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Supplement of

The Earthquake Risk Model of Switzerland, ERM-CH23

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S1 Ground motion model (GMM) logic tree

The GMM logic tree used in ERM-CH23 is adopted from SUIhaz2015 (Wiemer et al. 2015). Four branching sets are defined for events characterized as *Alpine Shallow*, *Foreland Shallow*, *Alpine Deep* and *Foreland Deep*. Figures S1-S4 illustrate the GMM logic trees for each of these seismotectonic contexts. In all cases, the first logic tree branching level accounts for the derivation basis of the models, with stochastic GMMs getting a weight of 0.6, while empirical GMMs being assigned a weight of 0.4. A higher weight was assigned to the stochastic models, because they were specifically derived for Switzerland and calibrated against macroseismic and instrumental data. A second branching level for the empirical GMMs refers to the uncertainty pertaining to the VS-κ correction (Edwards et al., 2016; Cauzzi et al., 2015) that was implemented for rendering these models suitable for Switzerland. The three branches refer to the minimum, average and maximum amplification with respect to the target rock profile of Poggi et al. (2011). The last branching level, applying to both stochastic and empirical GMMs, accounts for the epistemic uncertainty in modelling single-station sigma. The φ_{ss} branches were collapsed into a single weighted mean model for each GMM, therefore this uncertainty was not further propagated. The rationale behind the formulation of the GMM logic tree and the choice of its constituents is described in further detail in Edwards et al. (2016) and Wiemer et al. (2015).

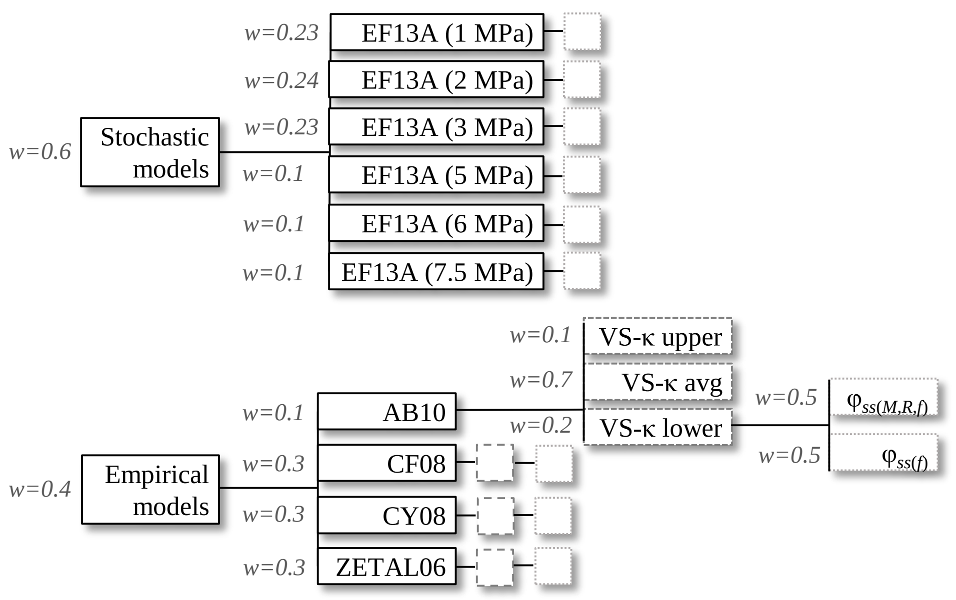

Figure S1. Ground motion model logic tree for alpine shallow crust tectonic regime, adapted from Wiemer et al. (2015). EF13A: Edwards and Fäh (2013) – alpine; AB10: Akkar and Bommer (2010); CF08: Cauzzi and Faccioli (2018); ZETAL06: Zhao et al. (2006).

