Online Resource 1 of "A site amplification model for Switzerland based on site-condition indicators and incorporating local response as measured at seismic stations" by Paolo Bergamo, Donat Fäh, Francesco Panzera, Carlo Cauzzi, Franziska Glueer, Vincent Perron, Stefan Wiemer; Bulletin of Earthquake Engineering.

Corresponding author: Paolo Bergamo, Swiss Seismological Service (SED) at ETH Zurich, paolo.bergamo@sed.ethz.ch.

This Online Resource 1 displays all the amplification-*vs*-proxy relations (for all ground-motion measure types, proxies and lithogroups) employed in the development of the Swiss national soil response model (Fig. OR1.1 – OR1.8). Furthermore, we report the semivariograms expressing the spatial auto-correlation patterns of the residuals for each ground-motion measure type and each amplification-*vs*-proxy relation type (Fig. OR1.9 – OR1.12).

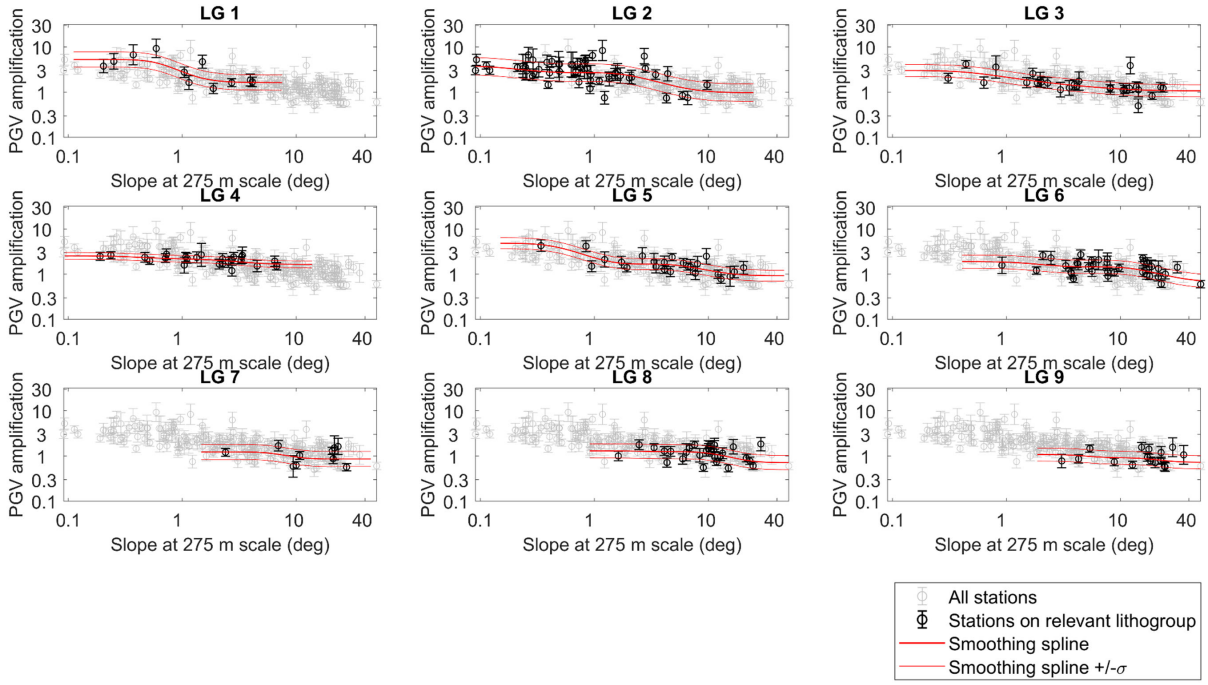

Fig. OR1.1 *PGV amplification-vs-topographic slope relations for all 9 lithogroups (LG).*

