

Electronic supplement to:

A Non-ergodic Spectral Acceleration Ground Motion Model for
California Developed with Random Vibration Theory

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S1 Comparison of different duration intervals for D_{gm}

Figures S1 to S5 show the residuals between the records' PSA and the PSA estimated with RVT. The RVT PSA were estimated with the $V75$ peak factors, records' actual duration for D_{gm} , and $BT15$ for D_{rms} . D_{gm} is equal to: $D_{a0.05-0.75}$ in Figure S1, $D_{a0.05-0.80}$ in Figure S2, $D_{a0.05-0.85}$ in Figure S3, $D_{a0.05-0.90}$ in Figure S4, and $D_{a0.05-0.95}$ in Figure S5.

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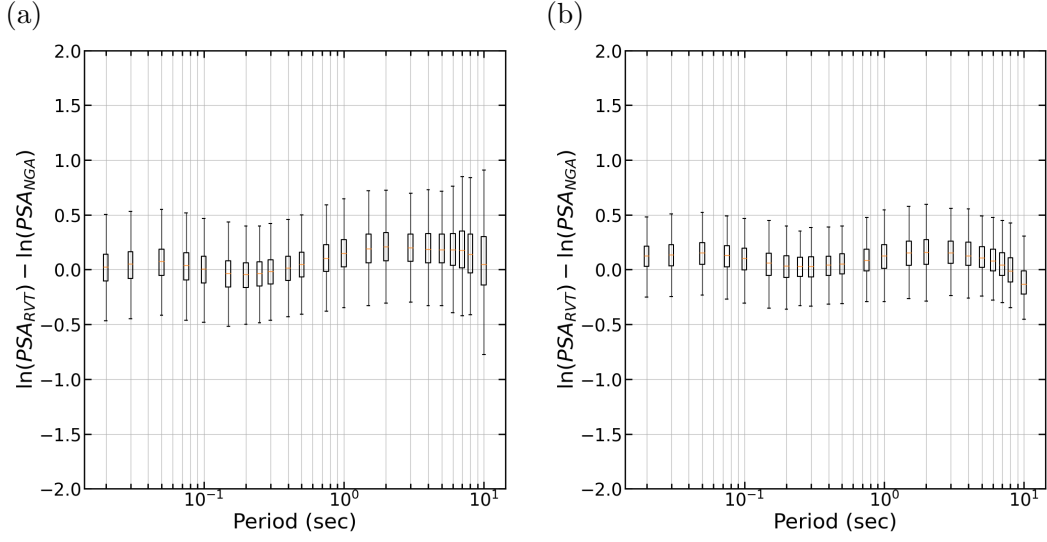


Fig. S1: Residuals between records' PSA and RVT PSA . V75 PF , records' $D_{a0.05-0.75}$ as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

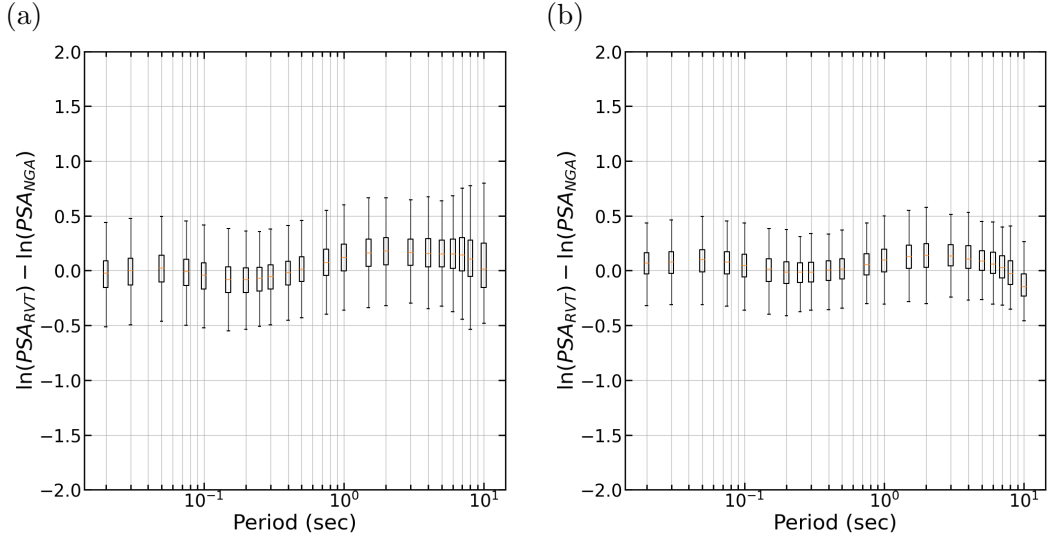


Fig. S2: Residuals between records' PSA and RVT PSA . V75 PF , records' $D_{a0.05-0.80}$ as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

