

Appendix: Residual Plots

KBCG 19

January 2020

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1 Within-Event Residuals

1.1 Global V_{S30}

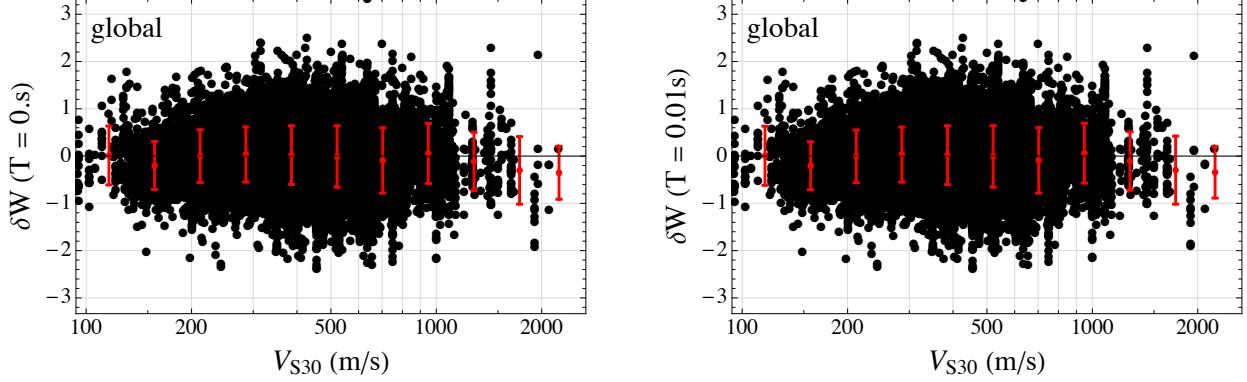


Figure 1: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.$ sec (left) and $T = 0.01$ sec (right) for the global model.

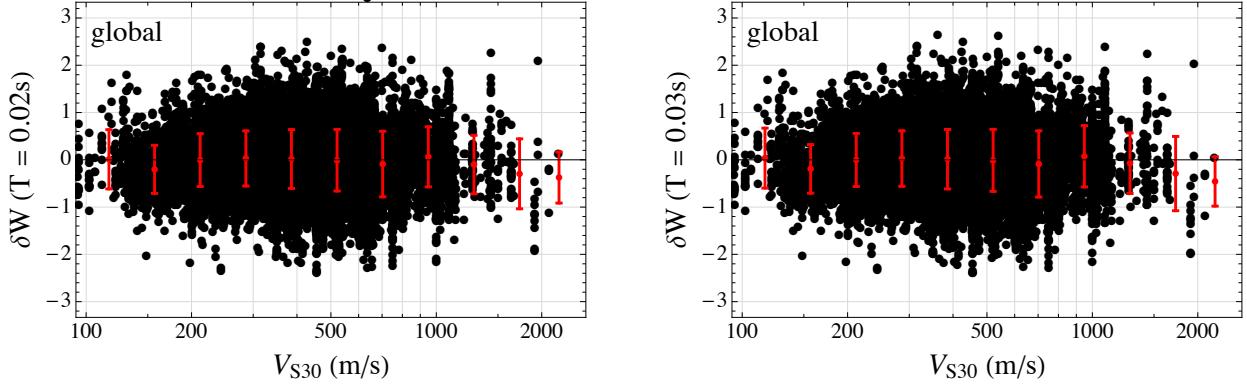


Figure 2: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.02$ sec (left) and $T = 0.03$ sec (right) for the global model.

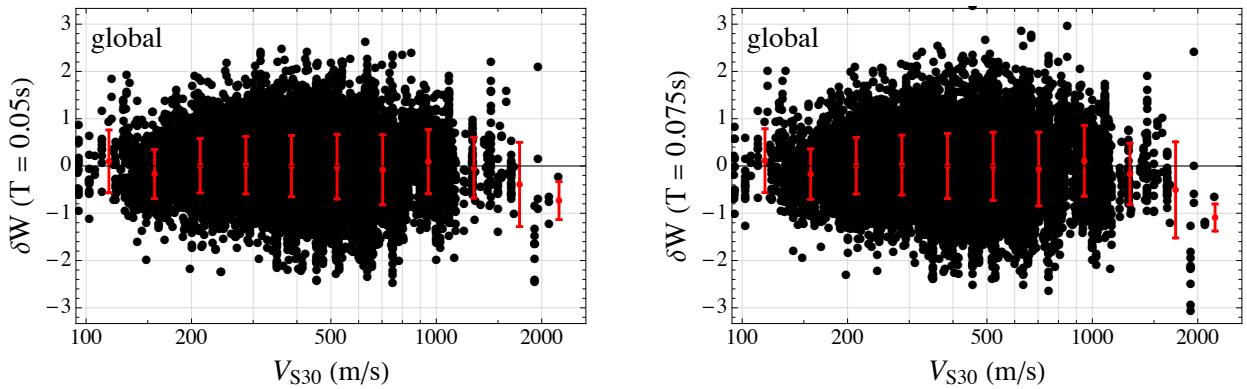


Figure 3: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.05$ sec (left) and $T = 0.075$ sec (right) for the global model.

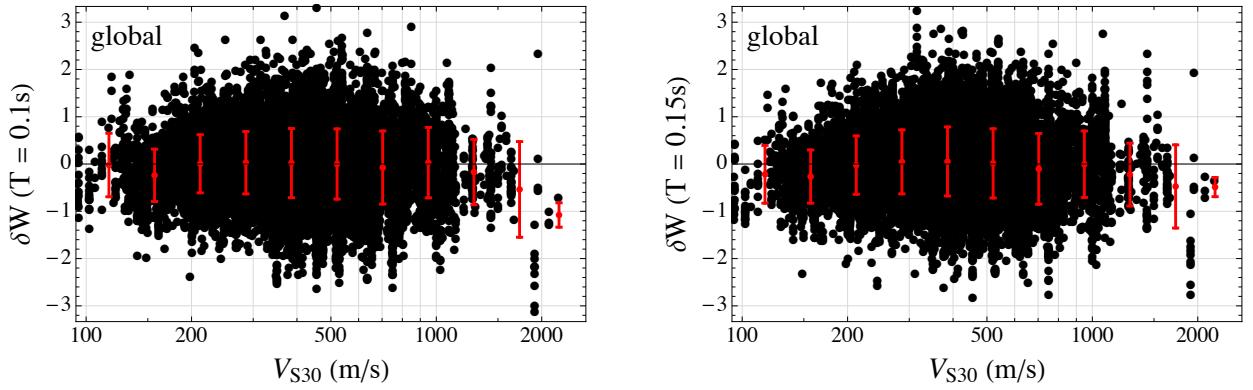


Figure 4: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.1$ sec (left) and $T = 0.15$ sec (right) for the global model.

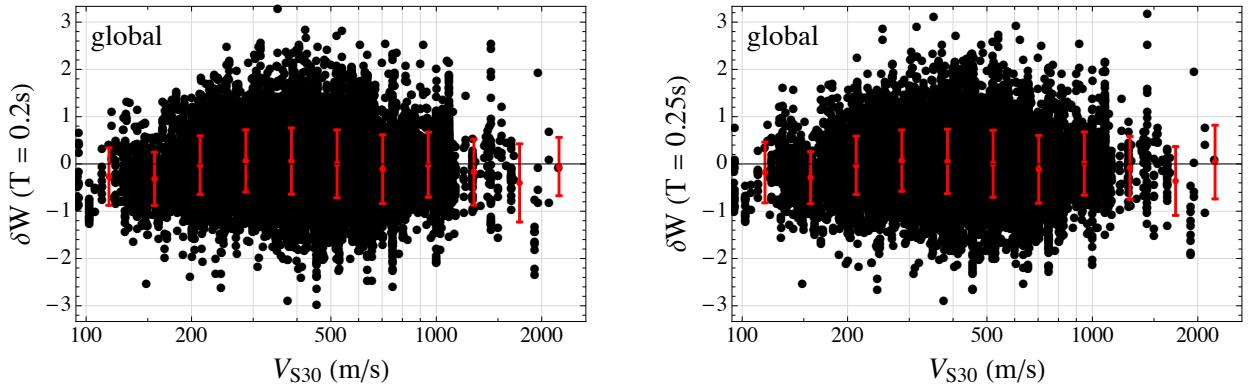


Figure 5: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.2$ sec (left) and $T = 0.25$ sec (right) for the global model.

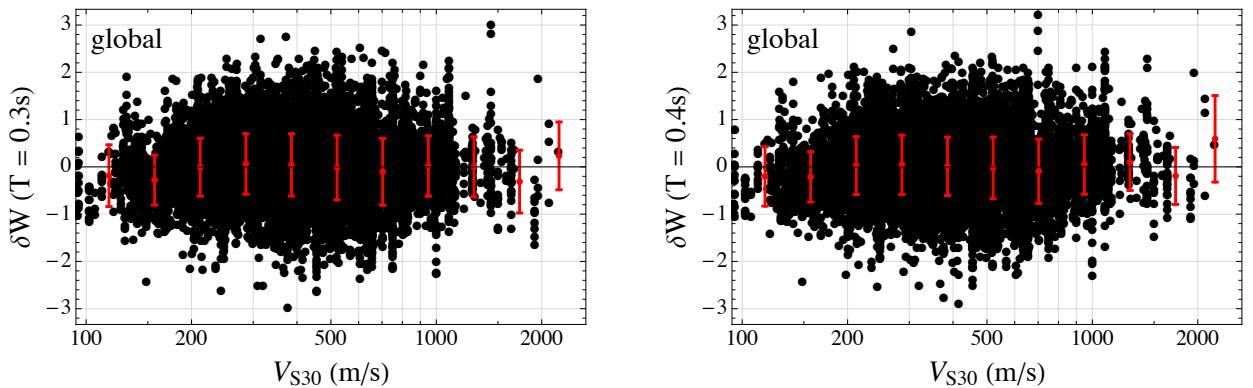


Figure 6: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.3$ sec (left) and $T = 0.4$ sec (right) for the global model.

