

Statistical Uncertainty of Median Prediction for Subduction Event

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**Taiwan SSHAC Level 3 PSHA Study
Taipei, Taiwan**

Epistemic Uncertainty of Median Prediction for Subduction Source

■ Model-to-Model Variability

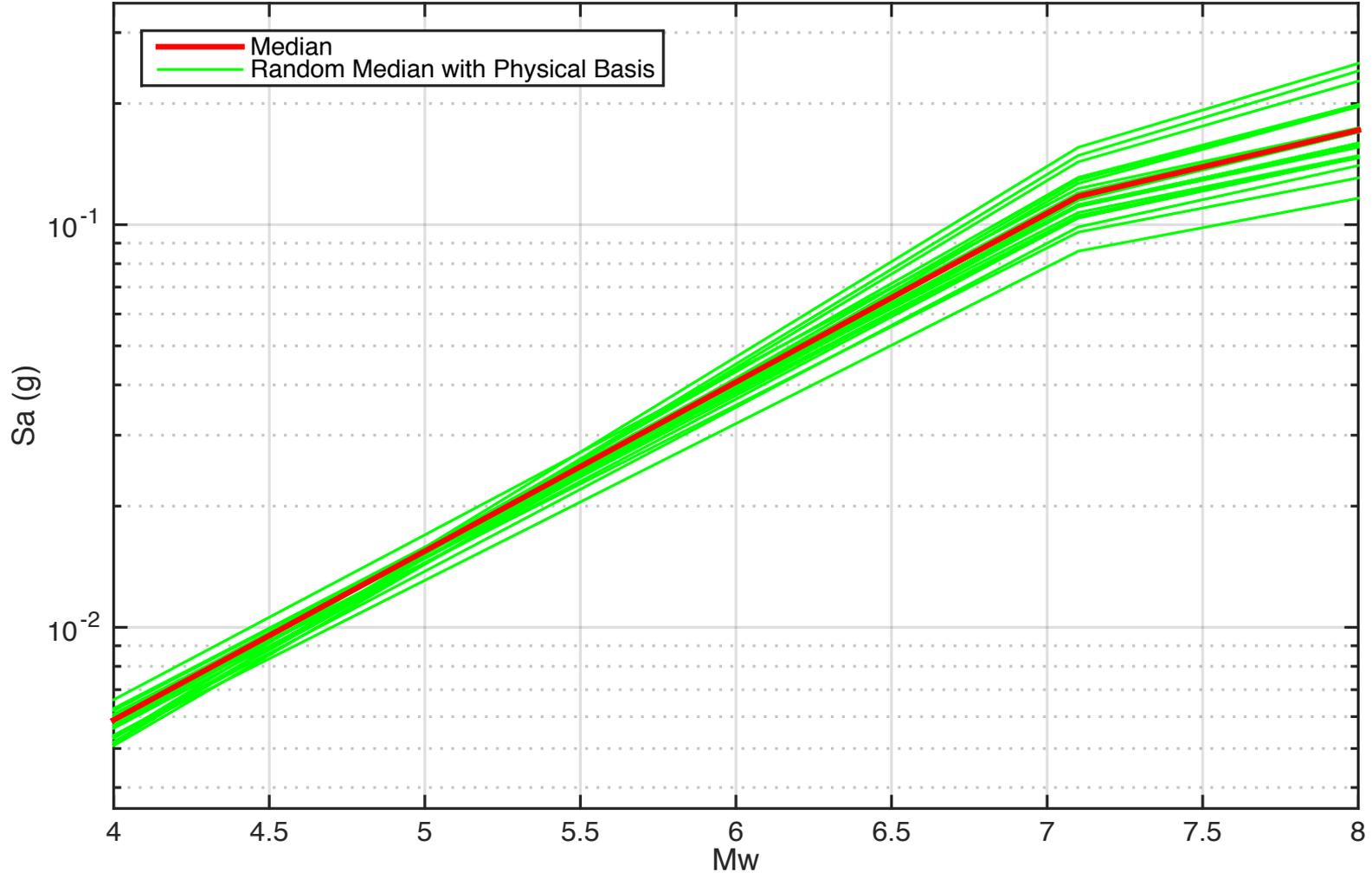
- It is represented by 1 adjusted foreign models and 3 Taiwan models
 - AGA16adj (only consider center Δc_1)
 - LL08, Phung17 and Chao17

■ Within-Model Variability

- Covariance matrix of Chao17 model coefficients are considered
 - Difference of magnitude scaling for $M_w > 7.1$ are considered as a known constant in this model

Random Chao17 Model

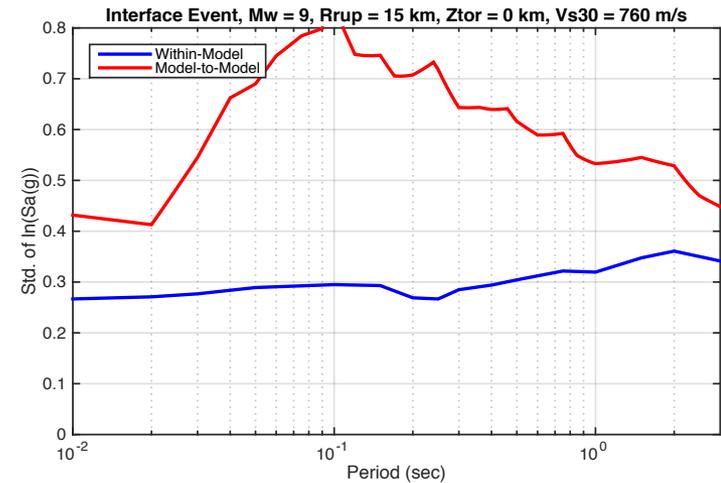
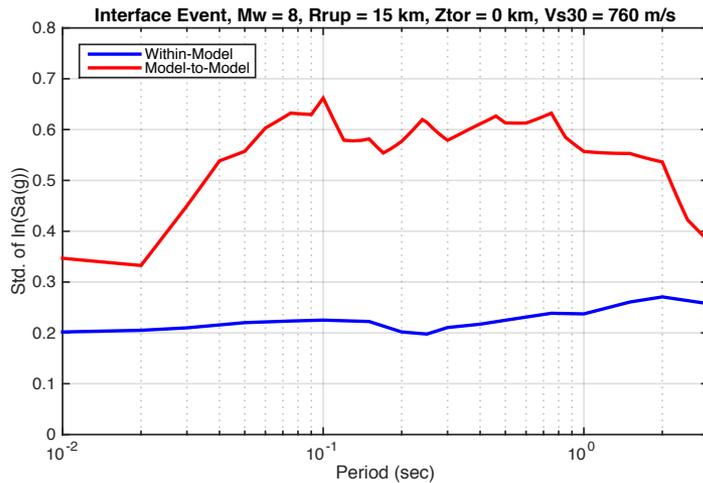
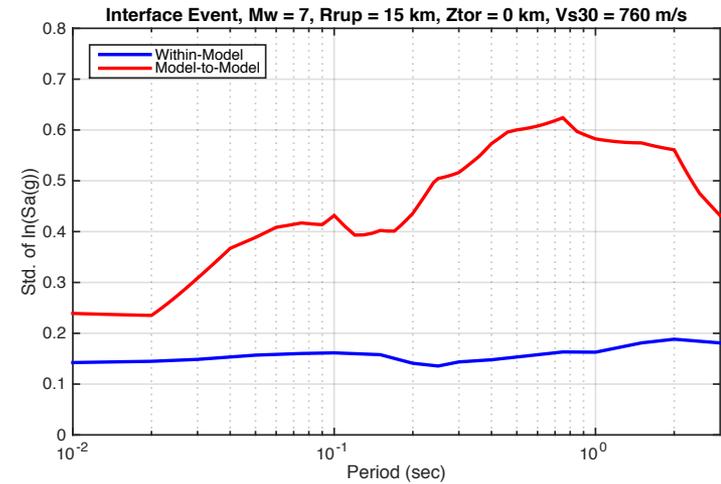
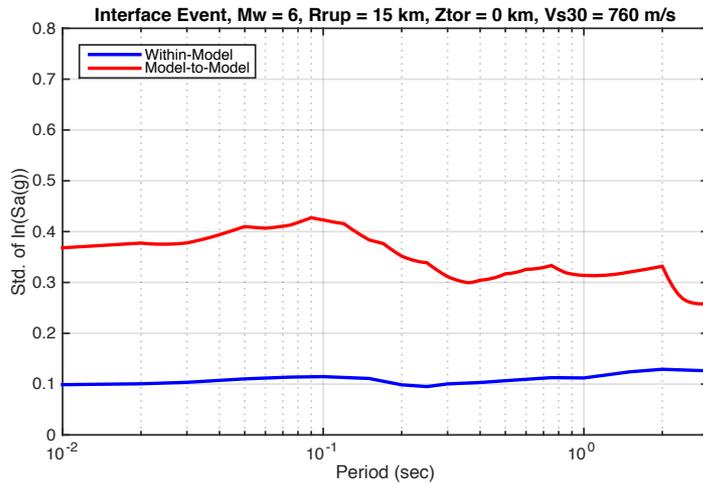
Chao17 Model, Intraslab Event, $T = 0.01$ sec, $R_{rup} = 50$ km, $Z_{tor} = 50$ km, $V_{s30} = 760$ km