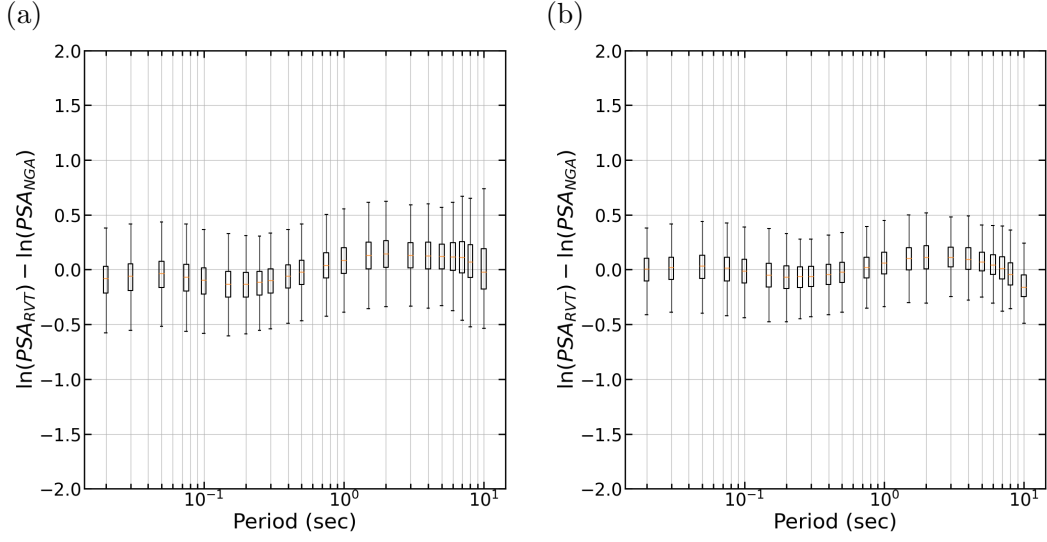


Fig. S3: Residuals between records' PSA and RVT PSA . V75 PF , records' $D_{a0.05-0.85}$ as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

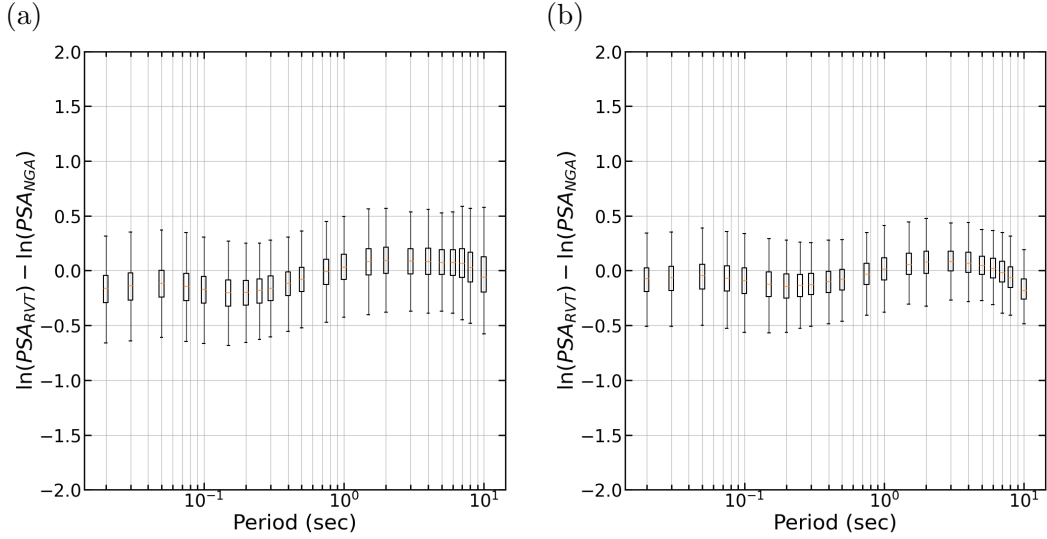


Fig. S4: Residuals between records' PSA and RVT PSA . V75 PF , records' $D_{a0.05-0.90}$ as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