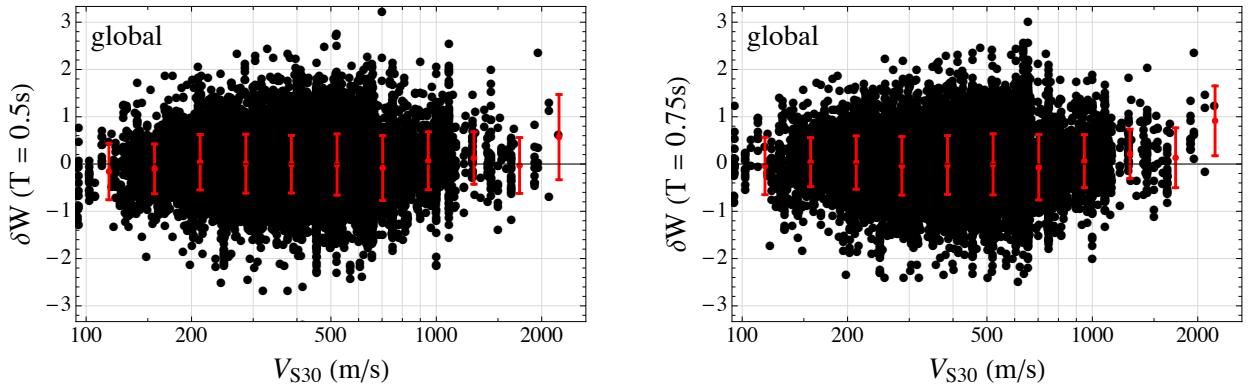


Figure 7: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.5$ sec (left) and $T = 0.75$ sec (right) for the global model.

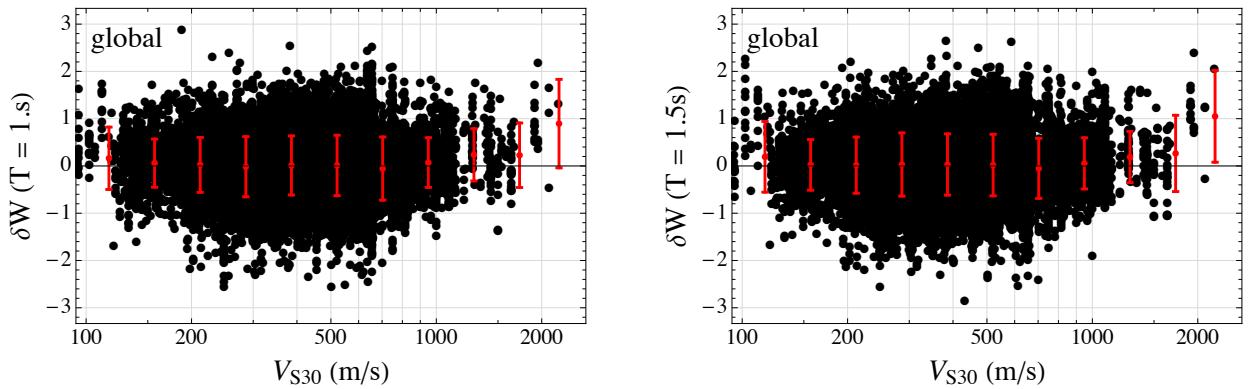


Figure 8: Plot of within-event residuals versus V_{S30} and PSA at $T = 1.$ sec (left) and $T = 1.5$ sec (right) for the global model.

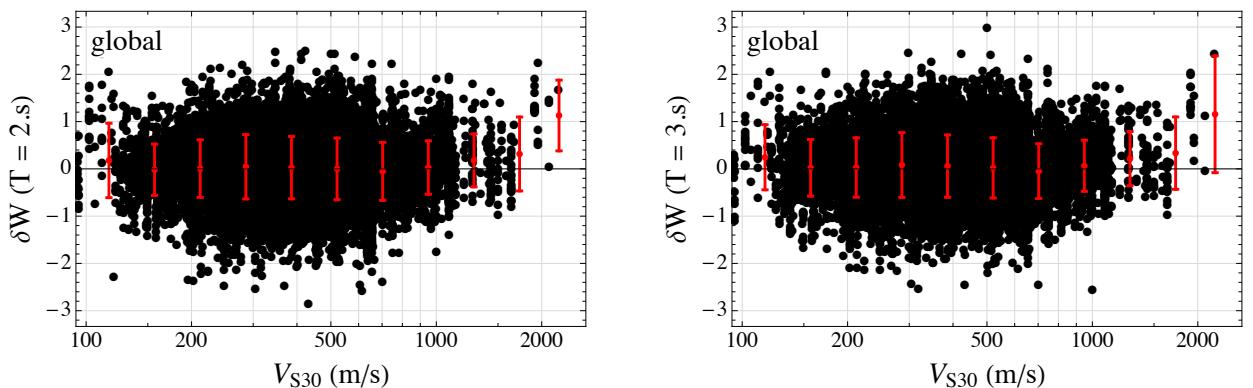


Figure 9: Plot of within-event residuals versus V_{S30} and PSA at $T = 2.$ sec (left) and $T = 3.$ sec (right) for the global model.

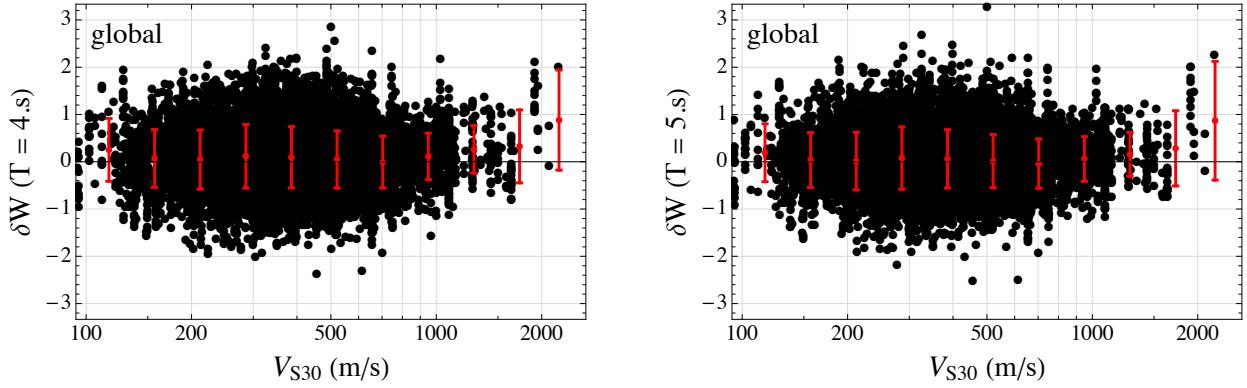


Figure 10: Plot of within-event residuals versus V_{S30} and PSA at $T = 4.$ sec (left) and $T = 5.$ sec (right) for the global model.

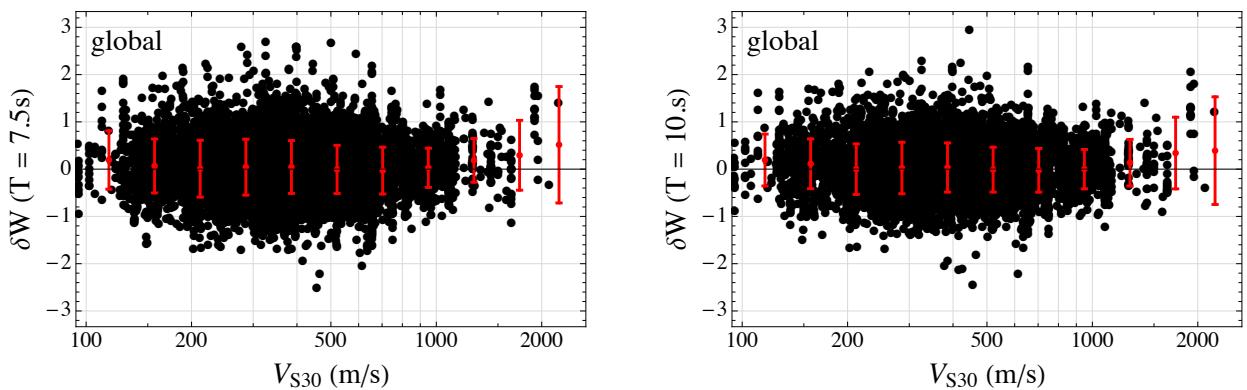


Figure 11: Plot of within-event residuals versus V_{S30} and PSA at $T = 7.5$ sec (left) and $T = 10.$ sec (right) for the global model.