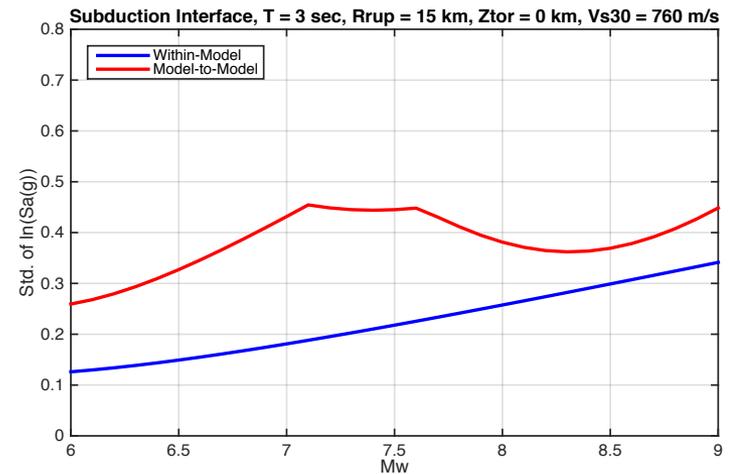
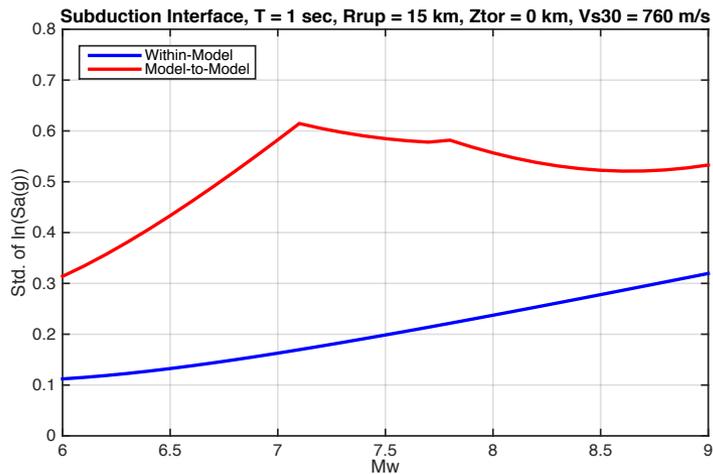
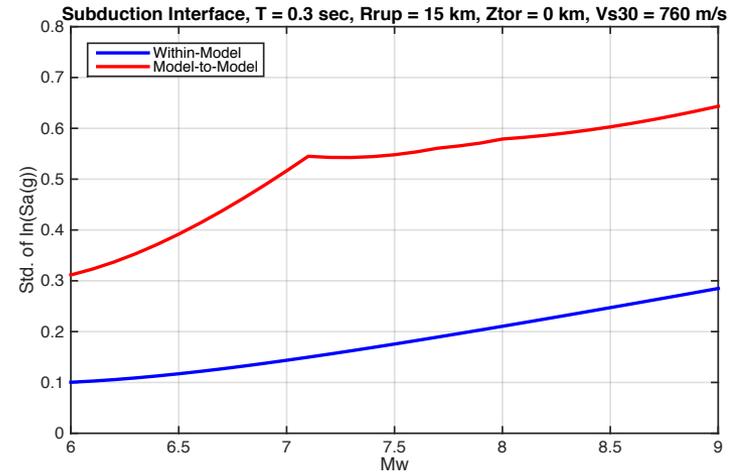
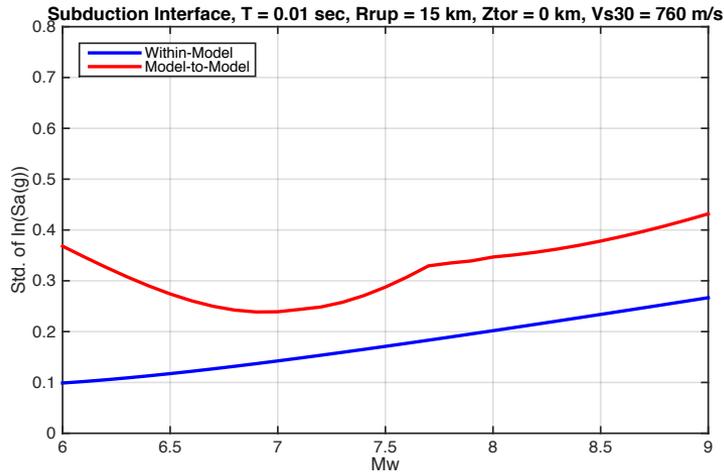
Comparison of GMMs with TDIs

SUBDUCTION INTERFACE SOURCE

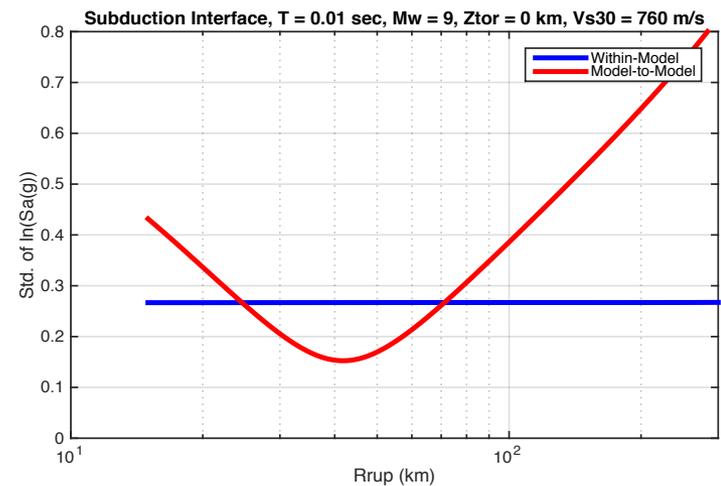
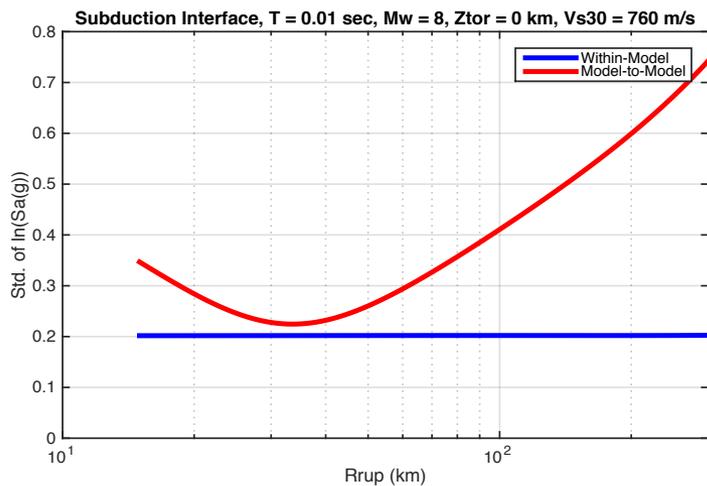
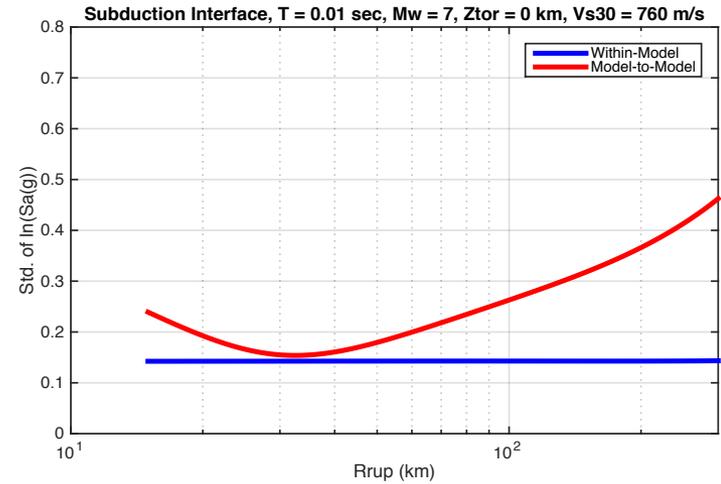
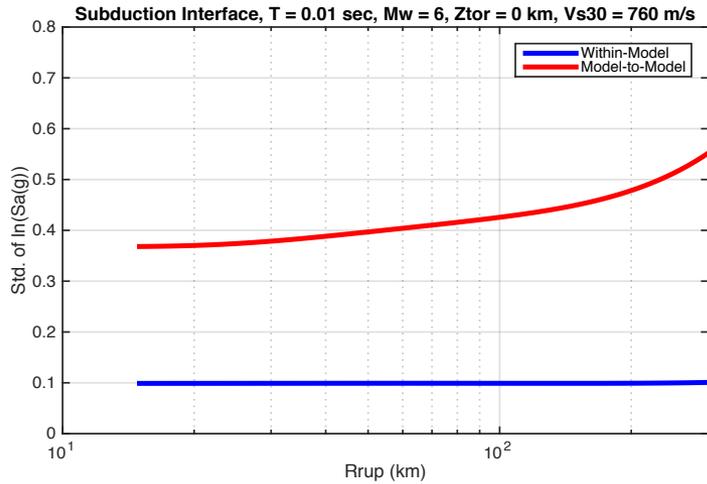
Period vs. Epistemic Uncertainty