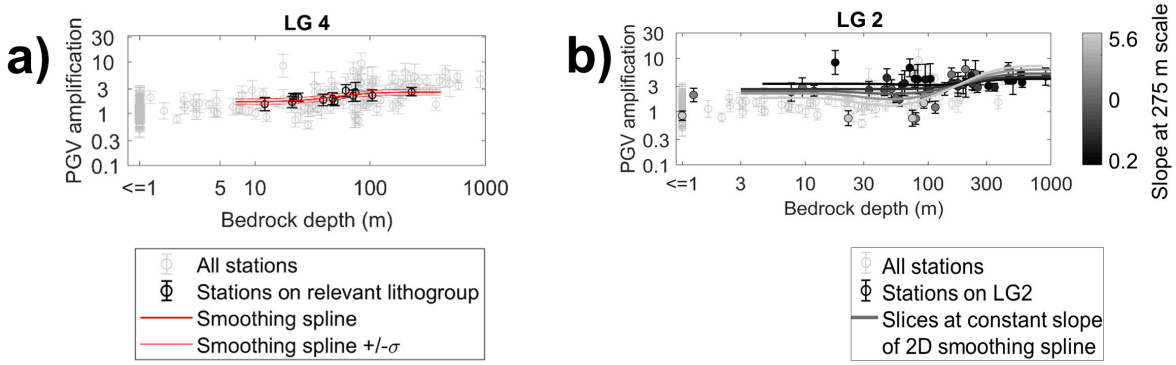

Fig. OR1.2 *a) PGV amplification-vs-bedrock depth relation for LG4. In the case of PGV amplification, LG4 is the only lithogroup (besides LG2, described in (b)) for which an amplification-vs-bedrock depth relation is available (i.e. ≥ 10 stations have an estimated depth-to-bedrock ≥ 3 m), and this relation is characterized by a r^2 higher than that obtained for the PGV amplification-vs-topographic slope correlation (see Fig. OR1.1). b) PGV amplification-vs-slope and -bedrock depth relation for lithogroup LG2.*

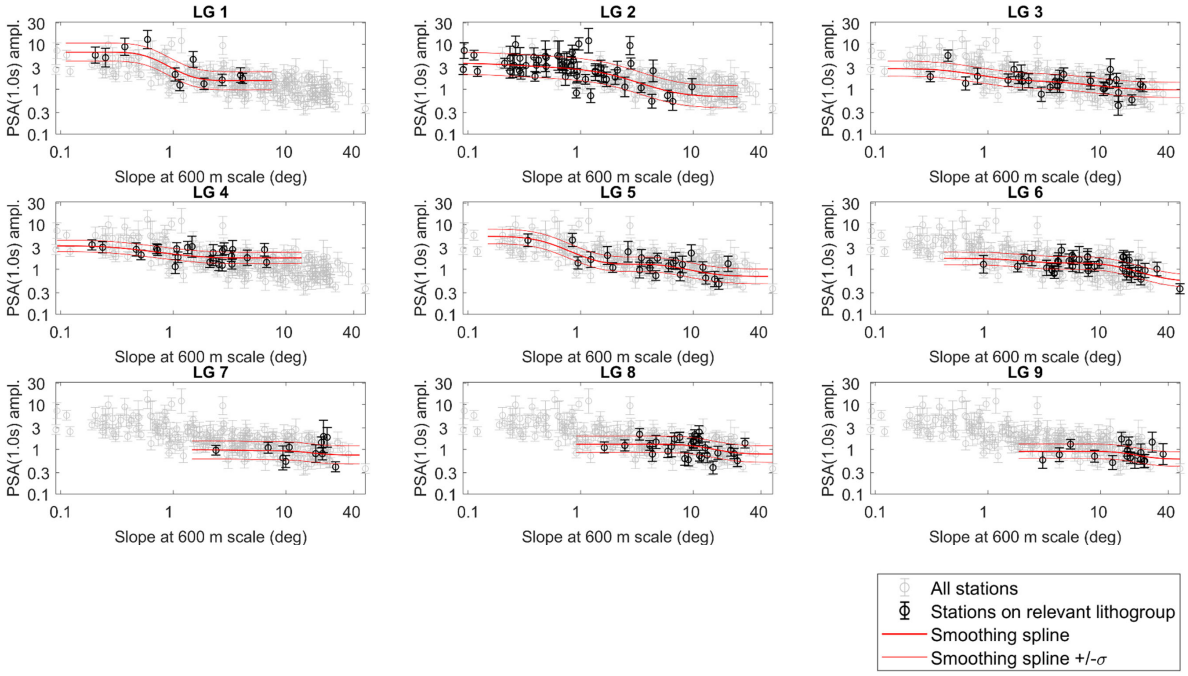

Fig. OR1.3 *PSA(1.0s) amplification-vs-topographic slope relations for all 9 lithogroups (LG).*