1.2 Alaska V_{S30}

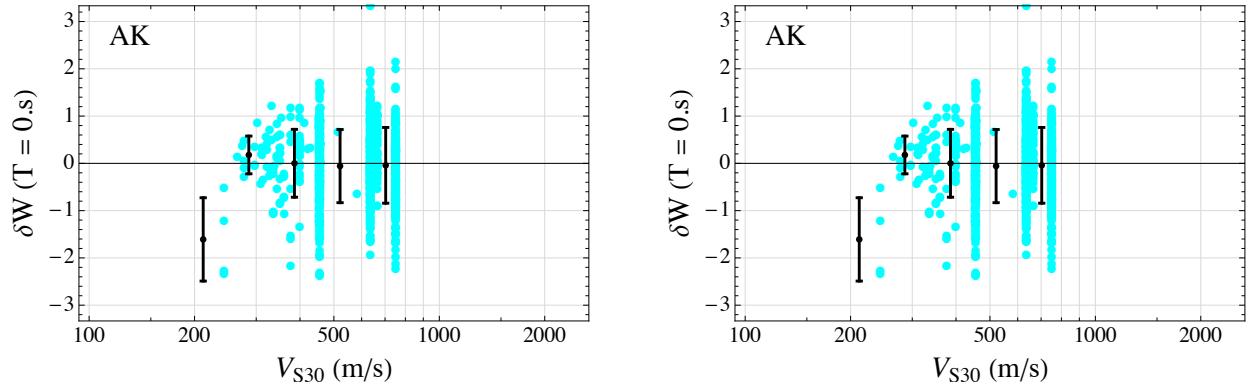


Figure 12: Plot of within-event residuals versus V_{S30} and PSA at $T = 0$. sec (left) and $T = 0.01$ sec (right) for Alaska.

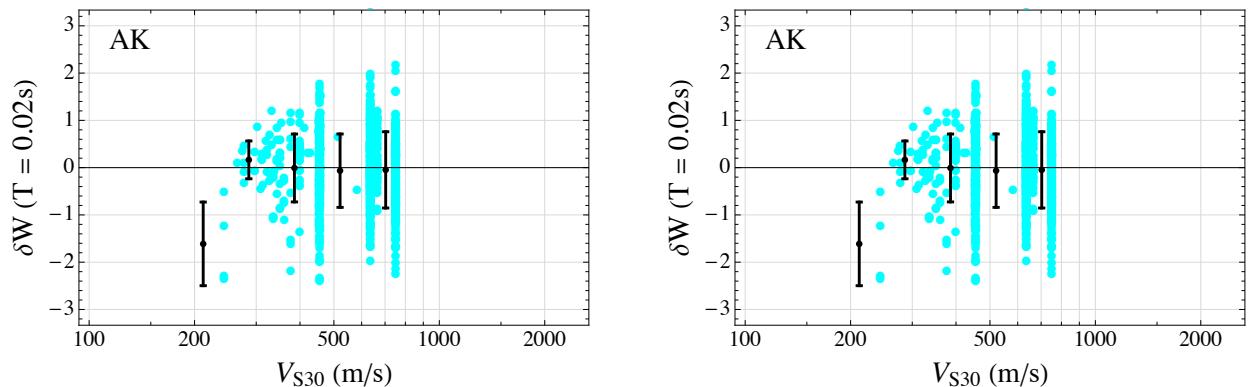


Figure 13: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.02$ sec (left) and $T = 0.03$ sec (right) for Alaska.

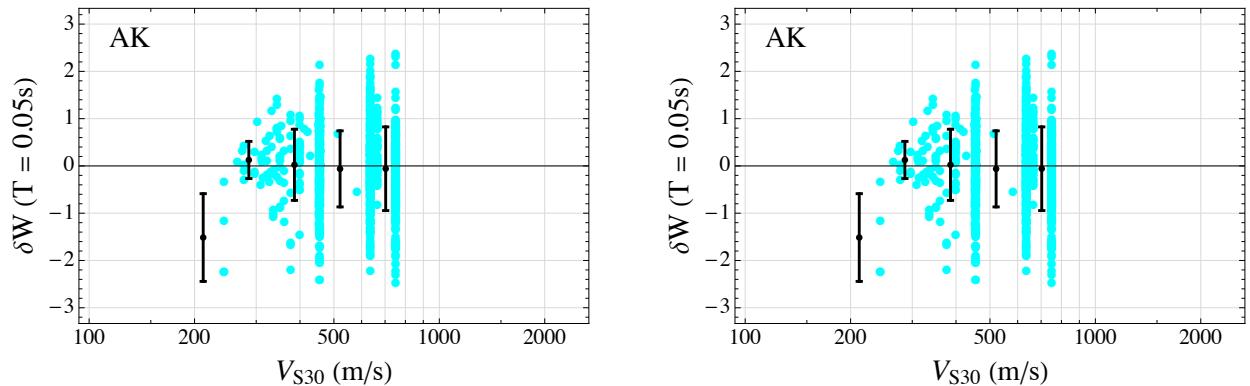


Figure 14: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.05$ sec (left) and $T = 0.075$ sec (right) for Alaska.

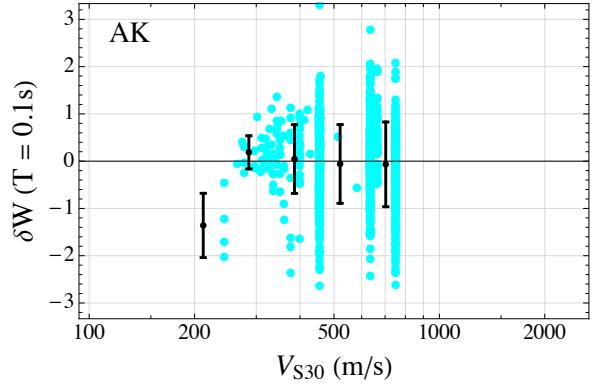
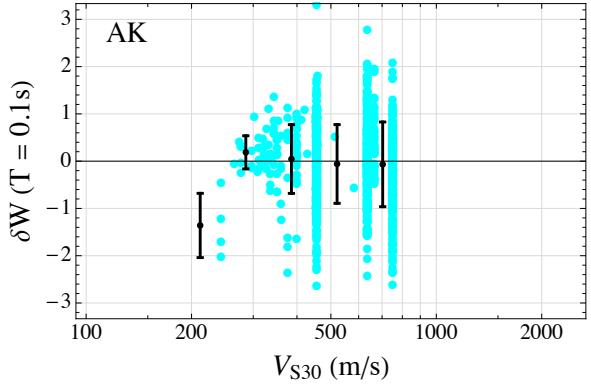


Figure 15: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.1$ sec (left) and $T = 0.15$ sec (right) for Alaska.

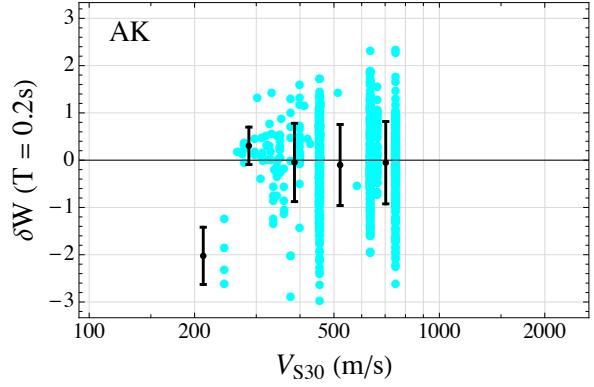
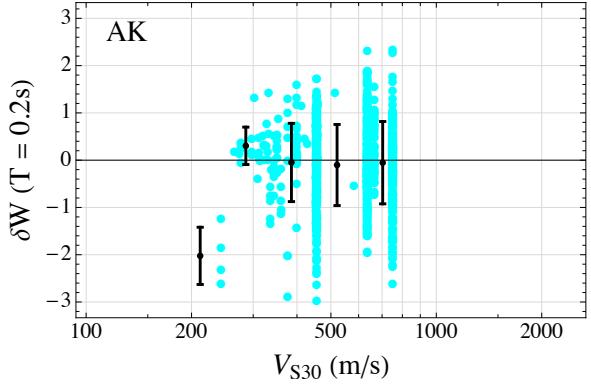


Figure 16: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.2$ sec (left) and $T = 0.25$ sec (right) for Alaska.

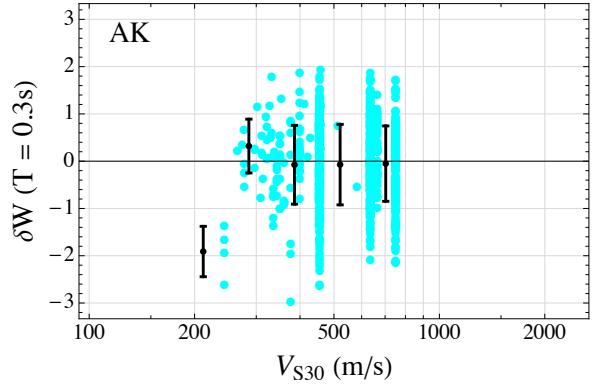
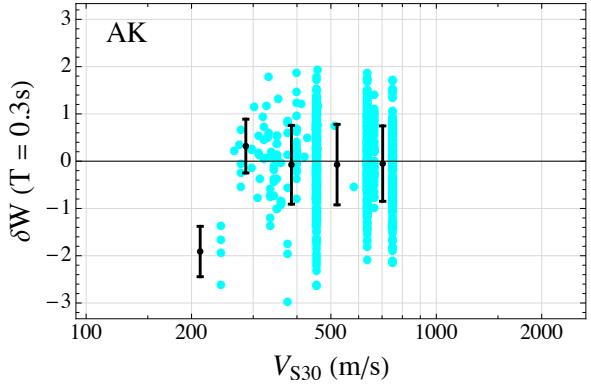


Figure 17: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.3$ sec (left) and $T = 0.4$ sec (right) for Alaska.

