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SUPPLEMENT TO

EXPLORING EARTHQUAKE DEPTH VARIABILITY THROUGH BETWEEN-EVENT RESIDUALS: INSIGHTS FROM ITALY

Claudia Mascandola[1], Francesca Pacor[1], Giovanni Lanzano[1], Fadel Ramadan[1], Paola Traversa[2]

[1] Istituto Nazionale di Geofisica e Vulcanologia (INGV), Milan, Italy
[2] Électricité de France (EDF), DIPNN-DI-TEGG, Aix-en-Provence, France

Electronic Supplement

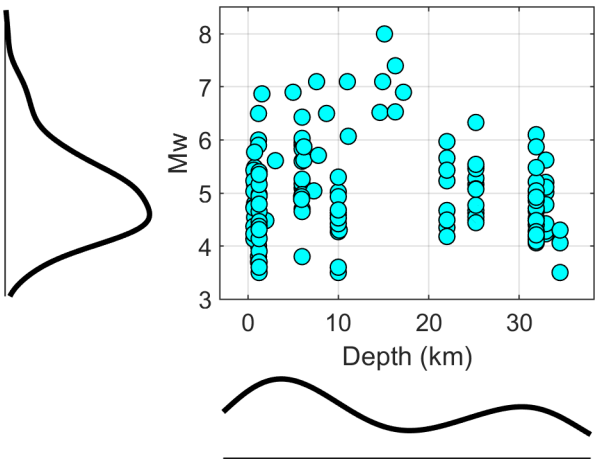

Figure S1. Magnitude-depth distribution of events in the calibration dataset of the ITA18 model (Lanzano et al., 2019).

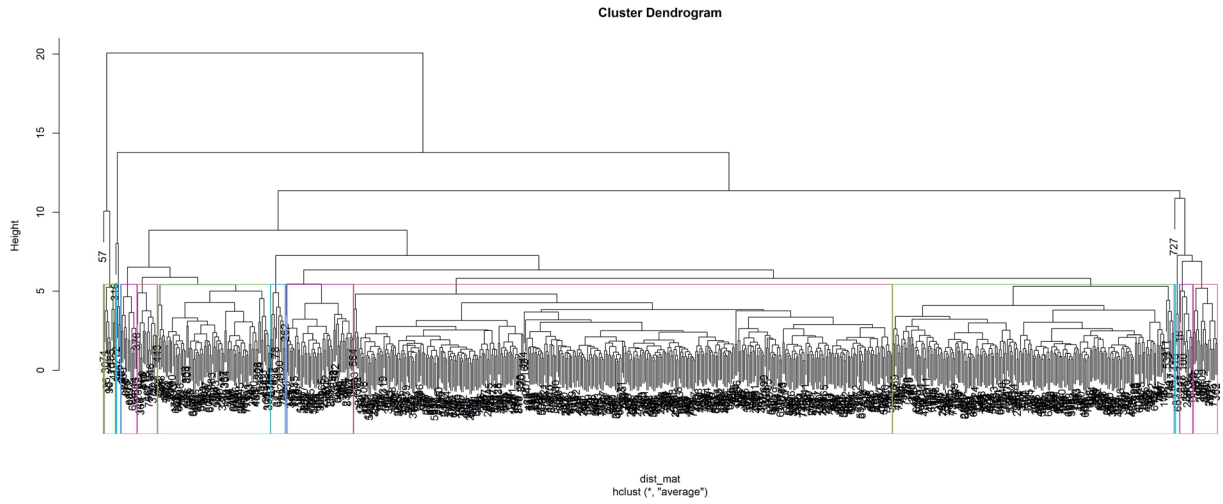

Figure S2. Dendrogram obtained by applying the *hierarchical clustering* algorithm on δB_e residuals of the horizontal ground-motion components. A value of $k = 16$ is chosen for truncating the dendrogram. The colored boxes in figure indicate different clusters.

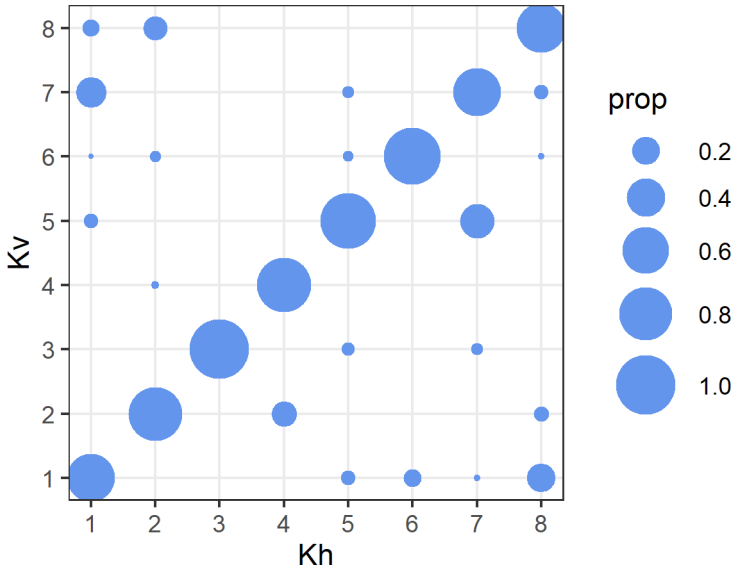

Figure S3. Correlation between clusters obtained by applying the *k-mean* algorithm on δB_e residuals of the horizontal (*Kh*) and vertical (*Kv*) ground-motion components. The size of the dots is proportional to the amount of data.

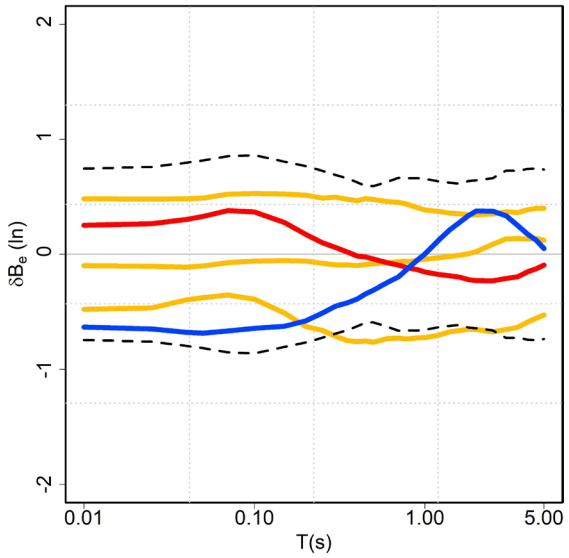

Figure S4. Average curves of the 5 clusters recognized on the δB_e residuals of a hundred events (M 3.1-6.5) in Central Italy, relocated by Chiaraluce et al. (2022) and provided in CAT3 catalog. The $\pm 2\tau$ variability of the ITA18 model is also indicated with black dashed lines. The mean curves of the VSE and DCE clusters are highlighted in blue and red, respectively.