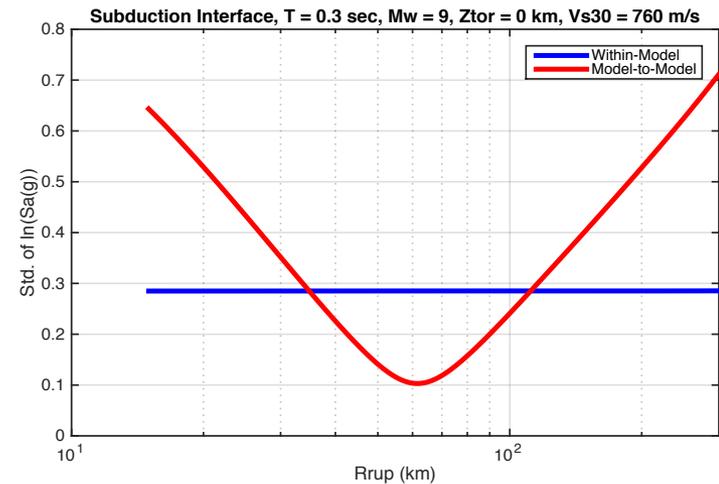
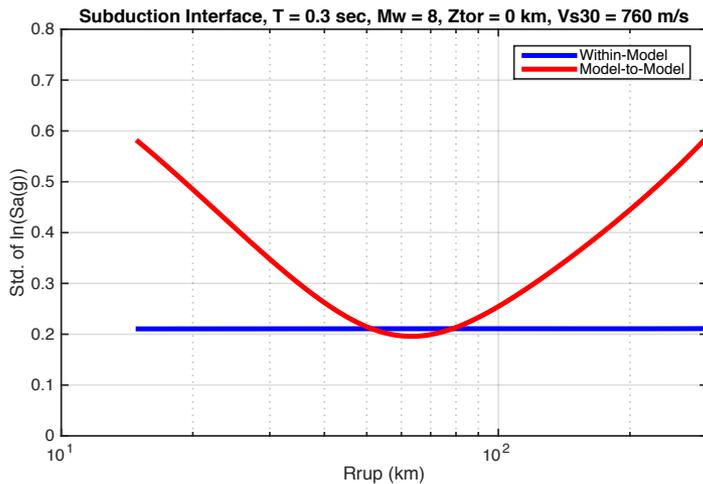
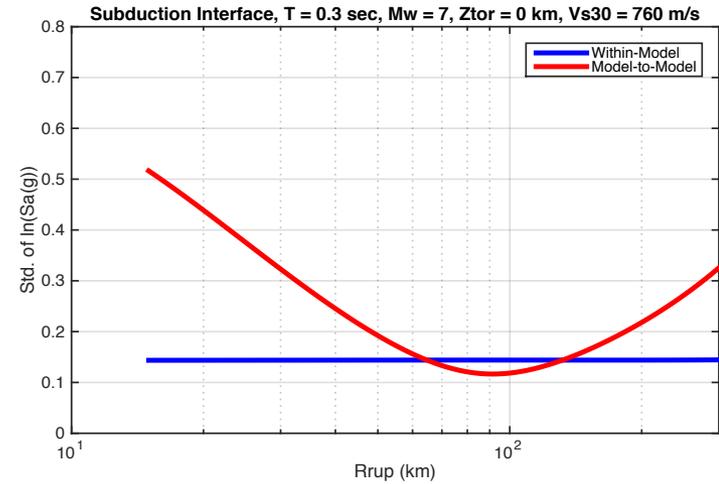
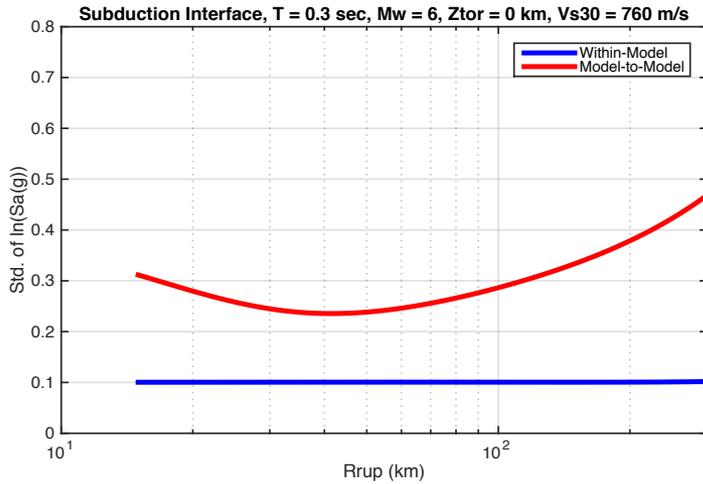
Magnitude vs. Epistemic Uncertainty



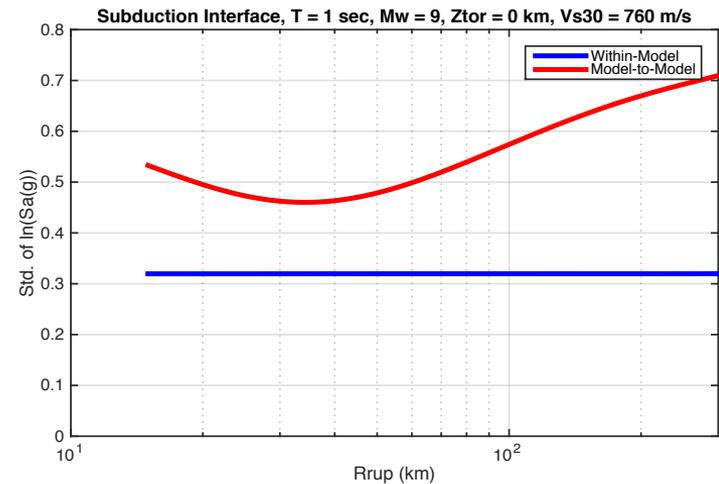
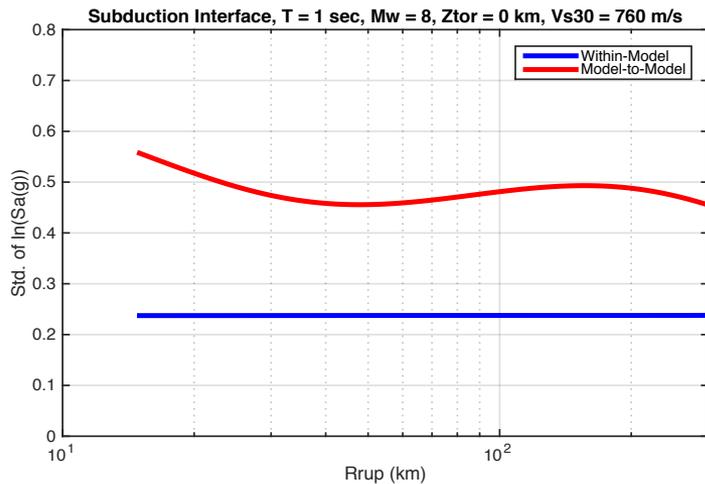
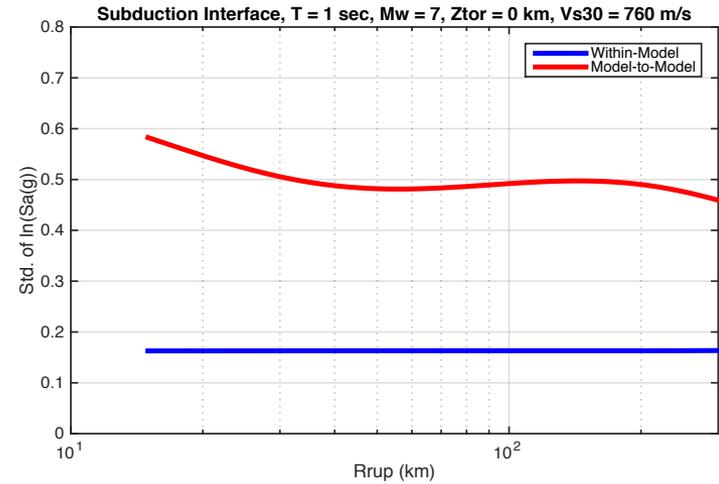
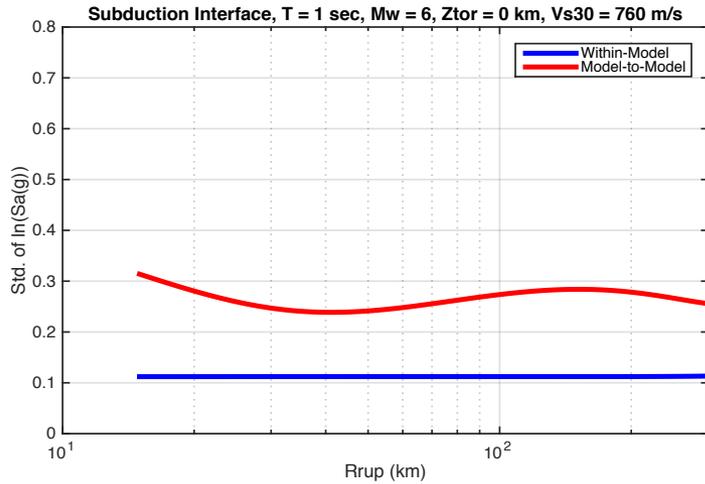
Distance vs. Epistemic Uncertainty for T 0.01 sec