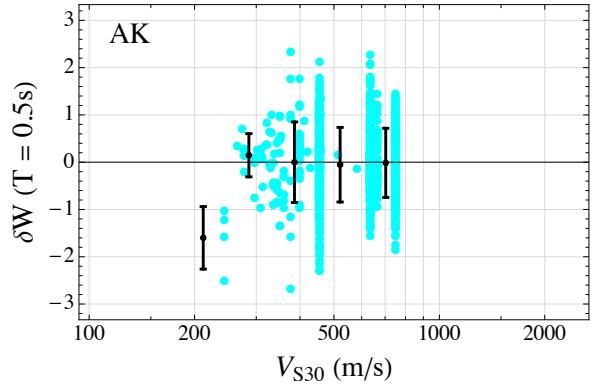
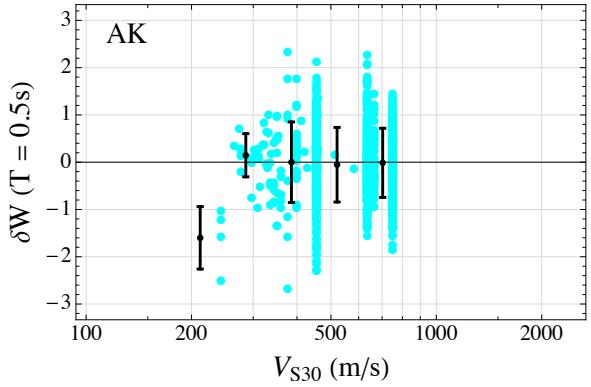


Figure 18: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.5$ sec (left) and $T = 0.75$ sec (right) for Alaska.

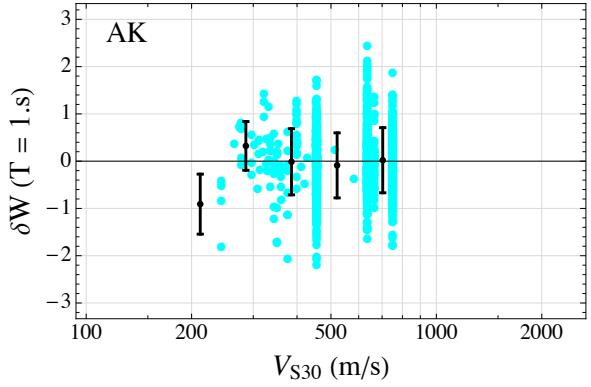
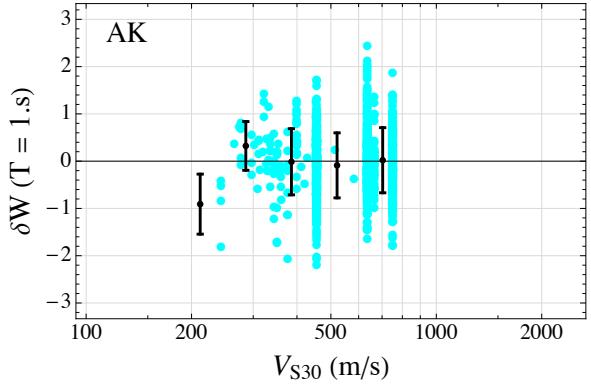


Figure 19: Plot of within-event residuals versus V_{S30} and PSA at $T = 1.$ sec (left) and $T = 1.5$ sec (right) for Alaska.

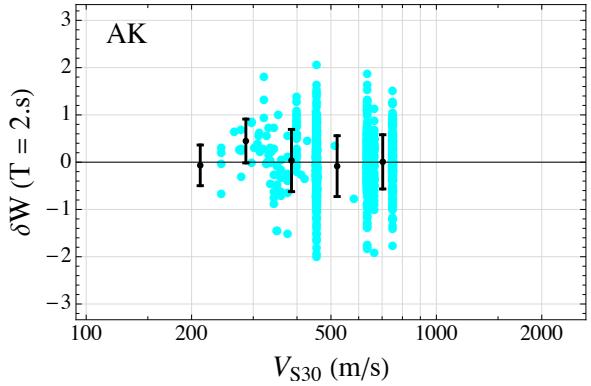
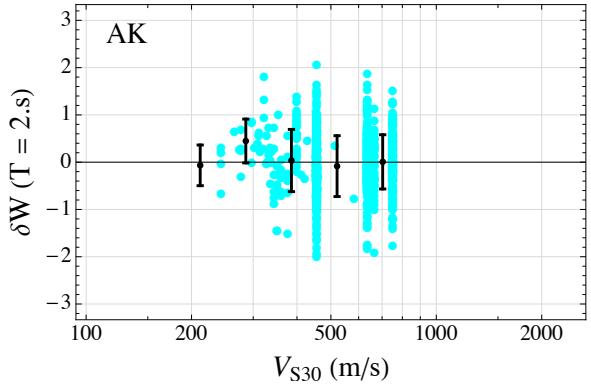


Figure 20: Plot of within-event residuals versus V_{S30} and PSA at $T = 2.$ sec (left) and $T = 3.$ sec (right) for Alaska.

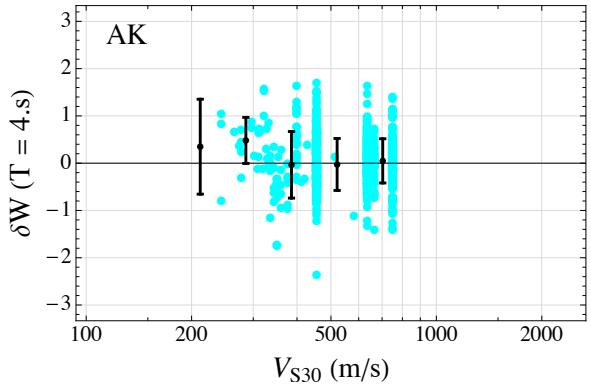
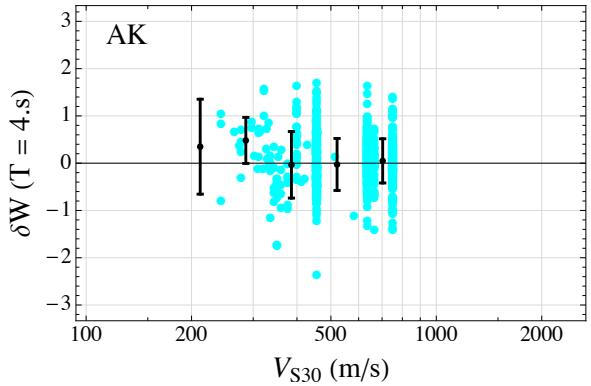


Figure 21: Plot of within-event residuals versus V_{S30} and PSA at $T = 4.$ sec (left) and $T = 5.$ sec (right) for Alaska.

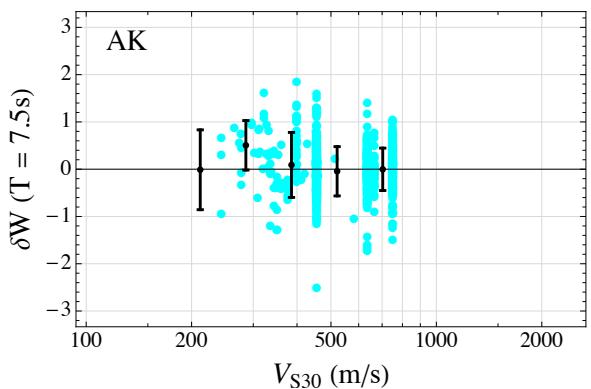
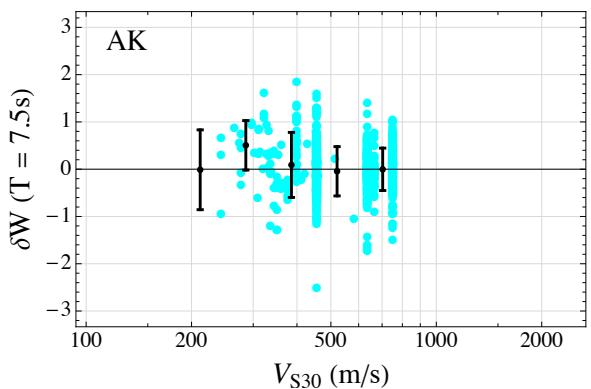


Figure 22: Plot of within-event residuals versus V_{S30} and PSA at $T = 7.5$ sec (left) and $T = 10.$ sec (right) for Alaska.

1.3 Cascadia V_{S30}

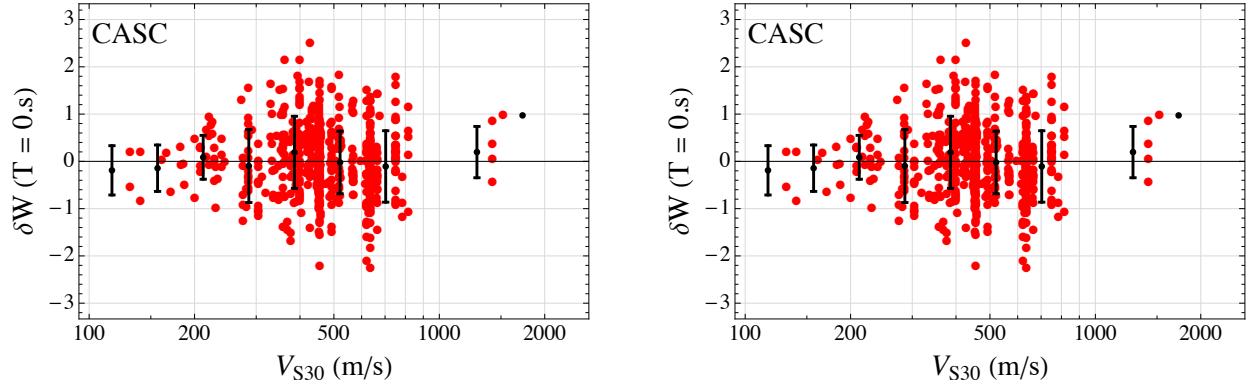


Figure 23: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.$ sec (left) and $T = 0.01$ sec (right) for Cascadia.