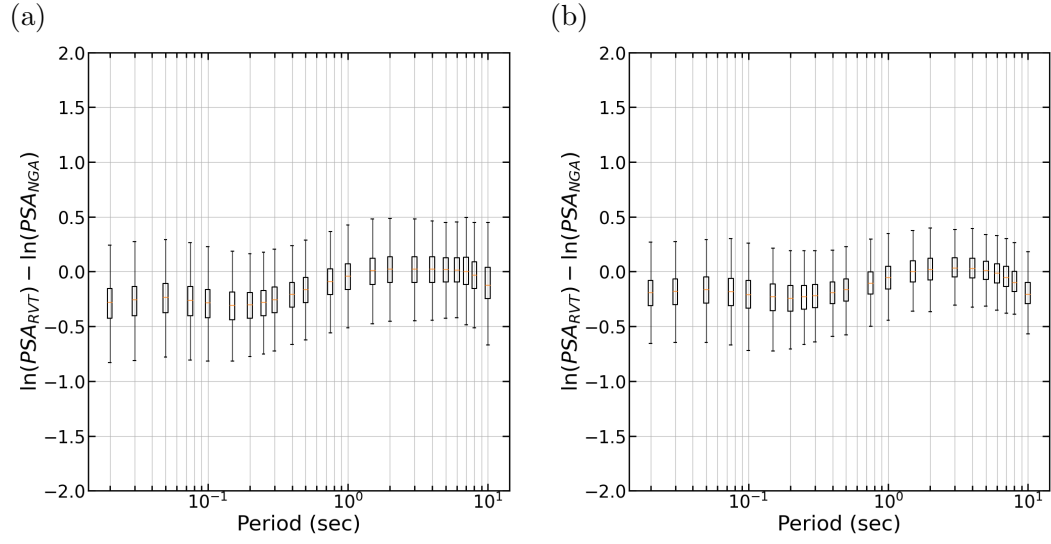


Fig. S5: Residuals between records' PSA and RVT PSA . V75 PF , records' $D_{a0.05-0.95}$ as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

S2 Comparison of different duration models for D_{gm}

Figures S6 to S12 show the residuals between the records' PSA and the PSA estimated with RVT. The RVT PSA were estimated with the $V75$ peak factors, the D_{gm} estimated with a duration GMM, and $BT15$ for D_{rms} . D_{gm} is based on: KS06 D_{a5-75} in Figure S6, KS06 D_{a5-95} in Figure S7, KS06 D_{v5-75} in Figure S8, the KS06 D_{v5-95} in Figure S9, AS16 D_{a5-75} in Figure S10, AS16 D_{a5-95} in Figure S11, and AS16 $2D_{a20-80}$ in Figure S12.

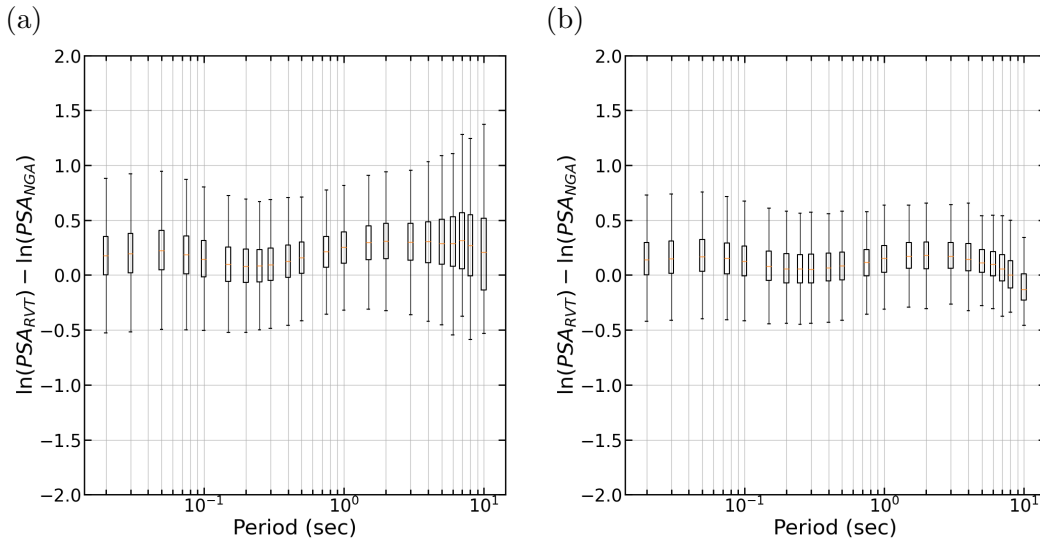


Fig. S6: Residuals between records' PSA and RVT PSA . $V75$ PF , $D_{a0.05-0.75}$ from KS06 as D_{gm} , and $BT15$ D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