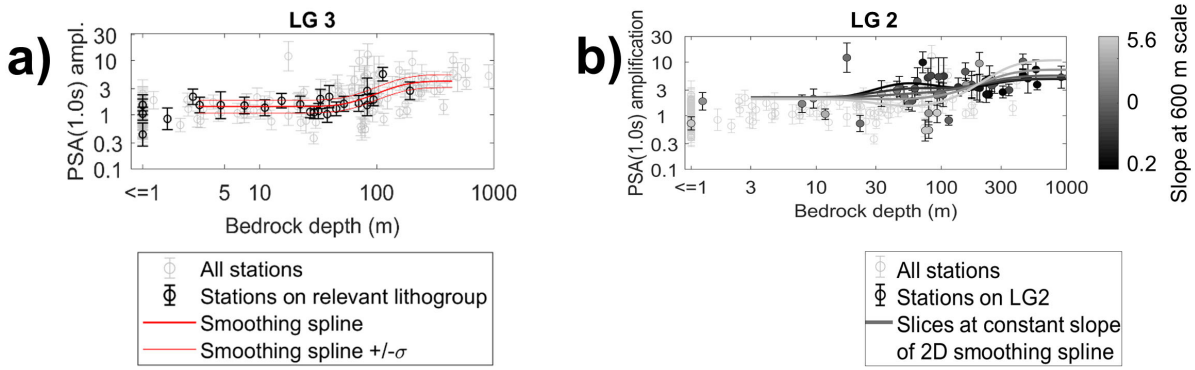

Fig. OR1.4 *a) PSA(1.0s) amplification-vs-bedrock depth relation for LG3. In the case of PSA(1.0s) amplification, LG3 is the only lithogroup (besides LG2, described in (b)) for which an amplification-vs-bedrock depth relation is available (i.e. ≥ 10 stations have an estimated depth-to-bedrock ≥ 3 m), and this relation is characterized by a r^2 higher than that obtained for the PSA(1.0s) amplification-vs-topographic slope correlation (see Fig. OR1.3). b) PSA(1.0s) amplification-vs-slope and -bedrock depth relation for lithogroup LG2.*