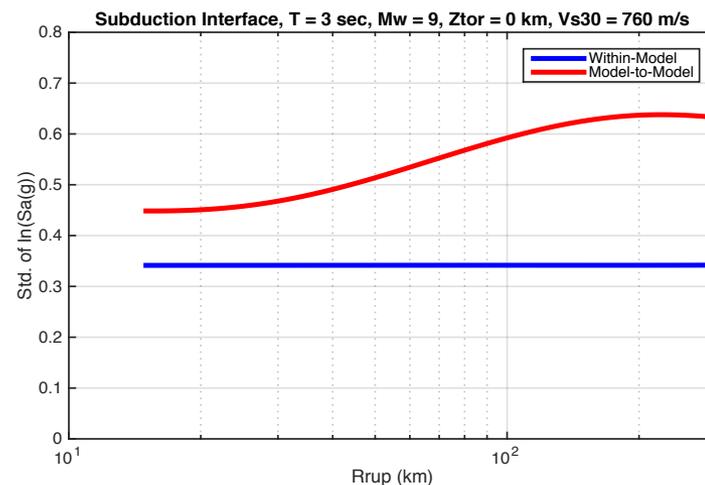
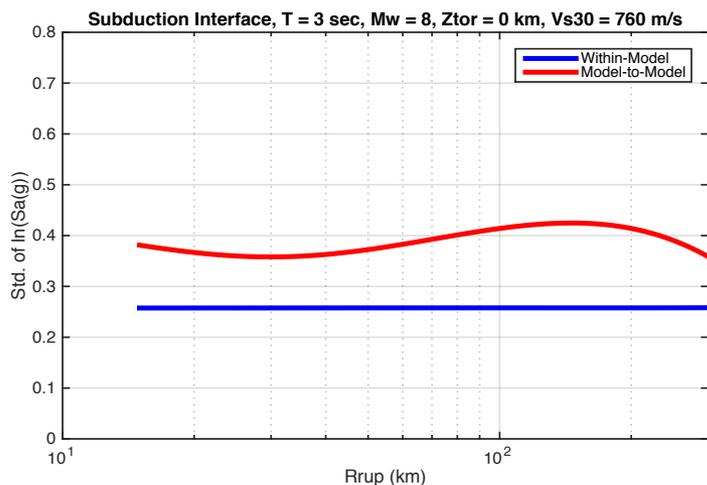
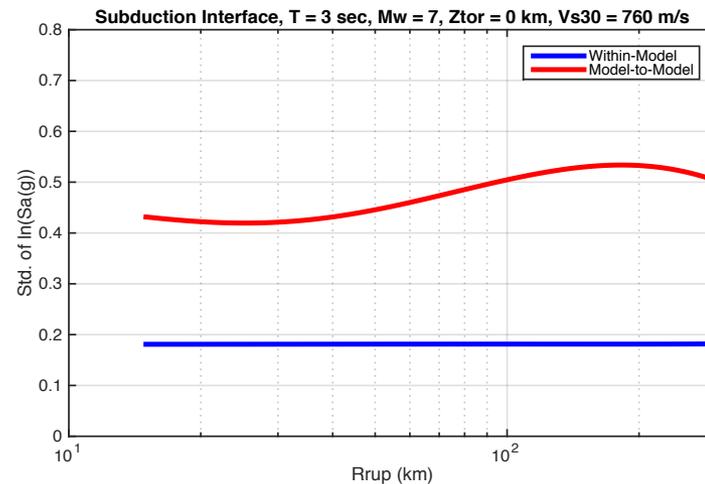
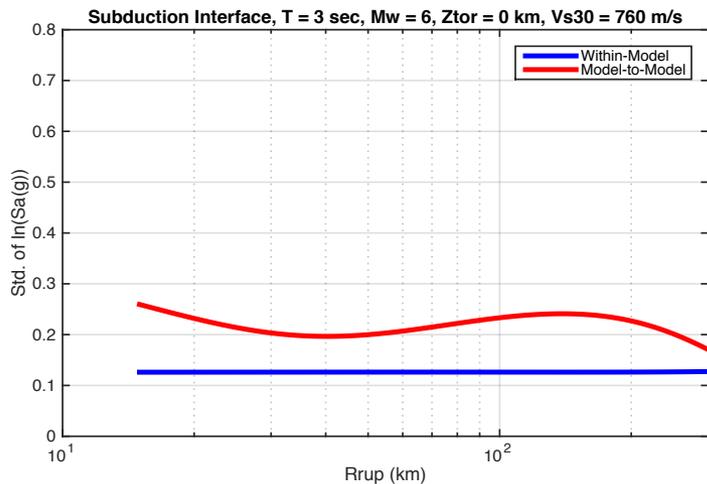
Distance vs. Epistemic Uncertainty for T 0.3 sec



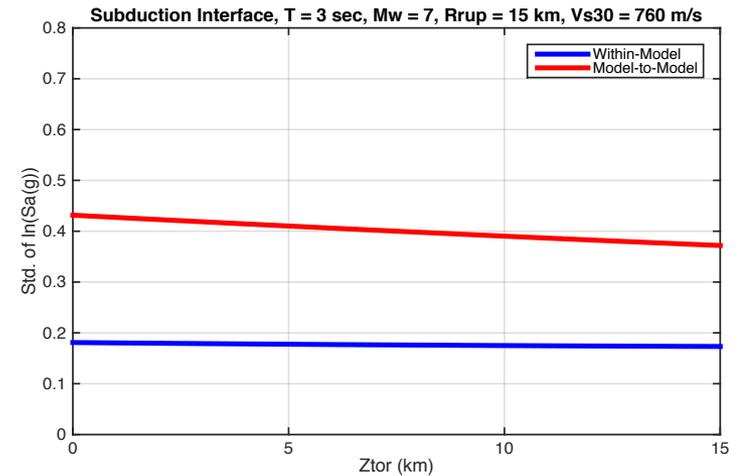
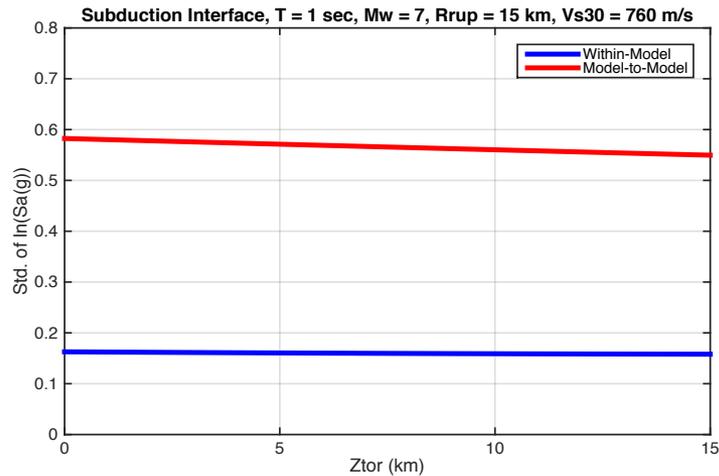
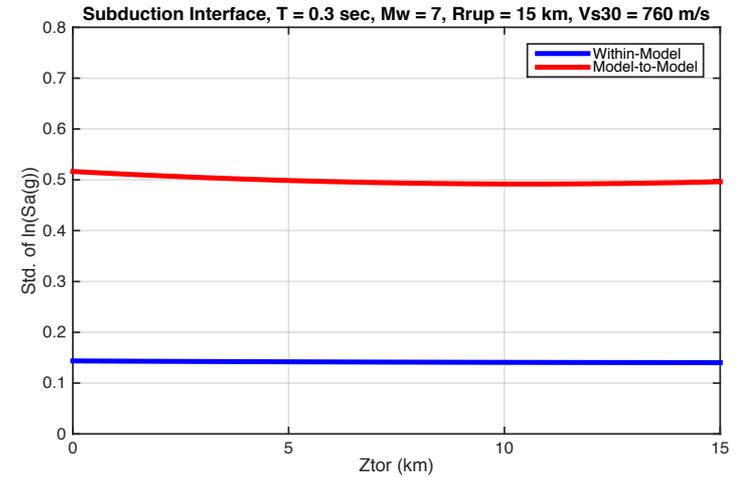
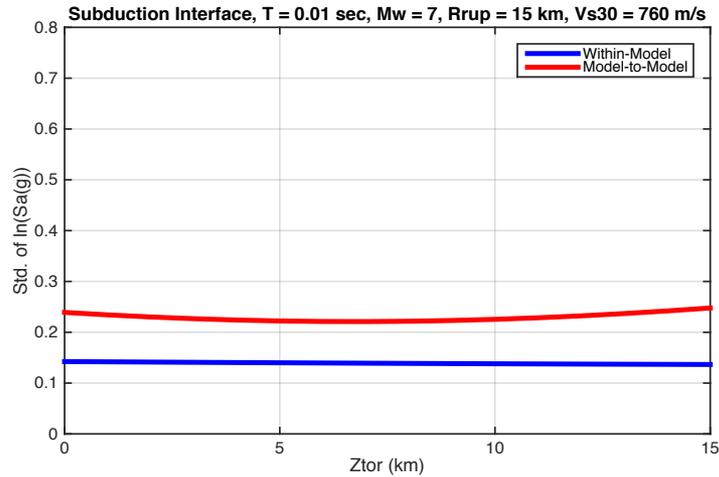
Distance vs. Epistemic Uncertainty for T 1.0 sec