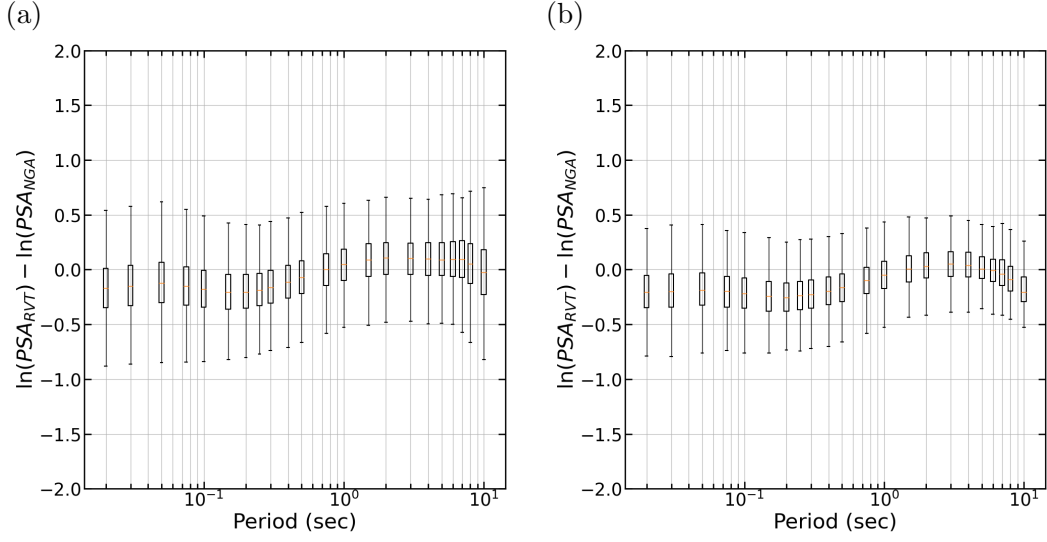


Fig. S7: Residuals between records' PSA and RVT PSA . V75 PF , $D_{a0.05-0.95}$ from KS06 as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

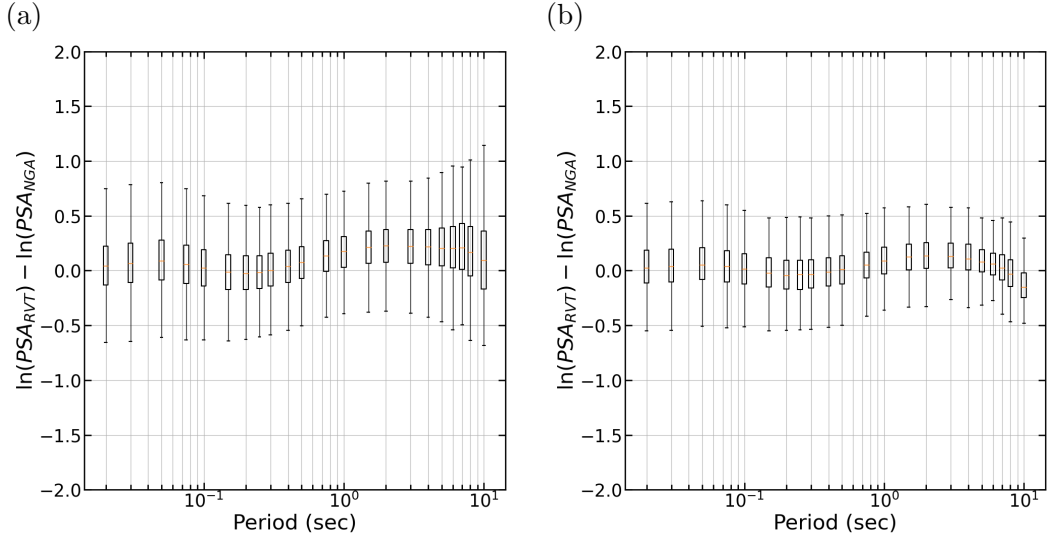


Fig. S8: Residuals between records' PSa and RVT PSa . V75 PF , $D_{v0.05-0.75}$ from KS06 as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