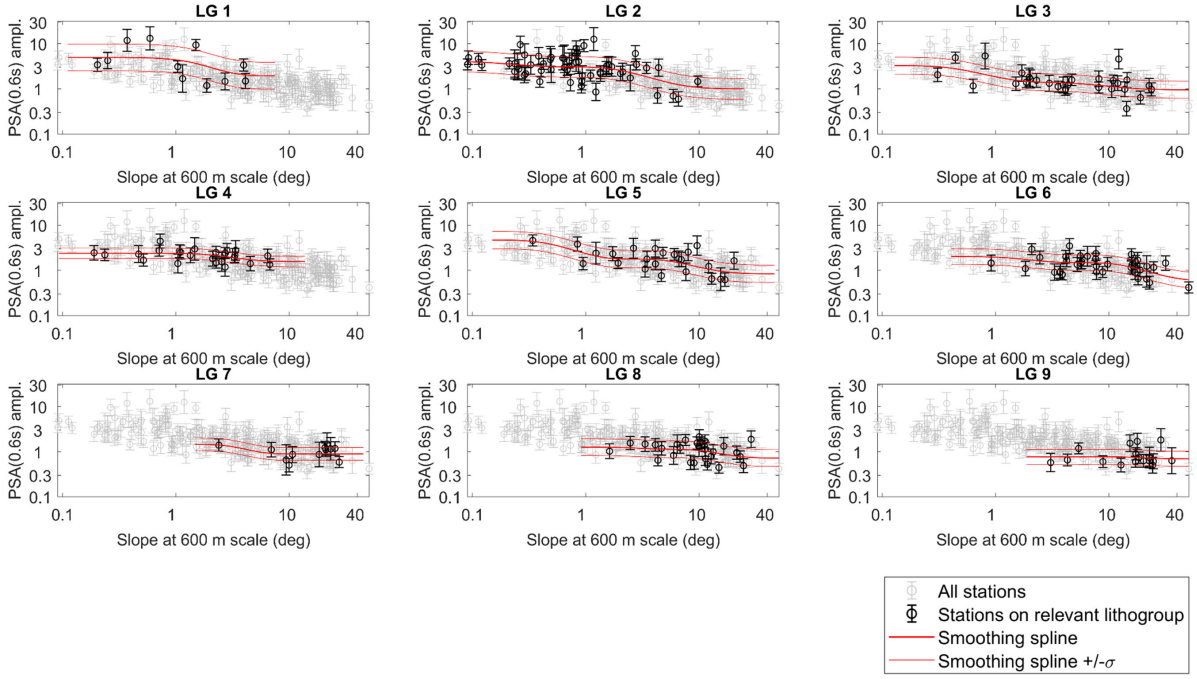

Fig. OR1.5 *PSA(0.6s) amplification-vs-topographic slope relations for all 9 lithogroups (LG).*

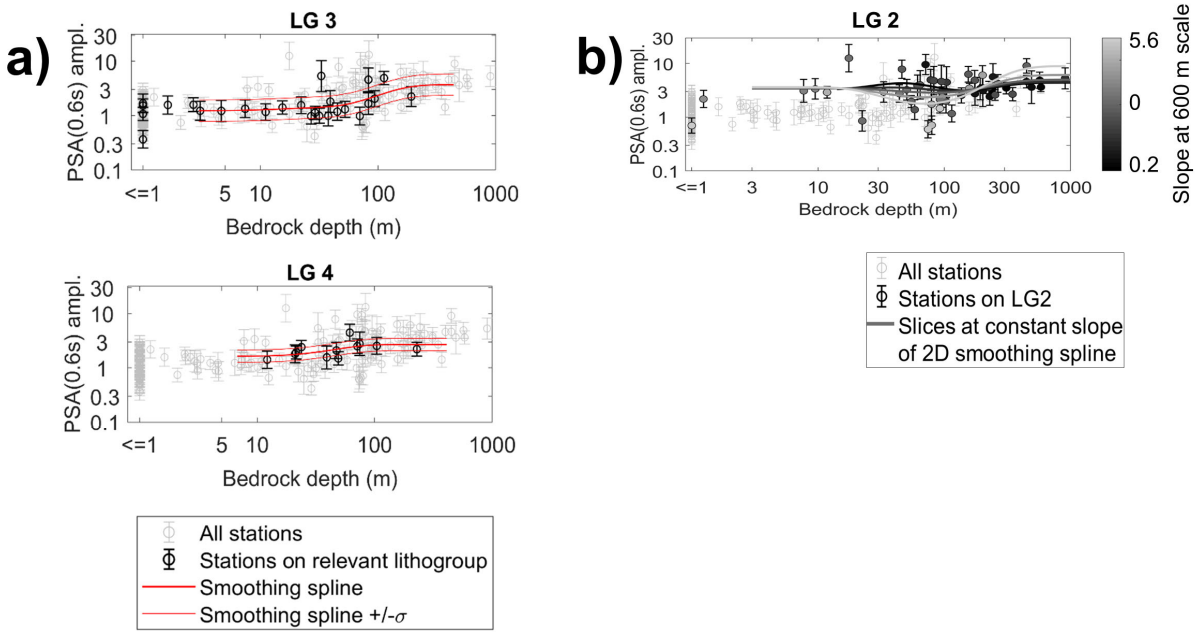

Fig. OR1.6 *a) PSA(0.6s) amplification-vs-bedrock depth relation for LG3 and LG4. In the case of PSA(0.6s) amplification, LG4 and LG3 are the only lithogroups (besides LG2, described in (b)) for which amplification-vs-bedrock depth relations are available (i.e. ≥ 10 stations have an estimated depth-to-bedrock ≥ 3 m), and these relations are characterized by a r^2 higher than those obtained for the PSA(0.6s) amplification-vs-topographic slope correlations (see Fig. OR1.5). b) PSA(0.6s) amplification-vs- slope and -bedrock depth relation for lithogroup LG2.*