Distance vs. Epistemic Uncertainty for T 3.0 sec



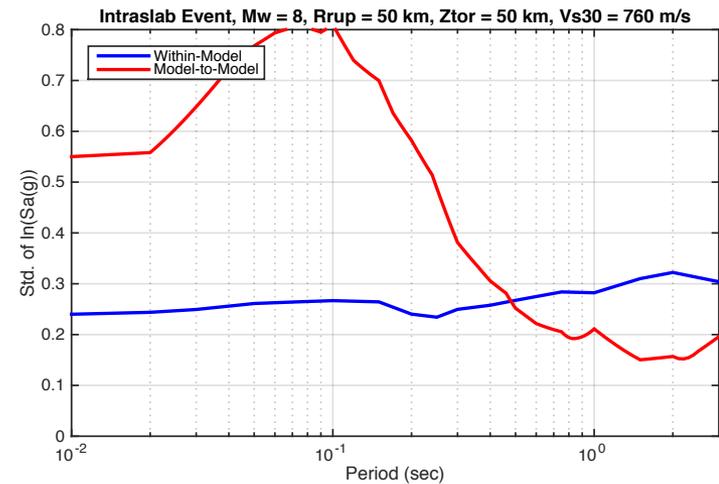
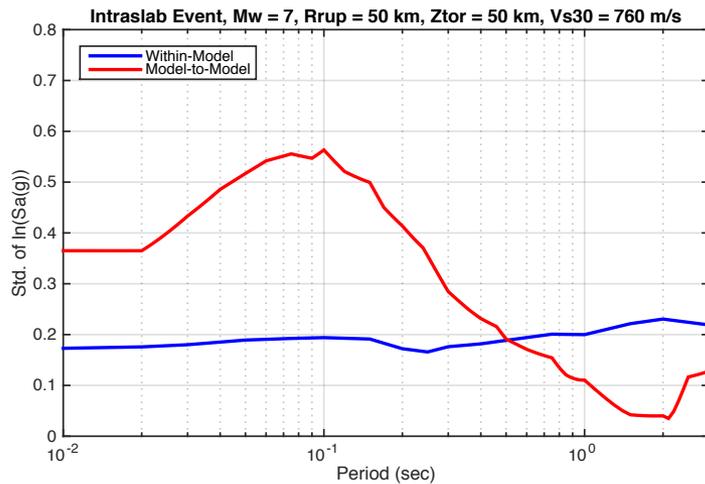
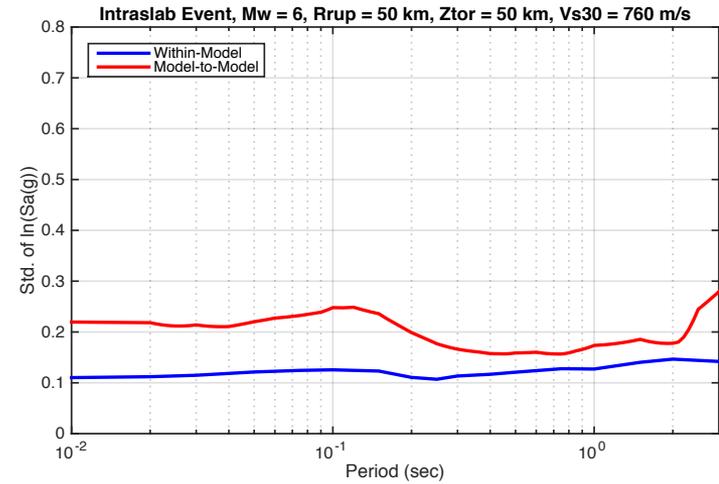
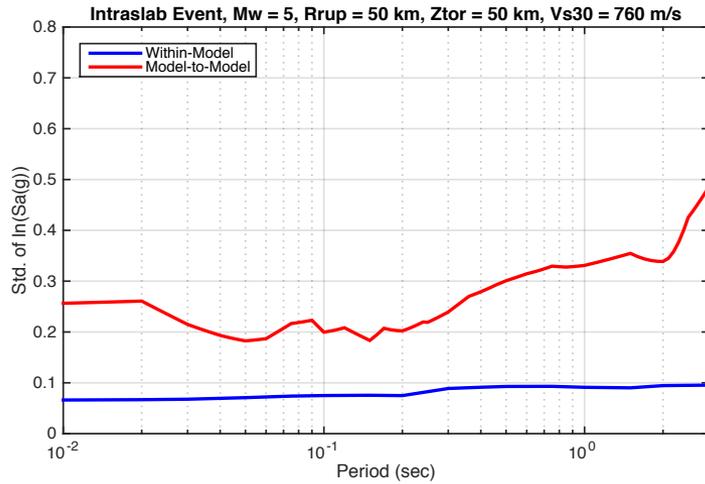
Ztor vs. Epistemic Uncertainty for Mw 7.0



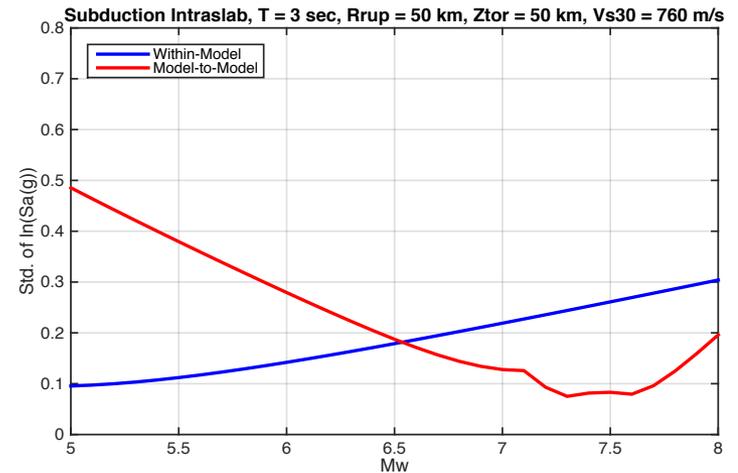
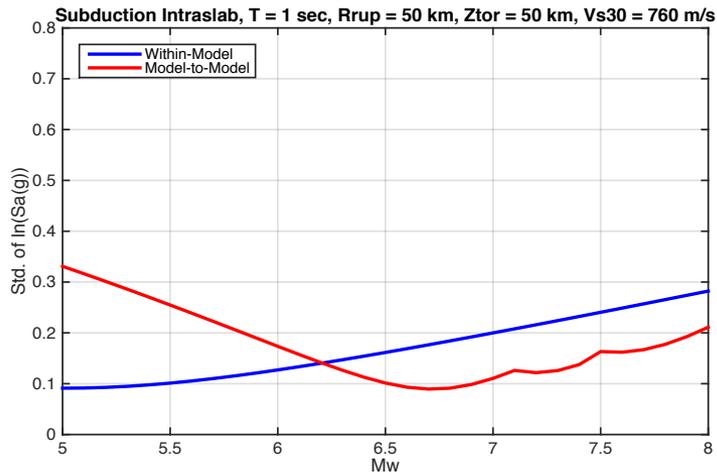
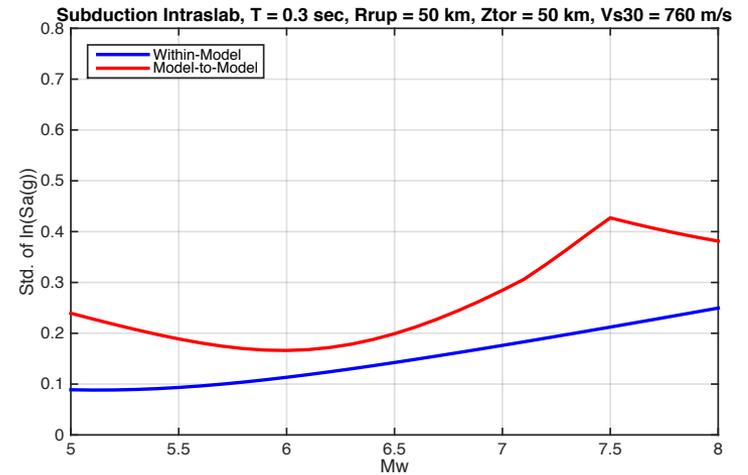
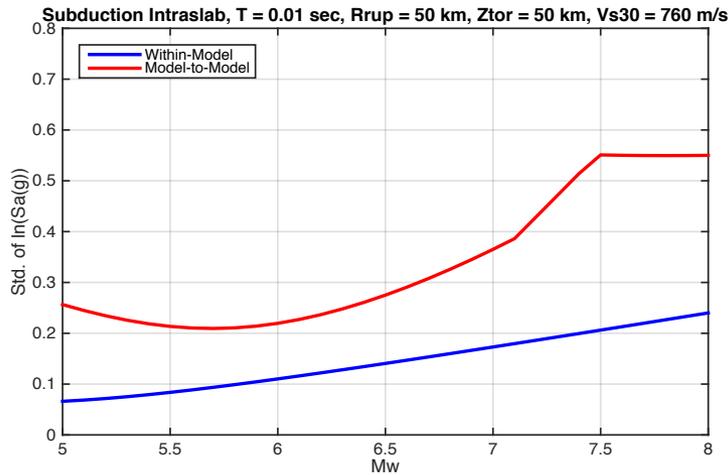
Comparison of GMMs with TDIs

