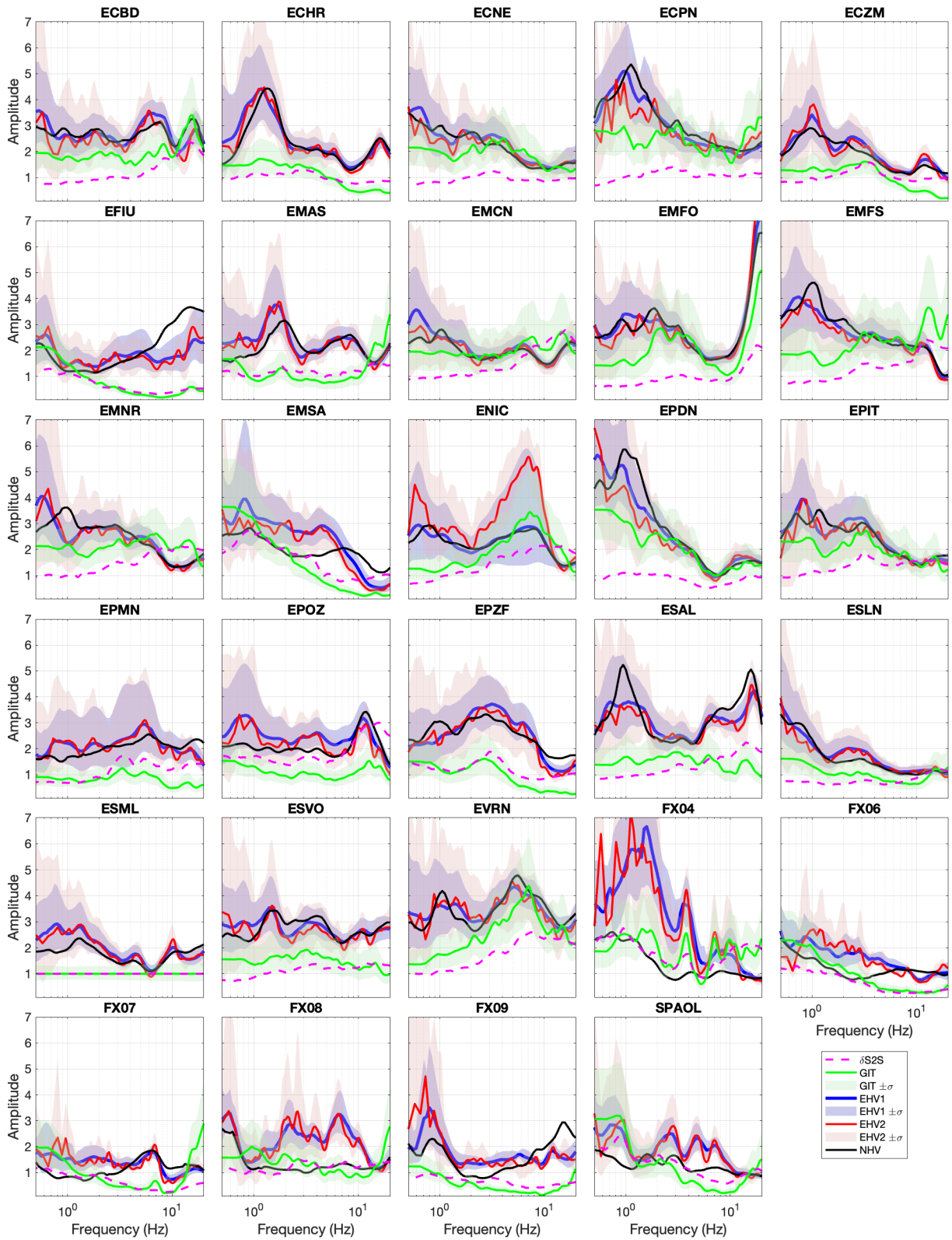


Figure S1. Comparison of spectral curves from δ S2S (dashed magenta curves), GIT (green curves), and HVSR methods at all common sites. Blue and red curves represent EHV results obtained from Dataset 1 and Dataset 2, respectively (shaded areas indicate one standard deviation), while black curves correspond to NHV derived from seismic noise recordings.