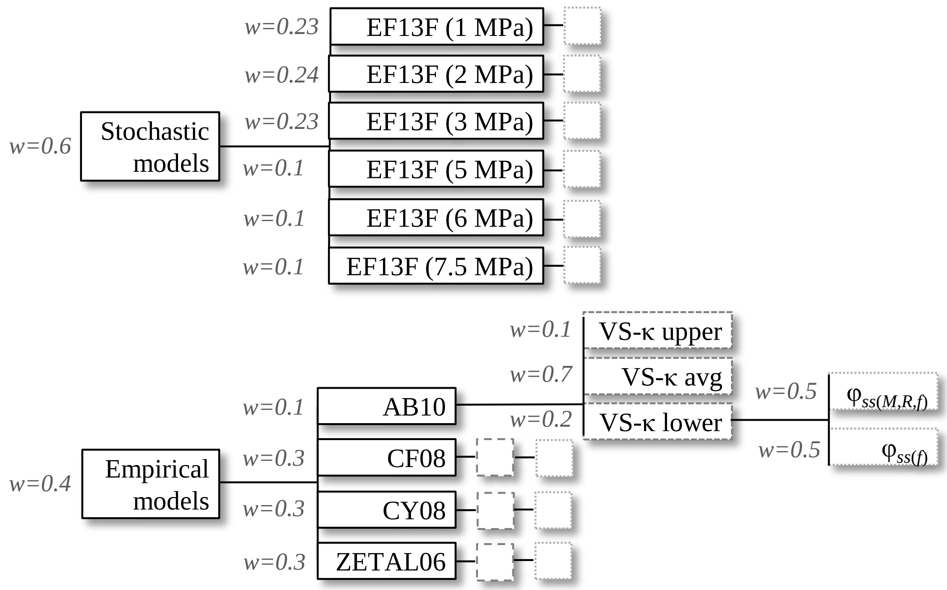

Figure S2. Ground motion model logic tree for foreland shallow crust tectonic regime, adapted from Wiemer et al. (2015). EF13F: Edwards and Fäh (2013) – foreland; AB10: Akkar and Bommer (2010); CF08: Cauzzi and Faccioli (2018); ZETAL06: Zhao et al. (2006).

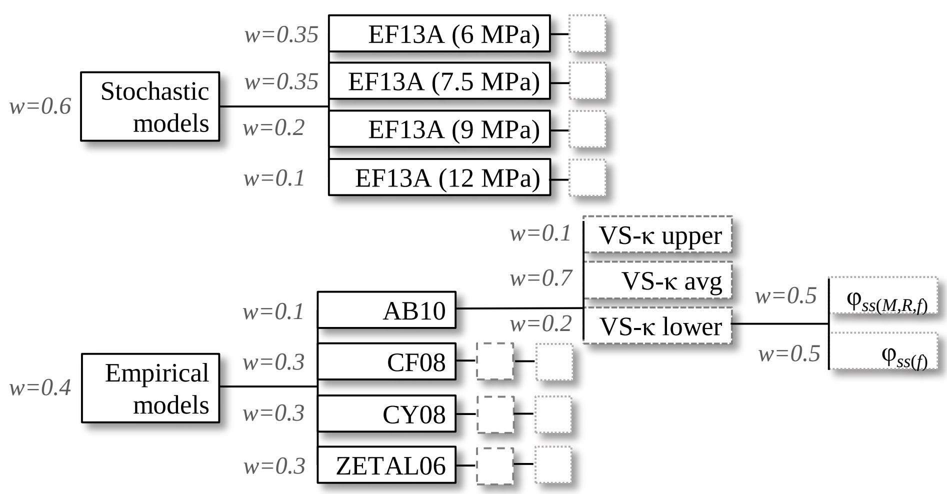

Figure S3. Ground motion model logic tree for alpine deep crust tectonic regime, adapted from Wiemer et al. (2015). EF13A: Edwards and Fäh (2013) – alpine; AB10: Akkar and Bommer (2010); CF08: Cauzzi and Faccioli (2018); ZETAL06: Zhao et al. (2006).

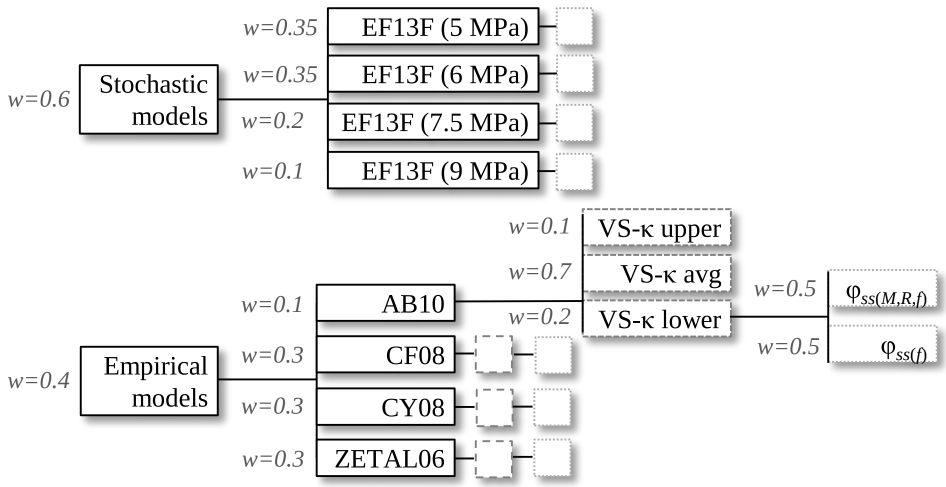

Figure S4. Ground motion model logic tree for foreland deep crust tectonic regime, adapted from Wiemer et al. (2015). EF13F: Edwards and Fäh (2013) – foreland; AB10: Akkar and Bommer (2010); CF08: Cauzzi and Faccioli (2018); ZETAL06: Zhao et al. (2006).

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