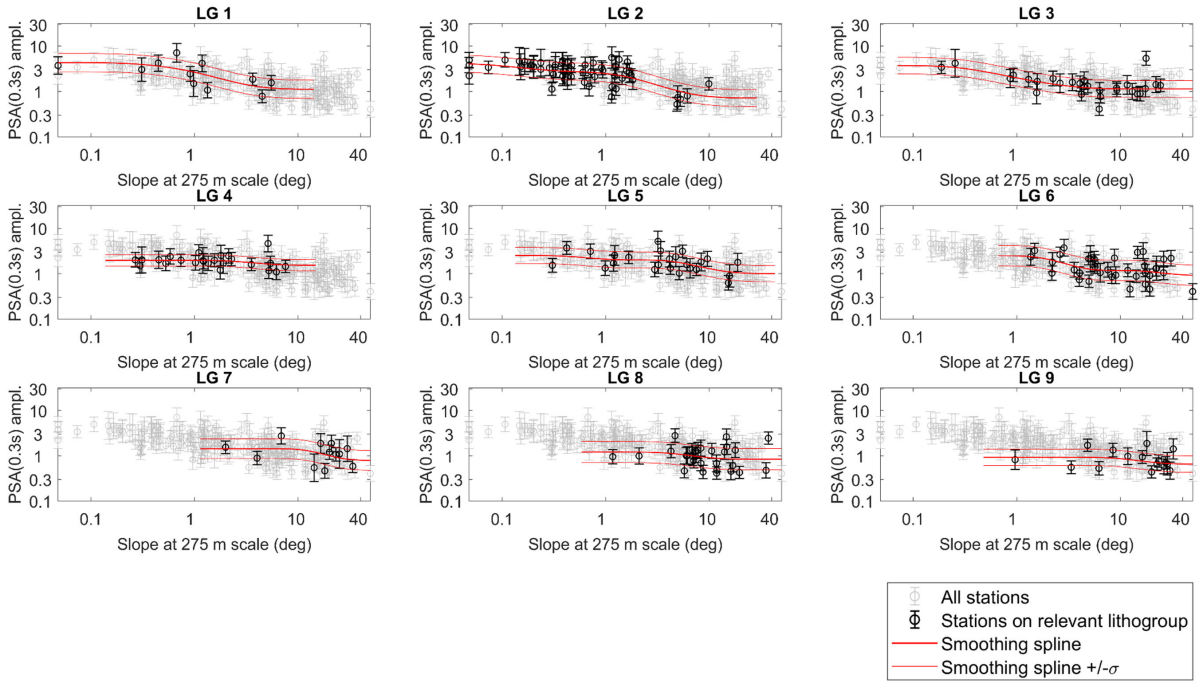

Fig. OR1.7 *PSA(0.3s) amplification-vs-topographic slope relations for all 9 lithogroups (LG).*

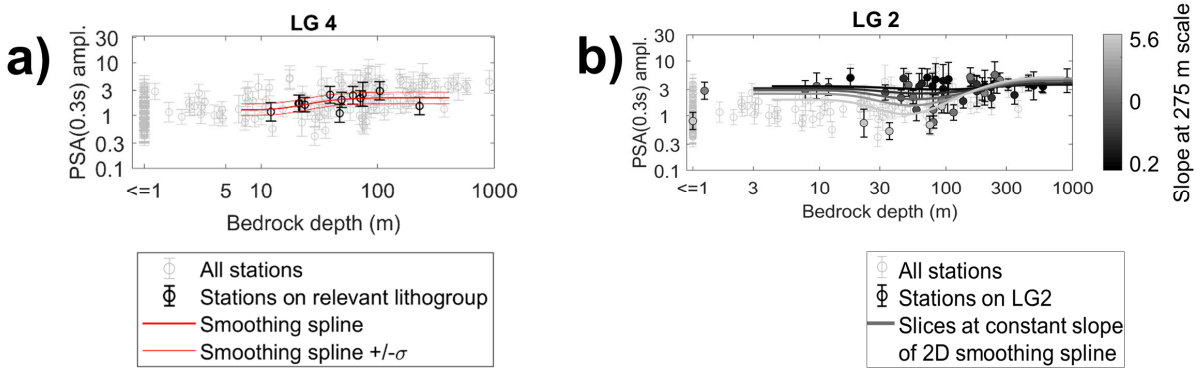

Fig. OR1.8 *a) PSA(0.3s) amplification-vs-bedrock depth relation for LG4. In the case of PSA(0.3s) amplification, LG4 is the only lithogroup (besides LG2, described in (b)) for which an amplification-vs-bedrock depth relation is available (i.e. ≥ 10 stations have an estimated depth-to-bedrock ≥ 3 m), and this relation is characterized by a* r^2 *higher than that obtained for the PSA(0.3s) amplification-vs-topographic slope correlation (see Fig. OR1.3). b) PSA(1.0s) amplification* vs *slope and bedrock depth relation for lithogroup LG2.*