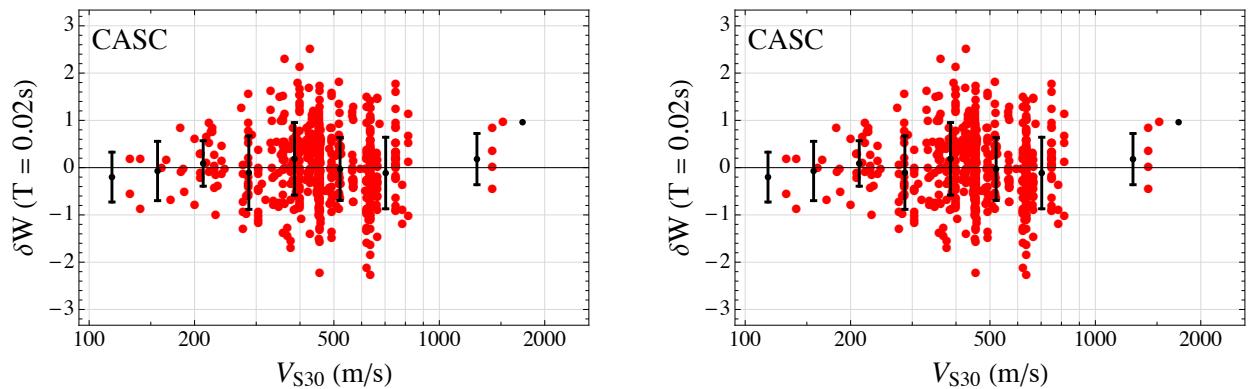


Figure 24: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.02$ sec (left) and $T = 0.03$ sec (right) for Cascadia.

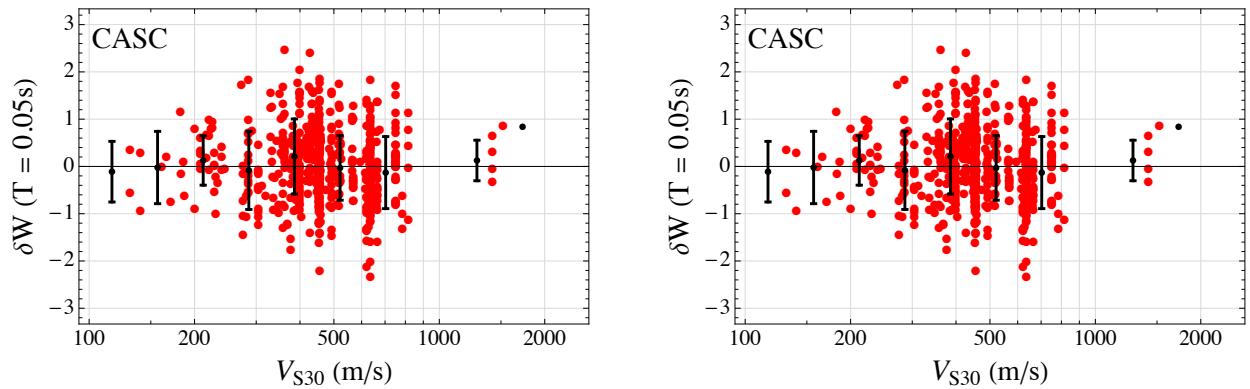


Figure 25: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.05$ sec (left) and $T = 0.075$ sec (right) for Cascadia.

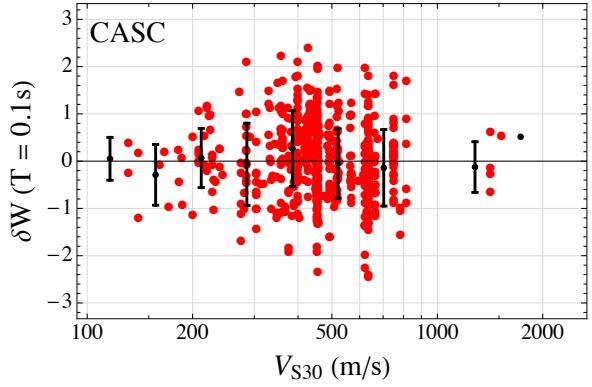
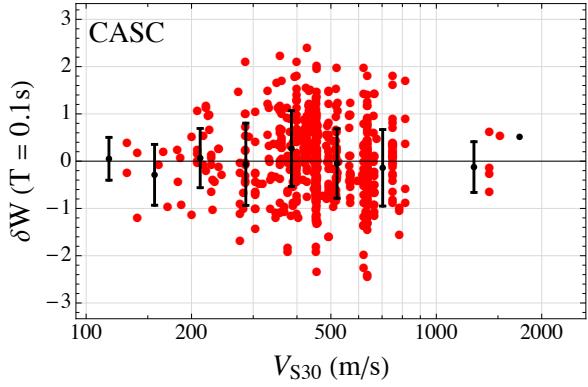


Figure 26: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.1$ sec (left) and $T = 0.15$ sec (right) for Cascadia.

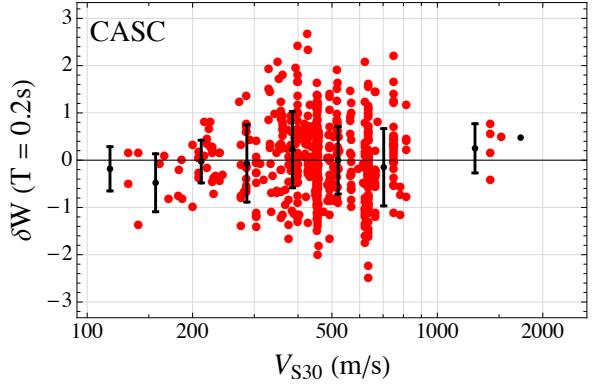
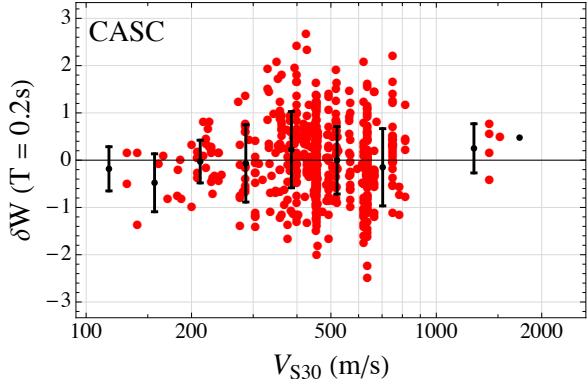


Figure 27: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.2$ sec (left) and $T = 0.25$ sec (right) for Cascadia.

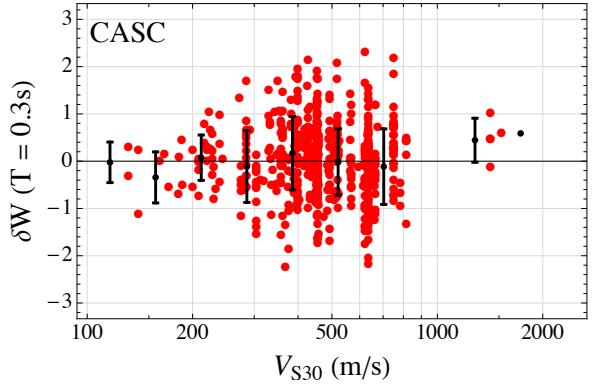
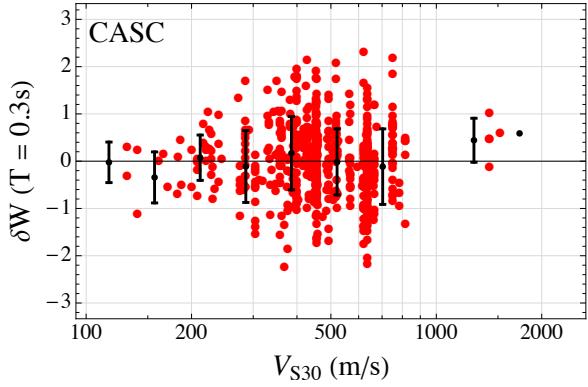


Figure 28: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.3$ sec (left) and $T = 0.4$ sec (right) for Cascadia.

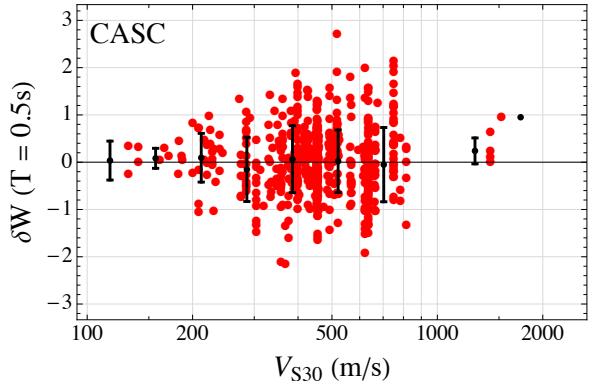
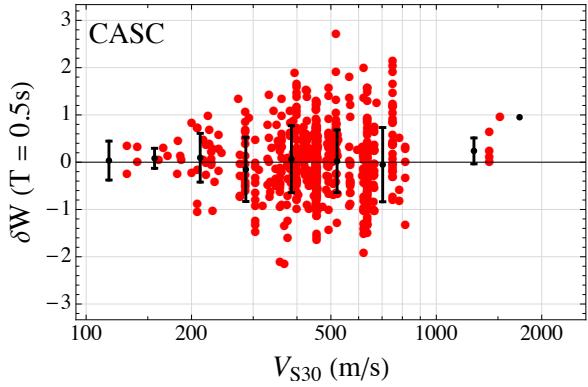


Figure 29: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.5$ sec (left) and $T = 0.75$ sec (right) for Cascadia.