SUBDUCTION INTRASLAB SOURCE

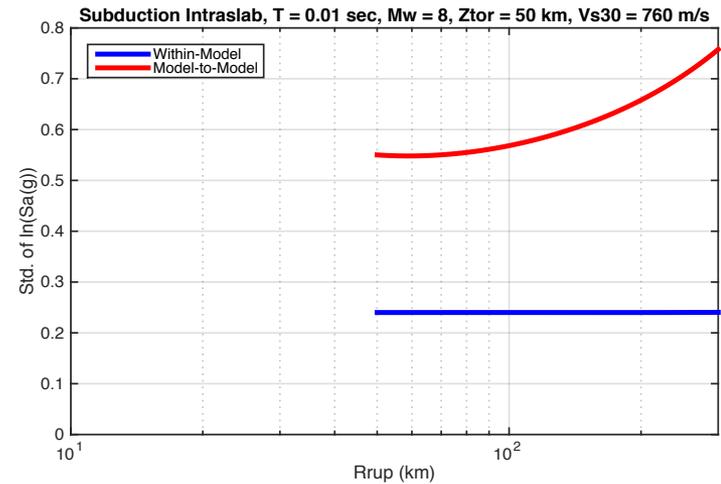
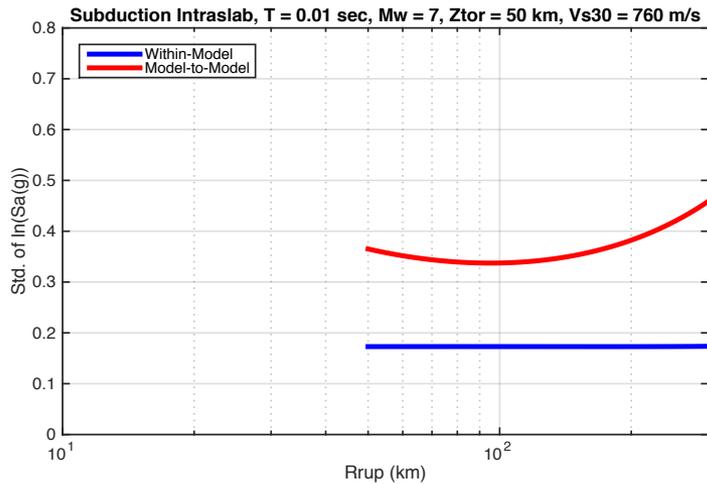
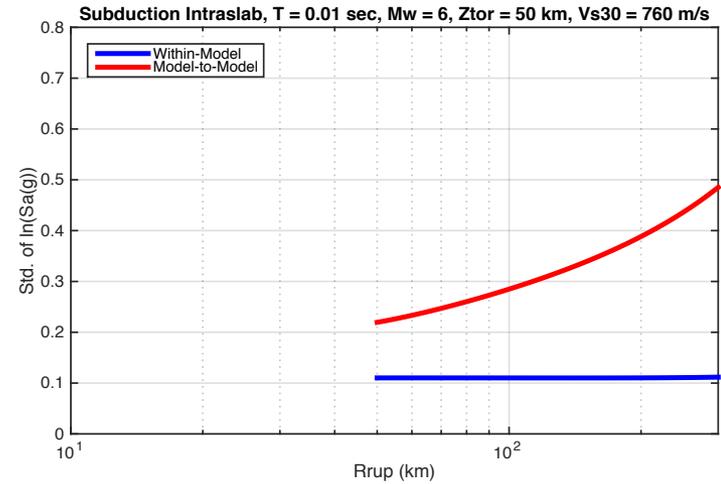
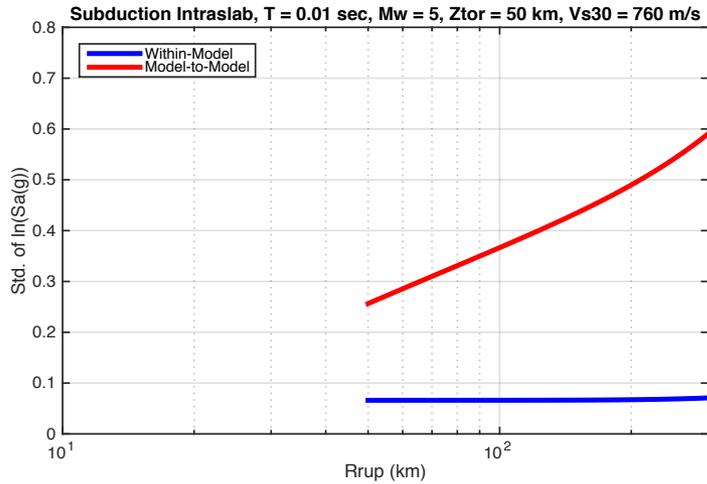
Period vs. Epistemic Uncertainty



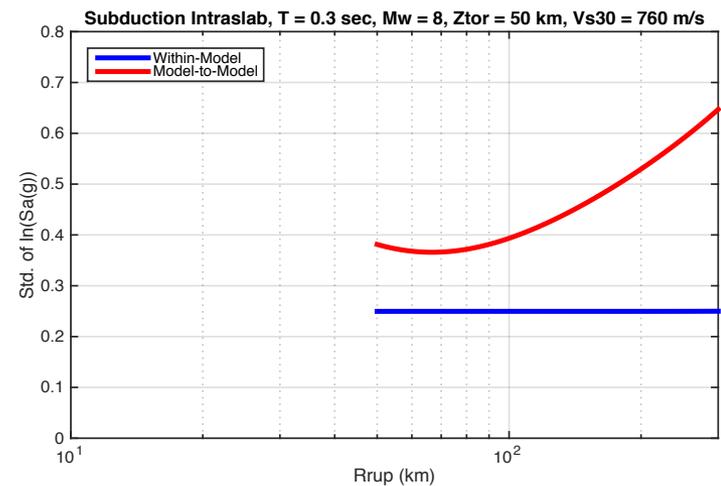
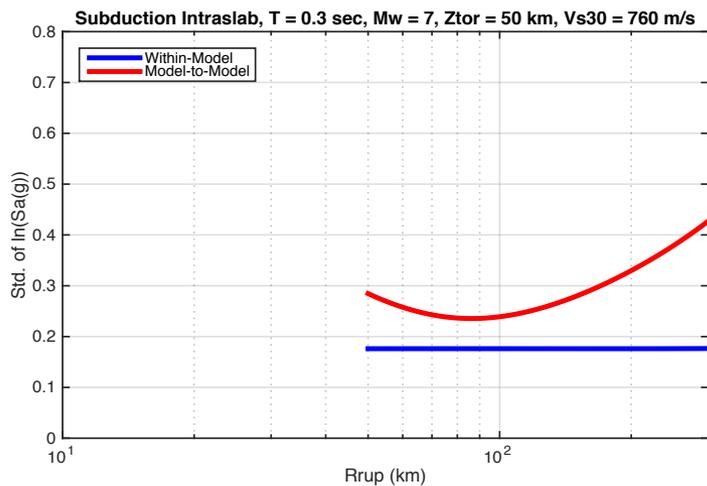
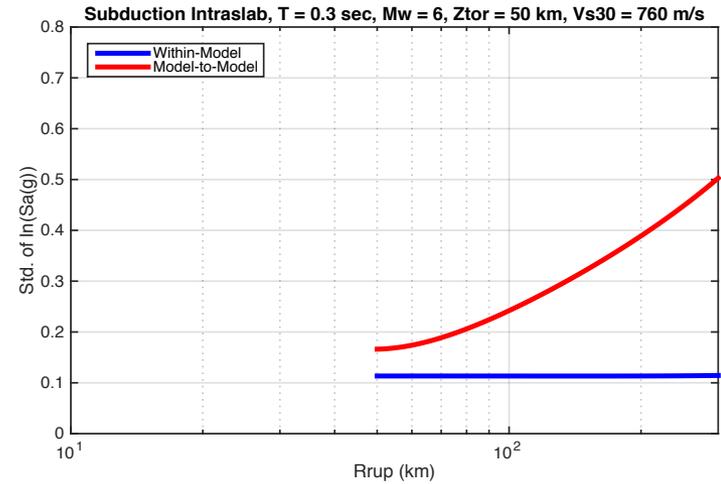
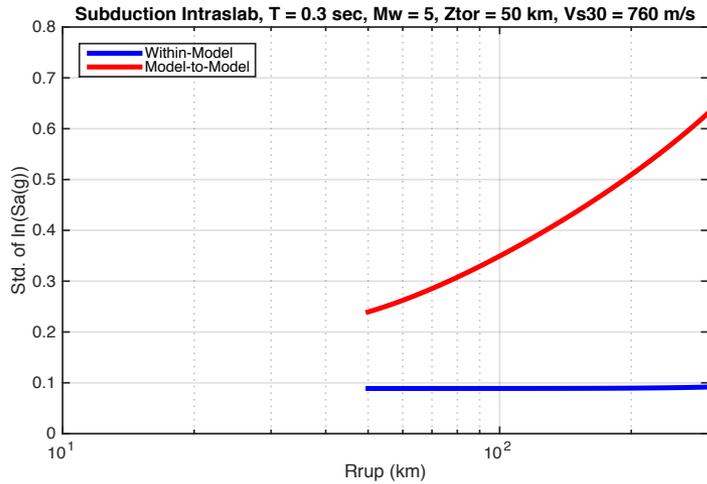
Magnitude vs. Epistemic Uncertainty