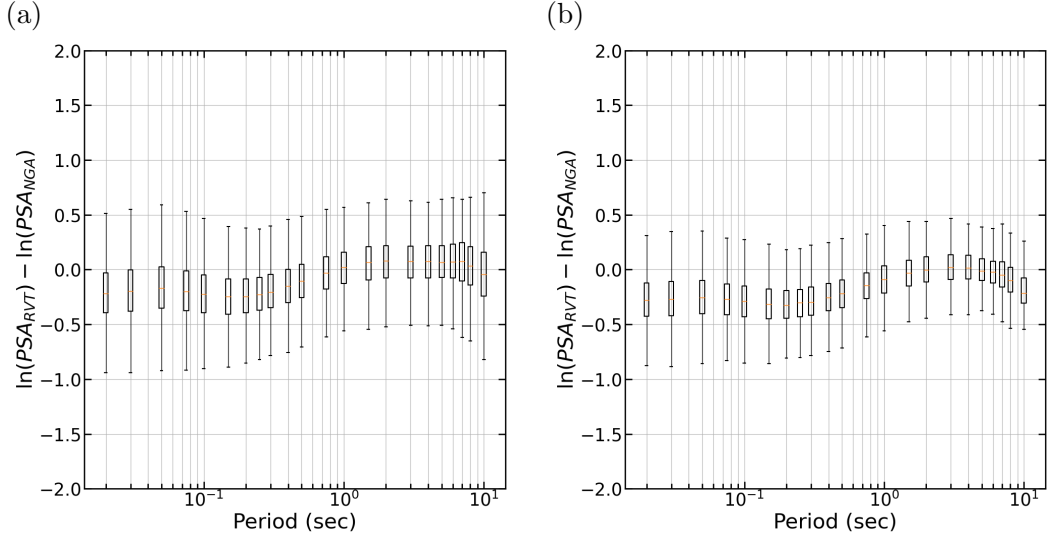


Fig. S9: Residuals between records' PSA and RVT PSA . V75 PF , $D_{v0.05-0.95}$ from KS06 as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

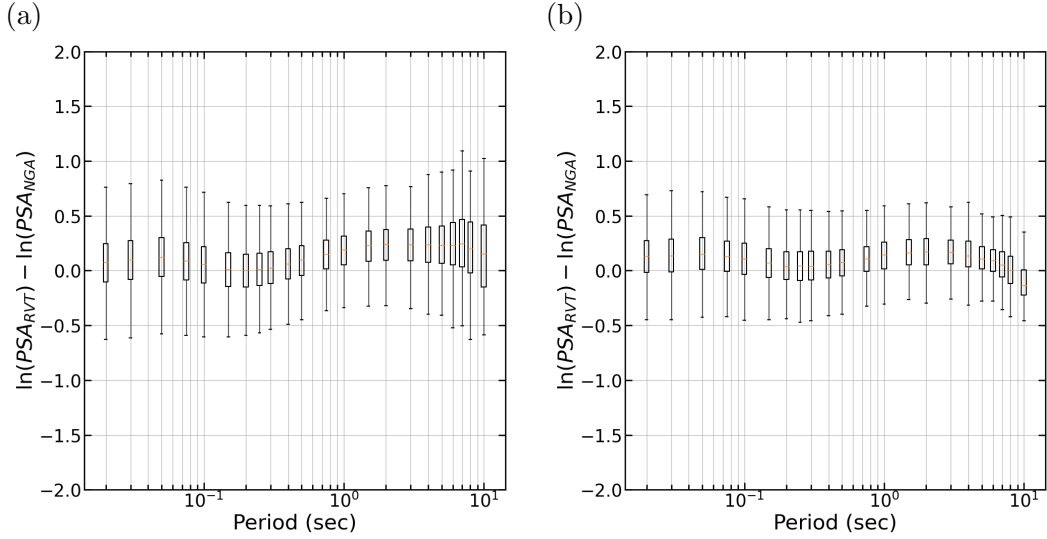


Fig. S10: Residuals between records' PSA and RVT PSA . V75 PF , $D_{a0.05-0.75}$ from KS06 as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