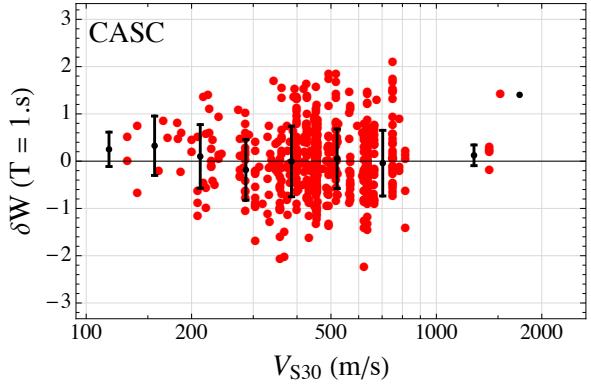
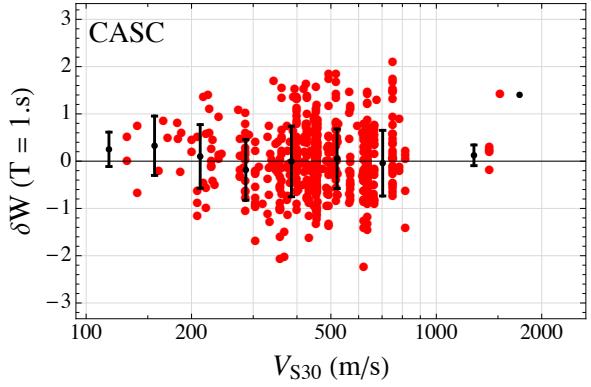


Figure 30: Plot of within-event residuals versus V_{S30} and PSA at $T = 1.$ sec (left) and $T = 1.5$ sec (right) for Cascadia.

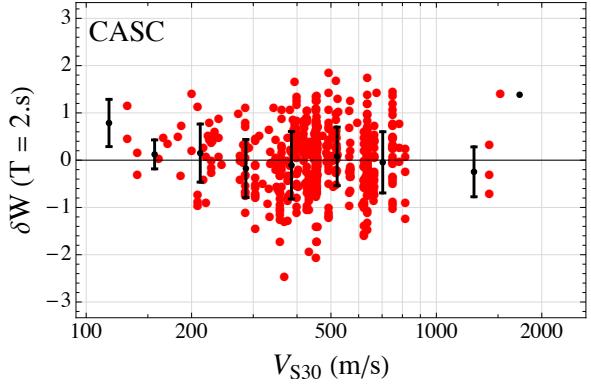
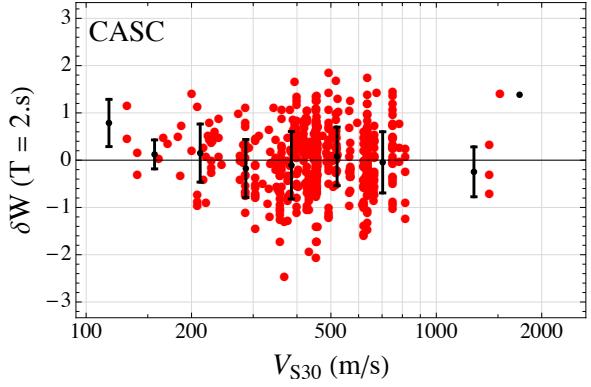


Figure 31: Plot of within-event residuals versus V_{S30} and PSA at $T = 2.$ sec (left) and $T = 3.$ sec (right) for Cascadia.

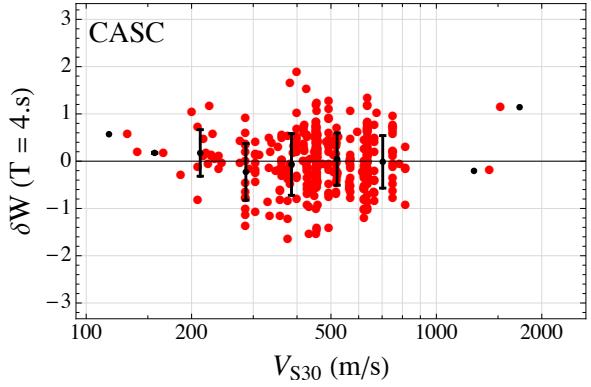
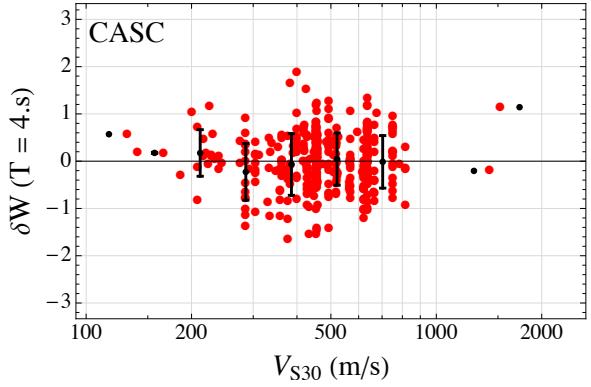


Figure 32: Plot of within-event residuals versus V_{S30} and PSA at $T = 4.$ sec (left) and $T = 5.$ sec (right) for Cascadia.

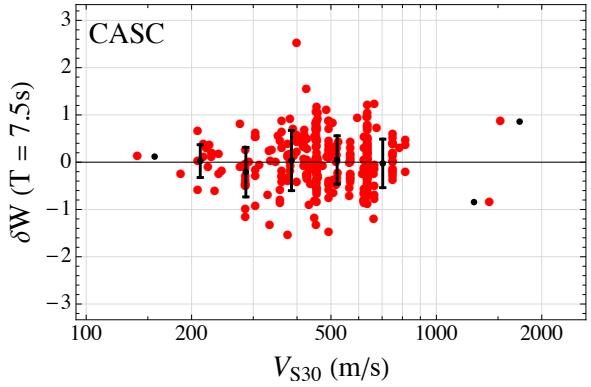
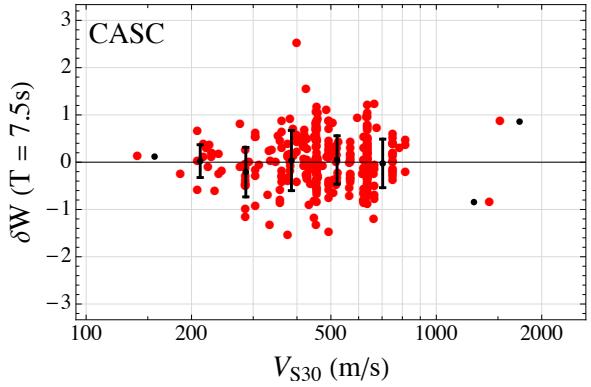


Figure 33: Plot of within-event residuals versus V_{S30} and PSA at $T = 7.5$ sec (left) and $T = 10.$ sec (right) for Cascadia.

1.4 CentralAmericaMexico V_{S30}

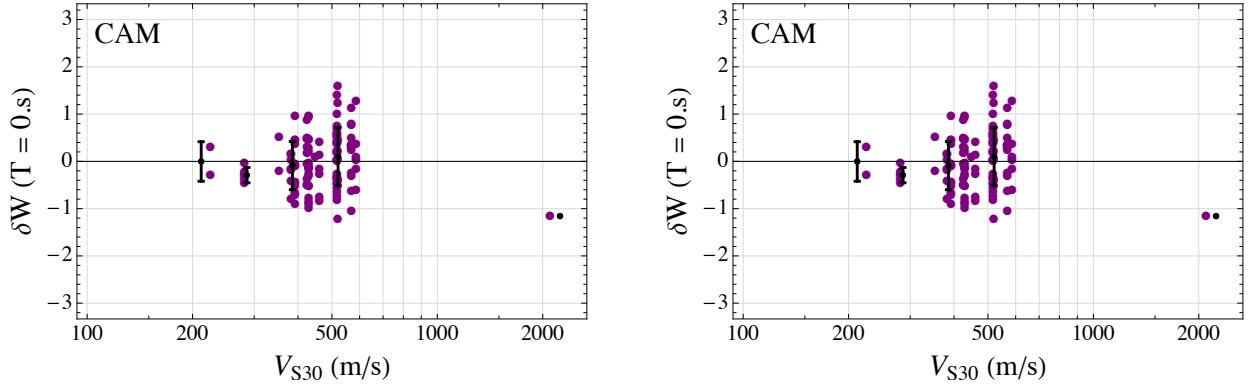


Figure 34: Plot of within-event residuals versus V_{S30} and PSA at $T = 0$. sec (left) and $T = 0.01$ sec (right) for CentralAmericaMexico.

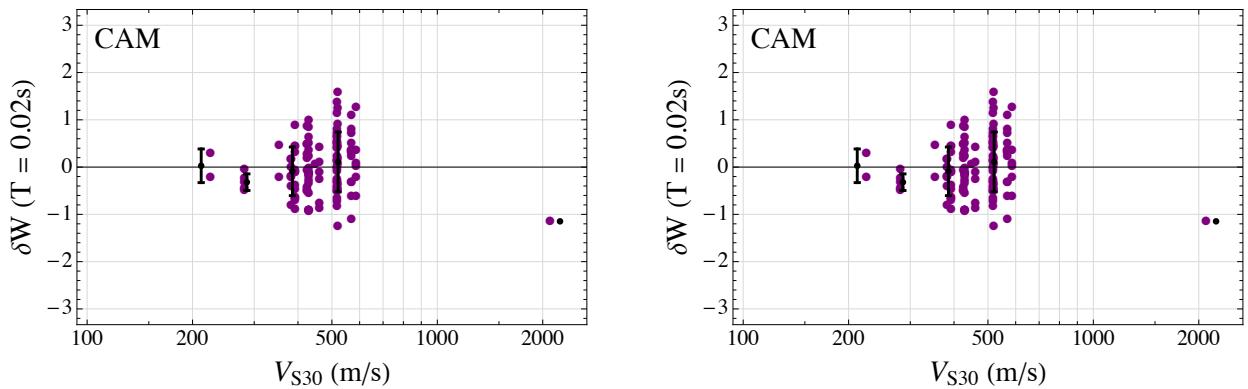


Figure 35: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.02$ sec (left) and $T = 0.03$ sec (right) for CentralAmericaMexico.