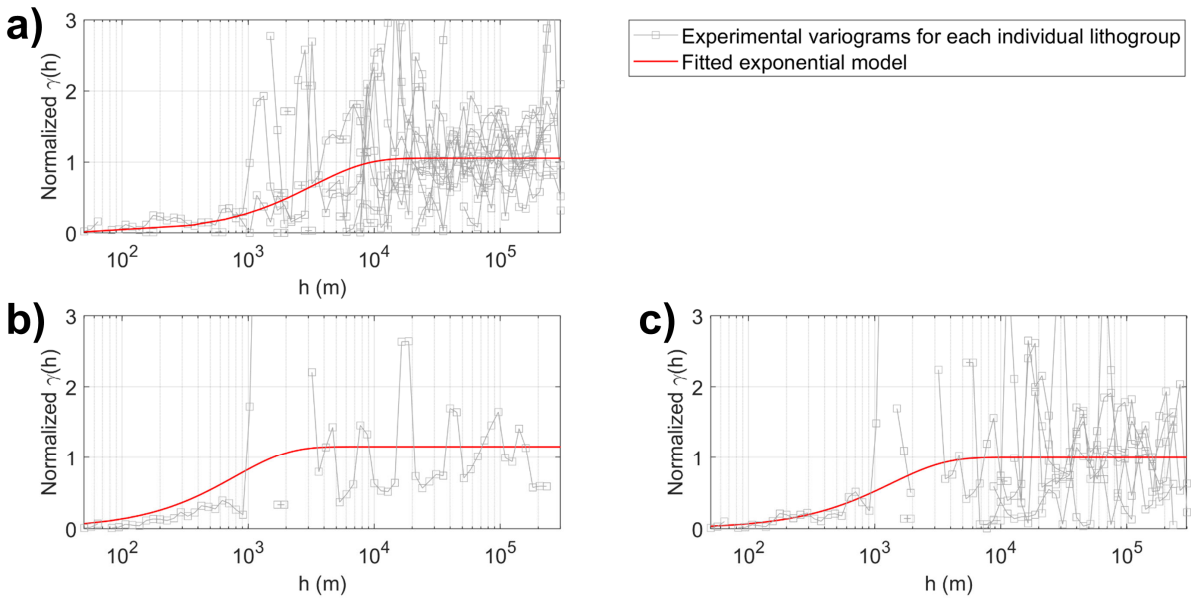

Fig. OR1.9 *a) Experimental normalized semivariograms obtained from the residuals of the PGV amplification-vs-topographic slope relations for all LGs (gray lines); the exponential model fitted on the whole set of experimental semivariograms is represented with a red line. b) Experimental normalized semivariogram obtained from the residuals of the PGV amplification-vs-topographic slope and -bedrock depth relation for LG2 (gray line); the red line represents the fitted exponential model. c) Experimental normalized semivariograms obtained from the residuals of the PGV amplification-vs-bedrock depth relations (available for LGs 2 – 6; gray lines); the exponential model fitted on the whole set of experimental semivariograms is represented with a red line.*