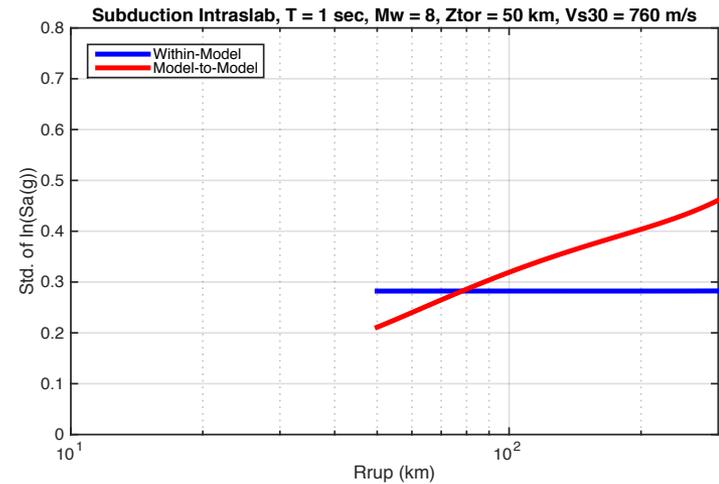
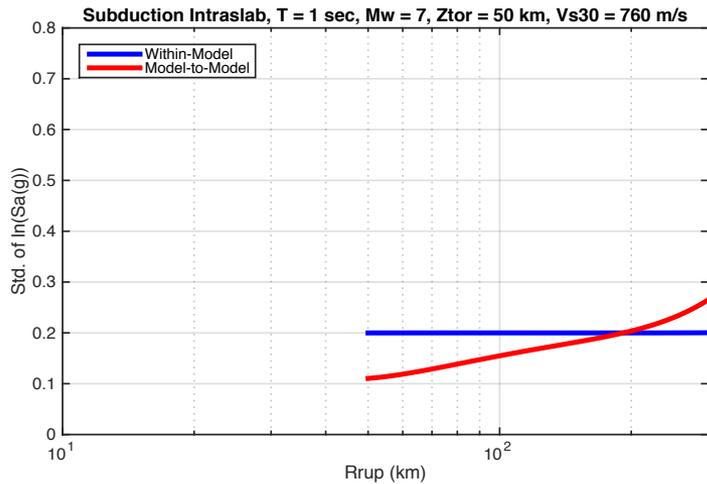
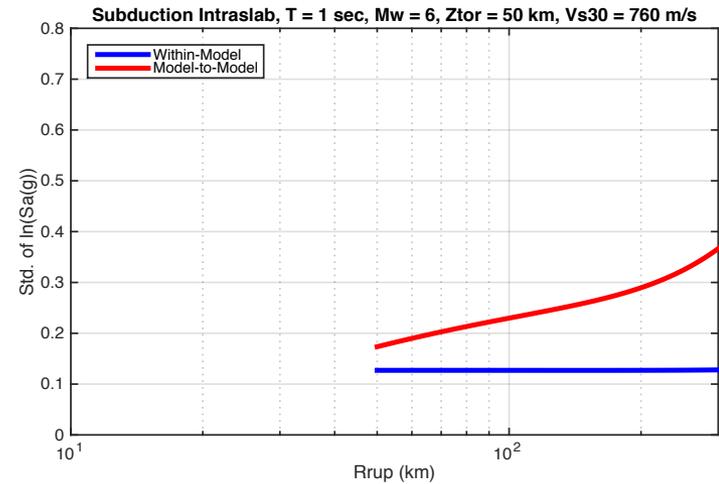
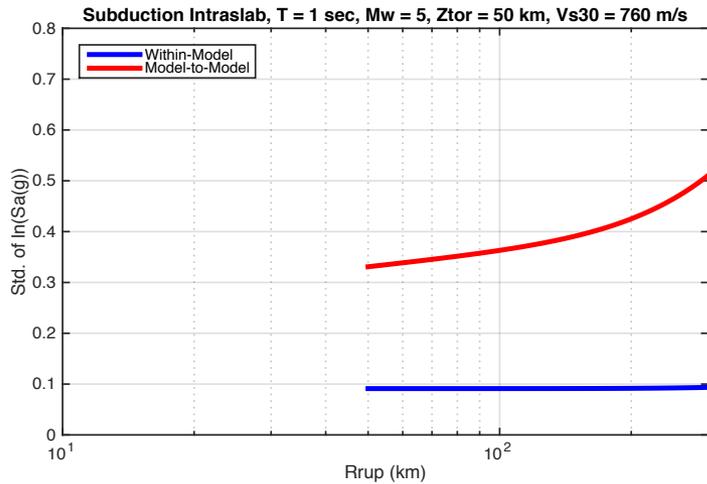
Distance vs. Epistemic Uncertainty for T 0.01 sec



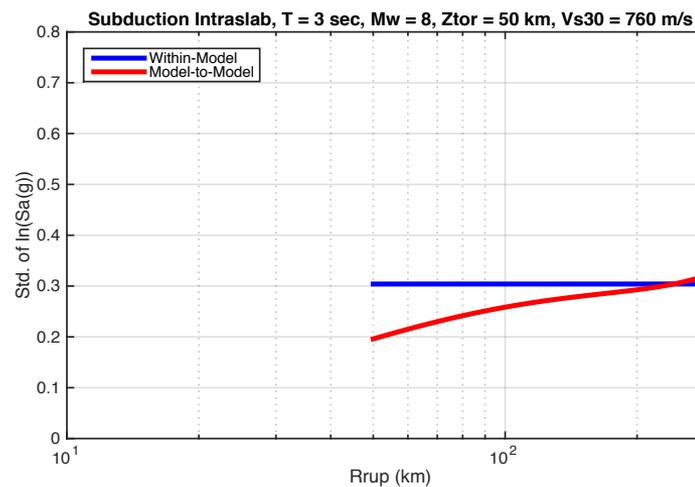
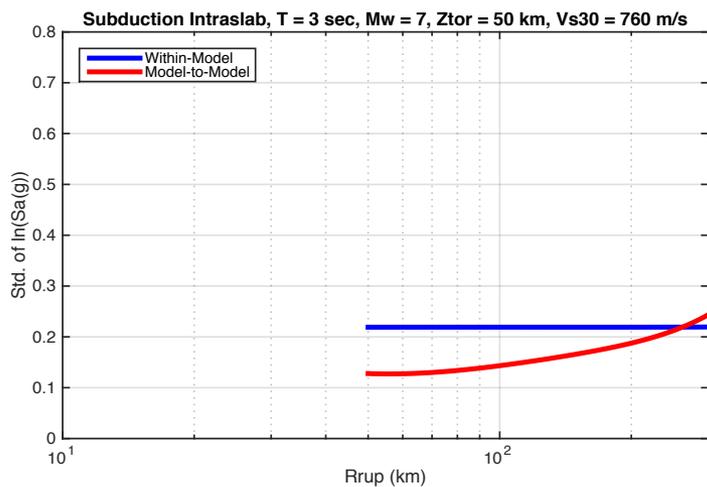
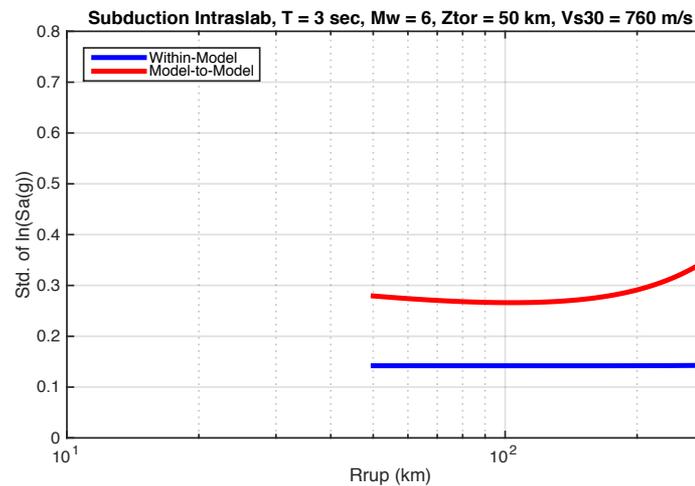
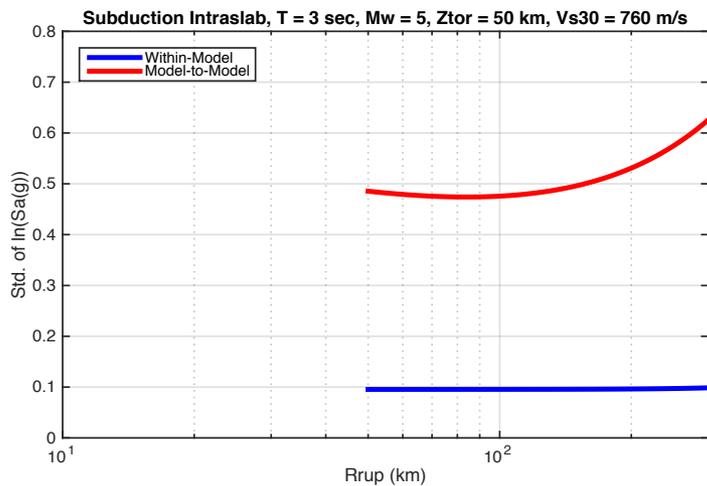
Distance vs. Epistemic Uncertainty for T 0.3 sec