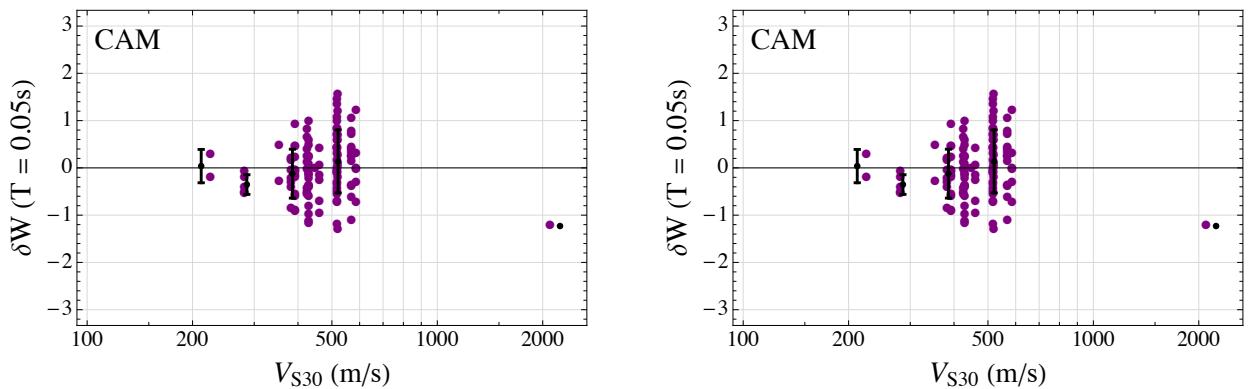


Figure 36: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.05$ sec (left) and $T = 0.075$ sec (right) for CentralAmericaMexico.

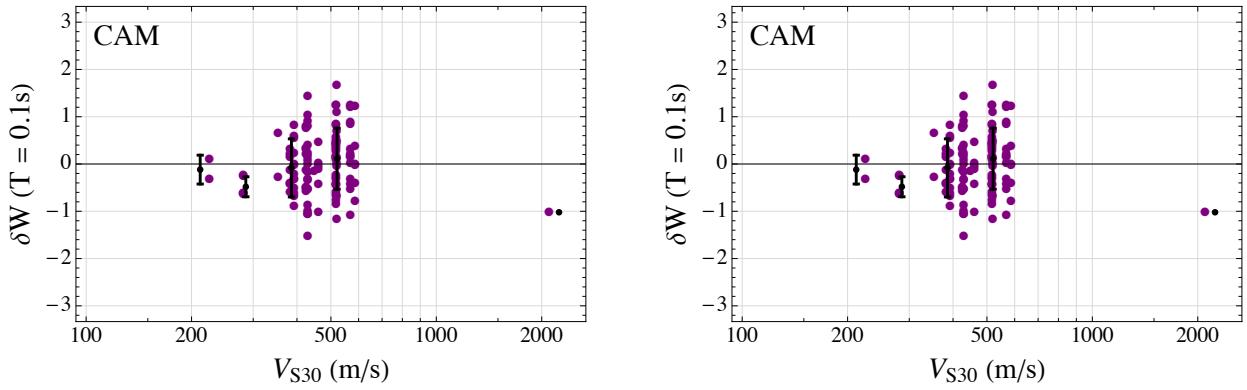


Figure 37: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.1$ sec (left) and $T = 0.15$ sec (right) for CentralAmericaMexico.

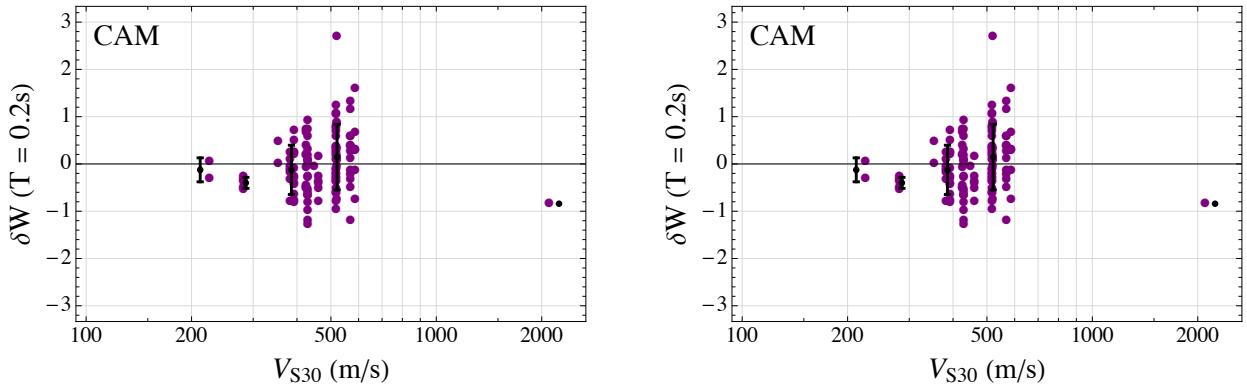


Figure 38: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.2$ sec (left) and $T = 0.25$ sec (right) for CentralAmericaMexico.

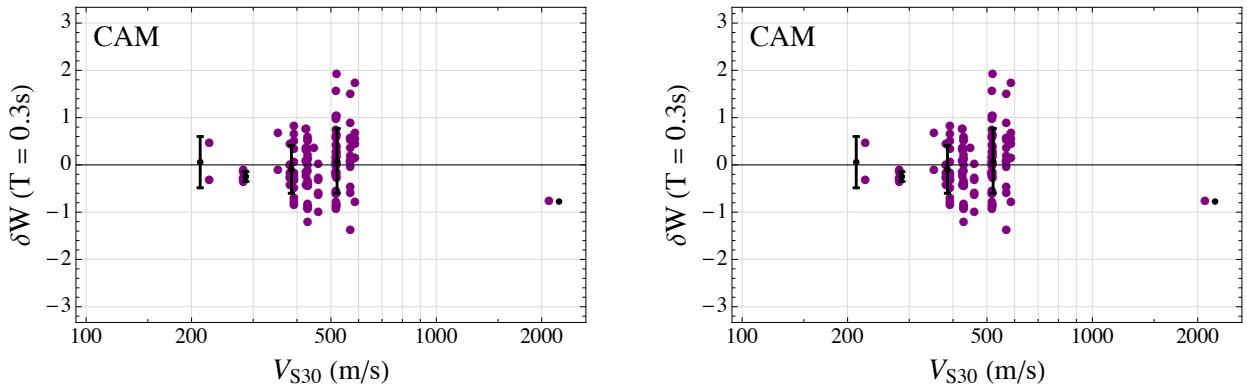


Figure 39: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.3$ sec (left) and $T = 0.4$ sec (right) for CentralAmericaMexico.

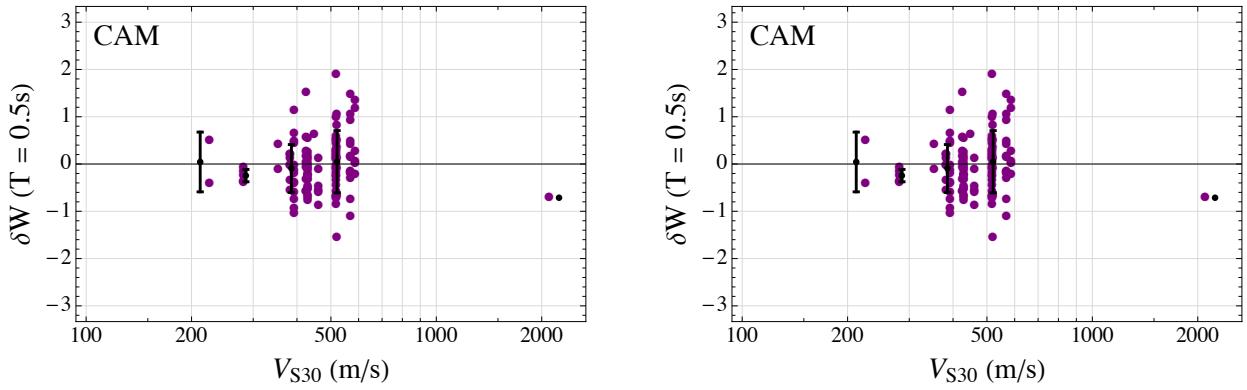


Figure 40: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.5$ sec (left) and $T = 0.75$ sec (right) for CentralAmericaMexico.