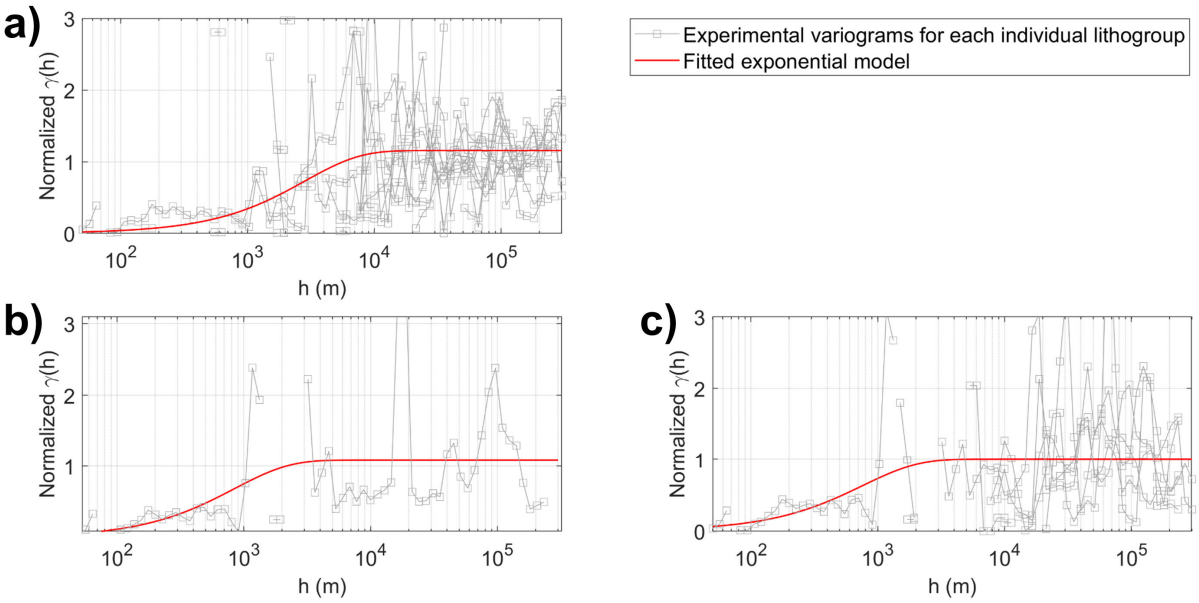

Fig. OR1.10 *a) Experimental normalized semivariograms obtained from the residuals of the PSA(1.0s) amplification-vs-topographic slope relations for all LGs (gray lines); the exponential model fitted on the whole set of experimental semivariograms is represented with a red line. b) Experimental normalized semivariogram obtained from the residuals of the PSA(1.0s) amplification-vs-topographic slope and -bedrock depth relation for LG2 (gray line); the red line represents the fitted exponential model. c) Experimental normalized semivariograms obtained from the residuals of the PSA(1.0s) amplification-vs-bedrock depth relations (available for LGs 2 – 6; gray lines); the exponential model fitted on the whole set of experimental semivariograms is represented with a red line.*