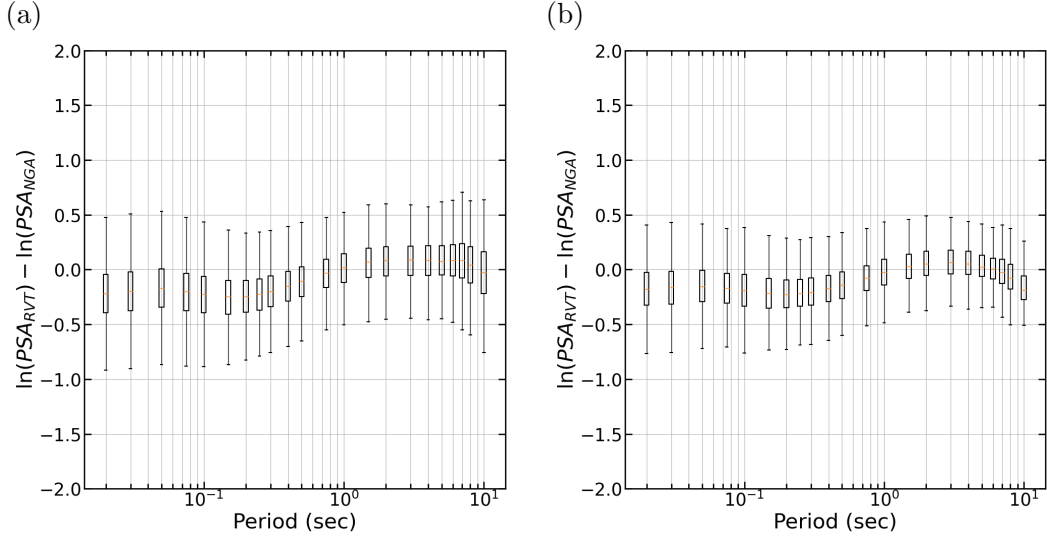


Fig. S11: Residuals between records' PSA and RVT PSA . V75 PF , $D_{a0.05-0.95}$ from KS06 as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$

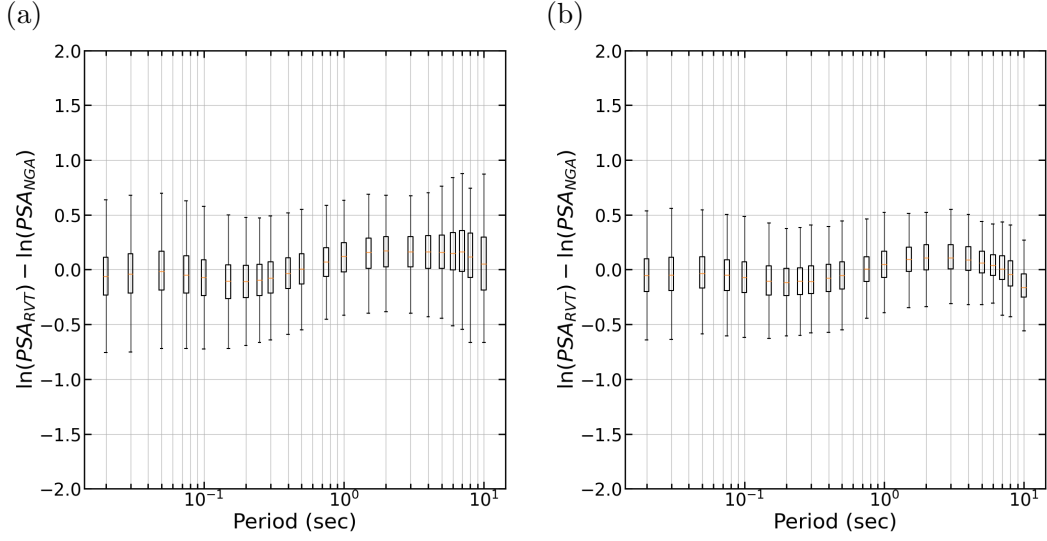


Fig. S12: Residuals between records' PSA and RVT PSA . V75 PF , $2D_{a0.20-0.95}$ from KS06 as D_{gm} , and BT15 for D_{rms} . (a) residuals for all M , (b) residuals for $M > 5$