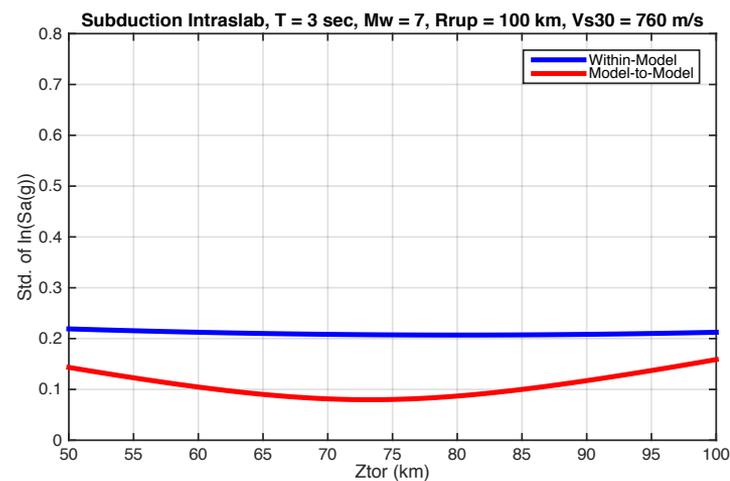
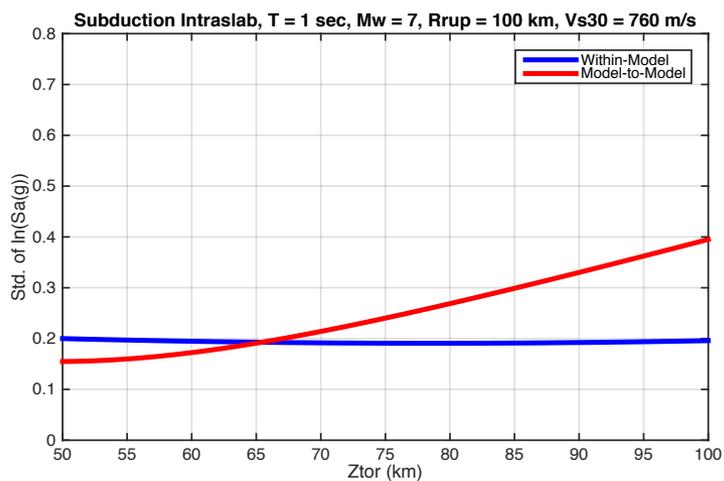
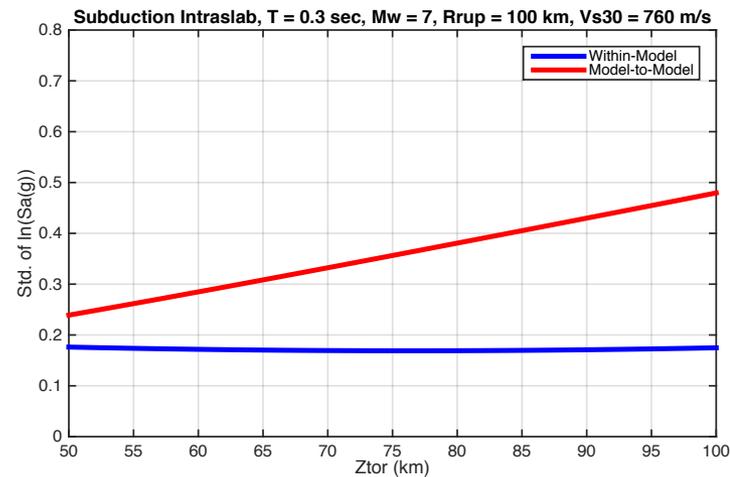
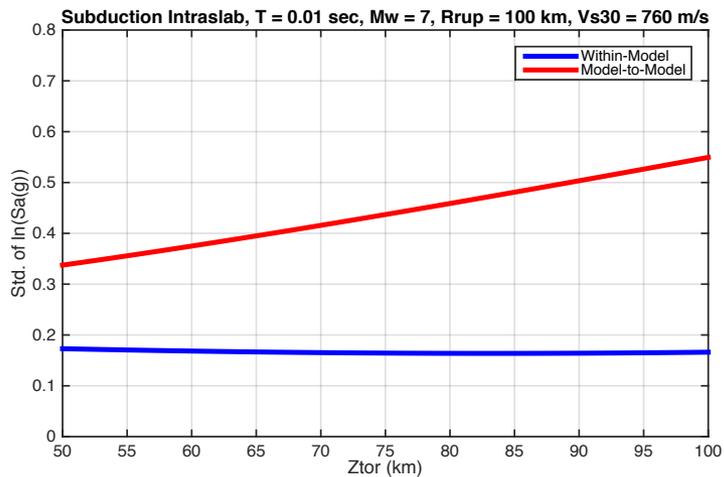
Distance vs. Epistemic Uncertainty for T 1.0 sec



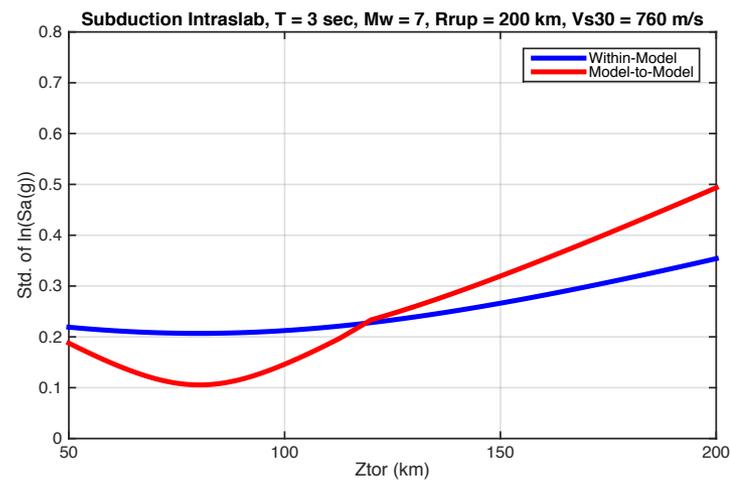
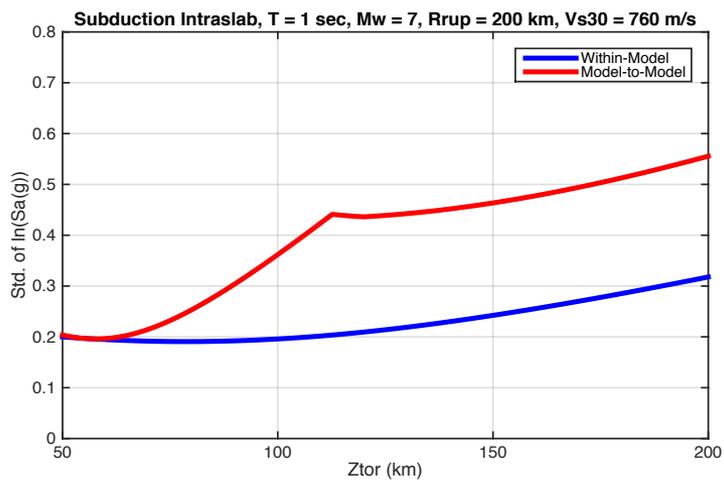
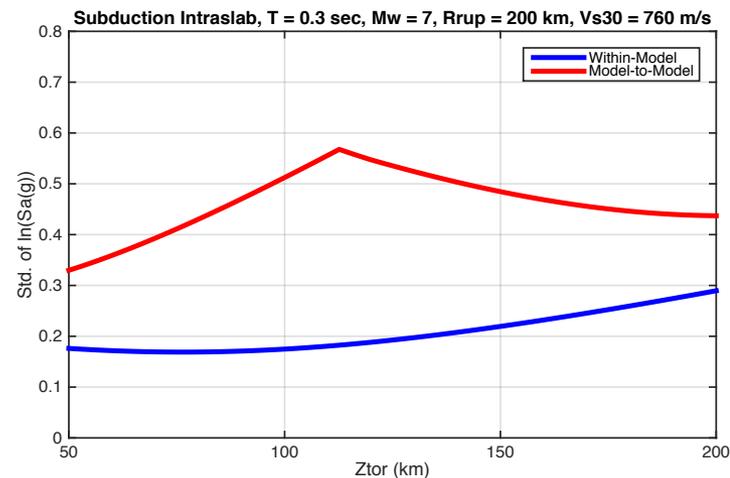
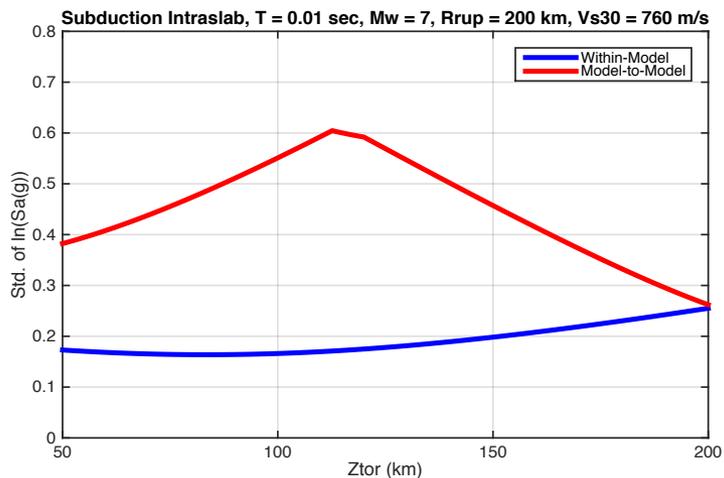
Distance vs. Epistemic Uncertainty for T 3.0 sec



Ztor vs. Epistemic Uncertainty for Mw 7.0 and Rrup 100 km



Ztor vs. Epistemic Uncertainty for Mw 7.0 and Rrup 200 km



Thank You for Your Attention !!

Questions ?

Summary and Discussion