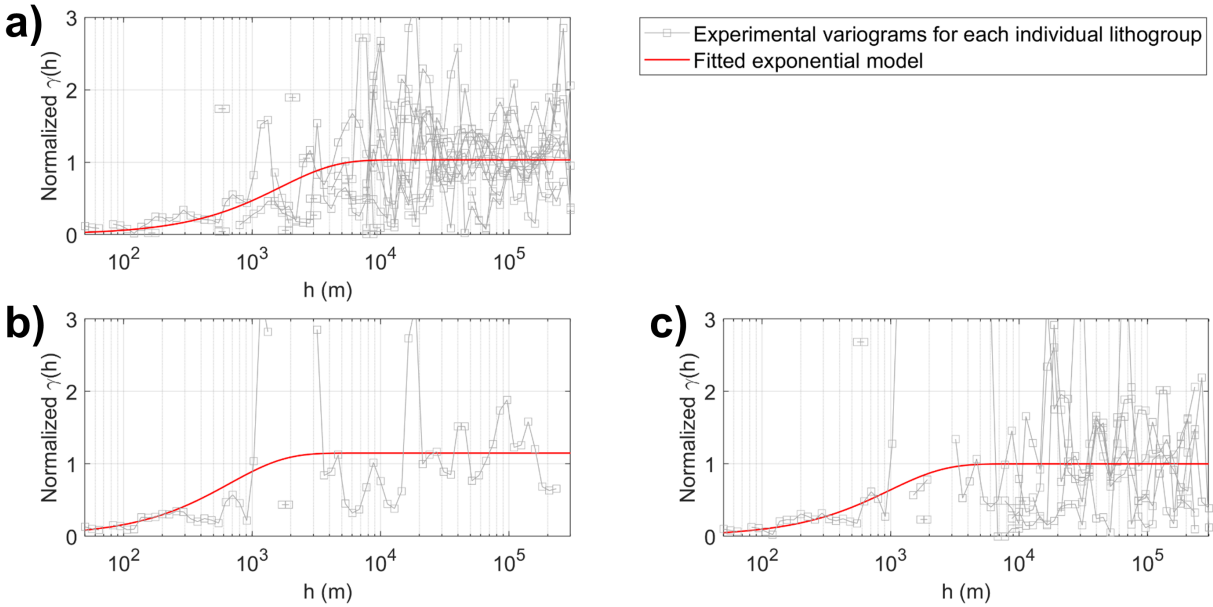

Fig. OR1.11 *a) Experimental normalized semivariograms obtained from the residuals of the PSA(0.6s) amplification-vs-topographic slope relations for all LGs (gray lines); the exponential model fitted on the whole set of experimental semivariograms is represented with a red line. b) Experimental normalized semivariogram obtained from the residuals of the PSA(0.6s) amplification-vs-topographic slope and -bedrock depth relation for LG2 (gray line); the red line represents the fitted exponential model. c) Experimental normalized semivariograms obtained from the residuals of the PSA(0.6s) amplification-vs-bedrock depth relations (available for LGs 2 – 6; gray lines); the exponential model fitted on the whole set of experimental semivariograms is represented with a red line.*

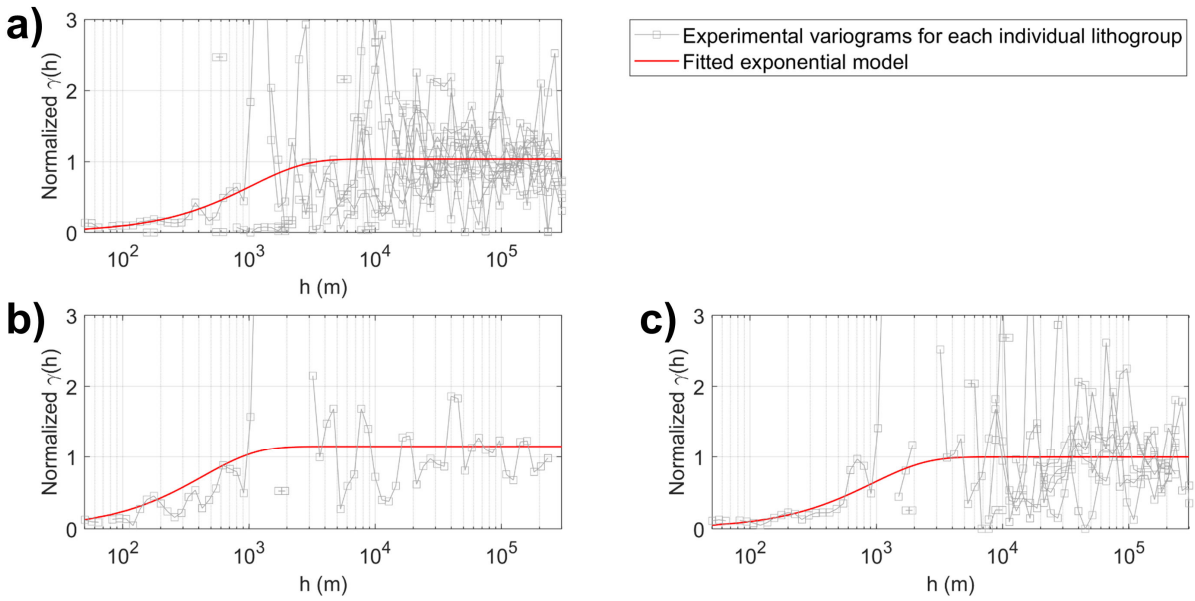

Fig. OR1.12 *a) Experimental normalized semivariograms obtained from the residuals of the PSA(0.3s) amplification-vs-topographic slope relations for all LGs (gray lines); the exponential model fitted on the whole set of experimental semivariograms is represented with a red line. b) Experimental normalized semivariogram obtained from the residuals of the PSA(0.3s) amplification-vs-topographic slope and -bedrock depth relation for LG2 (gray line); the red line represents the fitted exponential model. c) Experimental normalized semivariograms obtained from the residuals of the PSA(0.3s) amplification-vs-bedrock depth relations (available for LGs 2 – 6; gray lines); the exponential model fitted on the whole set of experimental semivariograms is represented with a red line.*