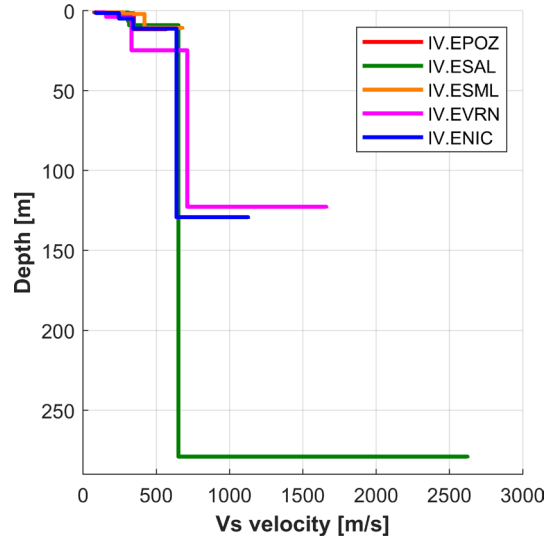


Figure S2. Shear wave velocity profiles of five recording stations of the IV network.

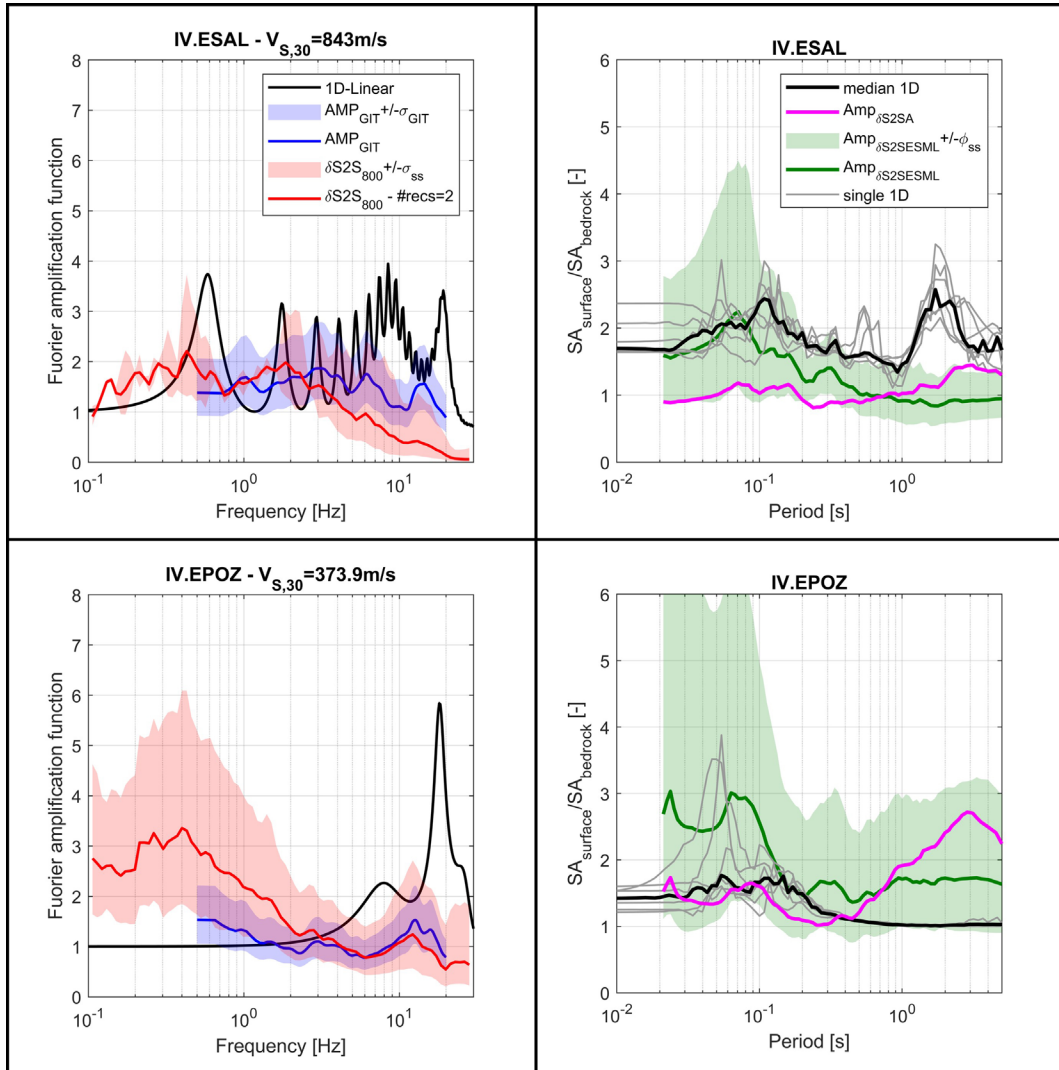


Figure S3. Comparison of empirical results and 1D analyses for two stations in the IV network. Left: comparison of transfer functions and amplification curves in FAS; Right: spectral ratios between the surface and bedrock from 1D analyses and $\delta S2S$ values derived from recordings in the Etna area. Top: ESAL; bottom: EPOZ.

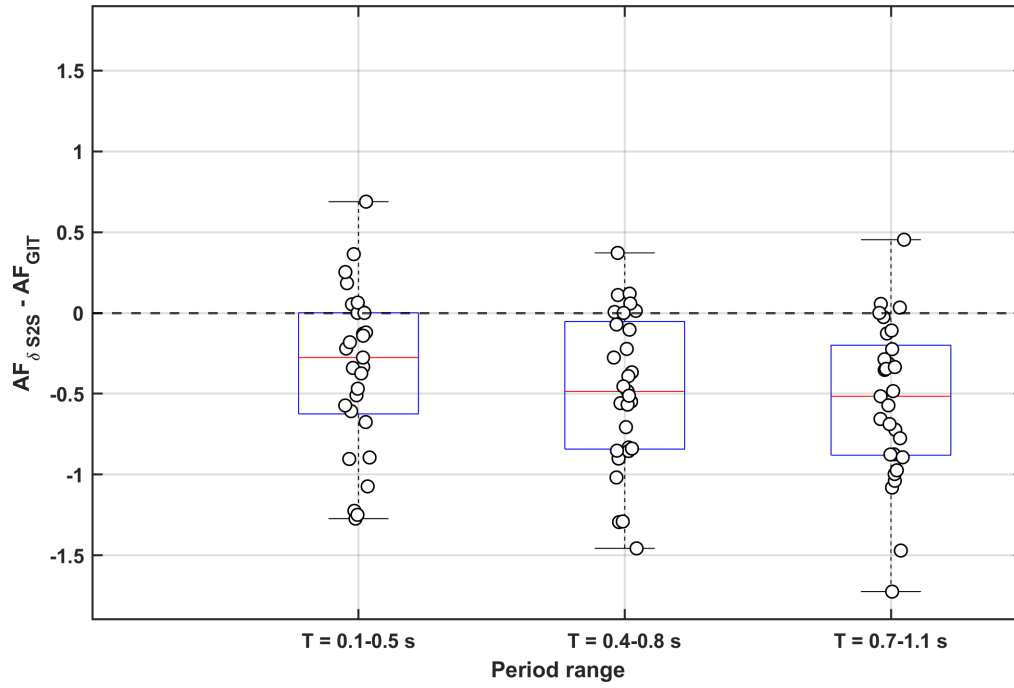


Figure S4. Distribution of the differences between the amplification factors (AF) estimated using the $\delta S2S$ and GIT approaches for the three investigated period ranges. The central line represents the median, the box indicates the interquartile range (IQR), whiskers extend to $1.5 \times IQR$, and circles represent individual stations. The dashed horizontal line indicates zero difference. Negative values indicate that the GIT method predicts higher amplification factors than the $\delta S2S$ approach.