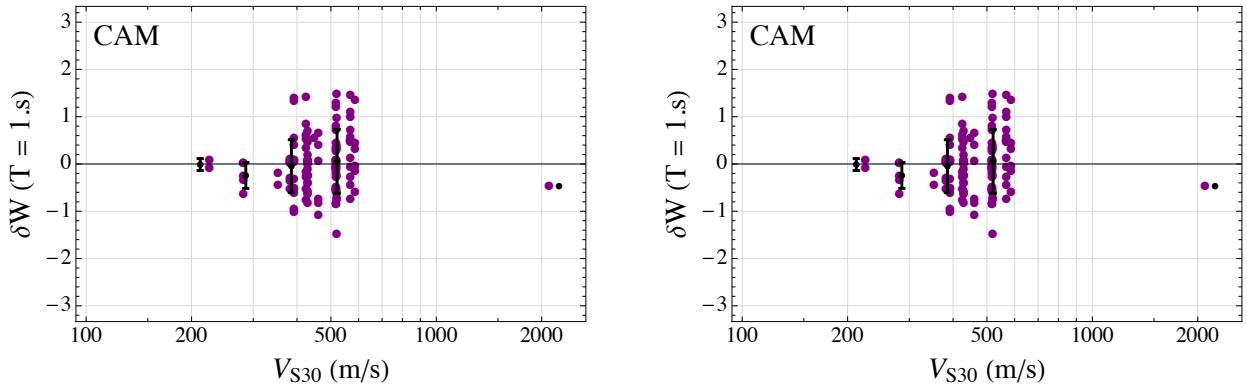


Figure 41: Plot of within-event residuals versus V_{S30} and PSA at $T = 1.$ sec (left) and $T = 1.5$ sec (right) for CentralAmericaMexico.

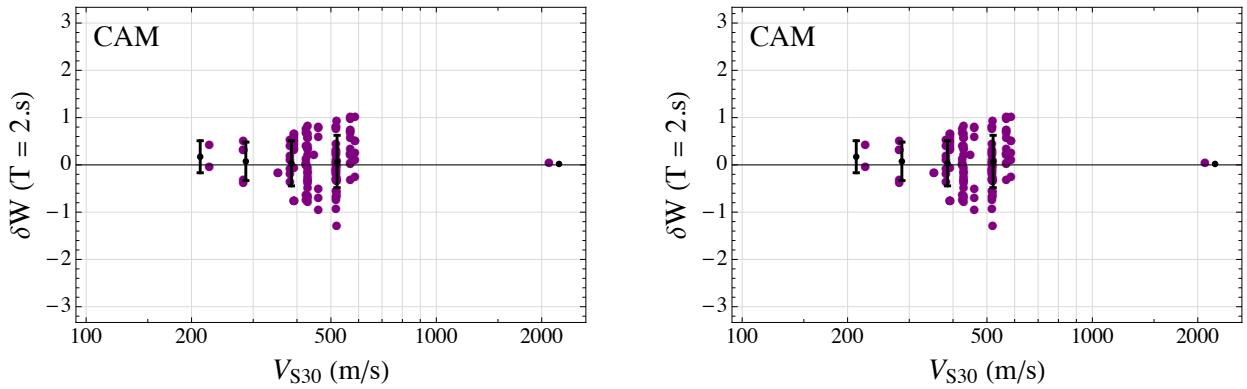


Figure 42: Plot of within-event residuals versus V_{S30} and PSA at $T = 2.$ sec (left) and $T = 3.$ sec (right) for CentralAmericaMexico.

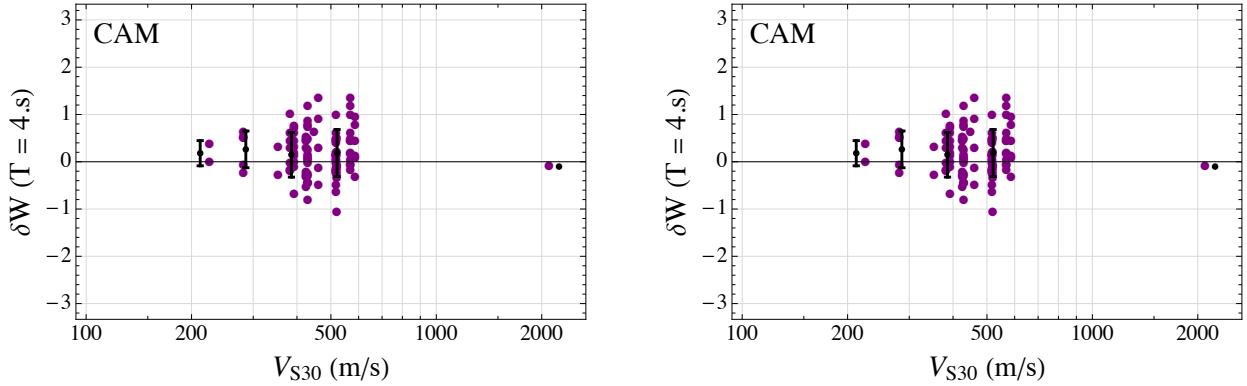


Figure 43: Plot of within-event residuals versus V_{S30} and PSA at $T = 4.$ sec (left) and $T = 5.$ sec (right) for CentralAmericaMexico.

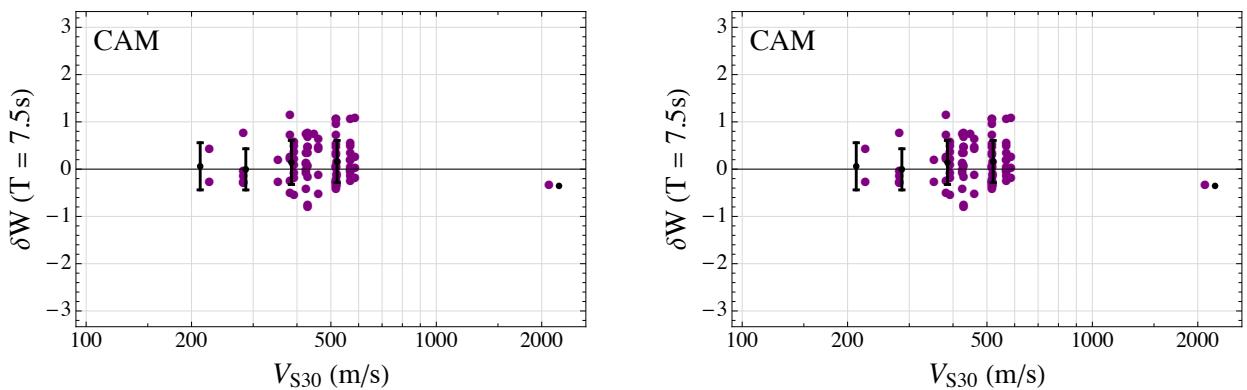


Figure 44: Plot of within-event residuals versus V_{S30} and PSA at $T = 7.5$ sec (left) and $T = 10.$ sec (right) for CentralAmericaMexico.

1.5 Japan V_{S30}

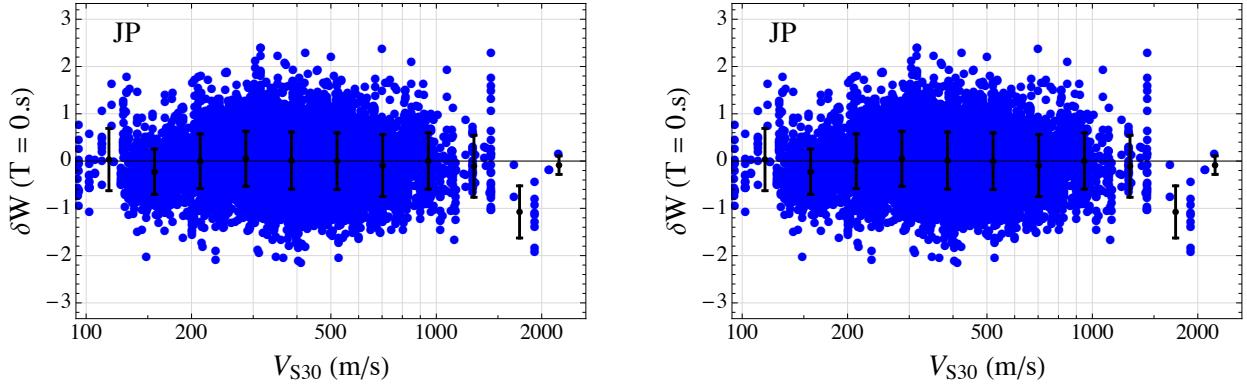


Figure 45: Plot of within-event residuals versus V_{S30} and PSA at $T = 0. \text{ sec}$ (left) and $T = 0.01 \text{ sec}$ (right) for Japan.

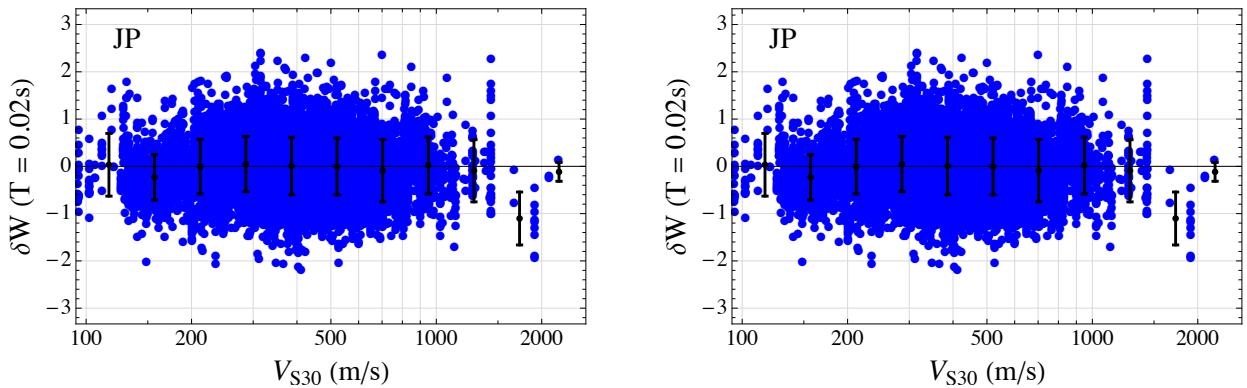


Figure 46: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.02 \text{ sec}$ (left) and $T = 0.03 \text{ sec}$ (right) for Japan.

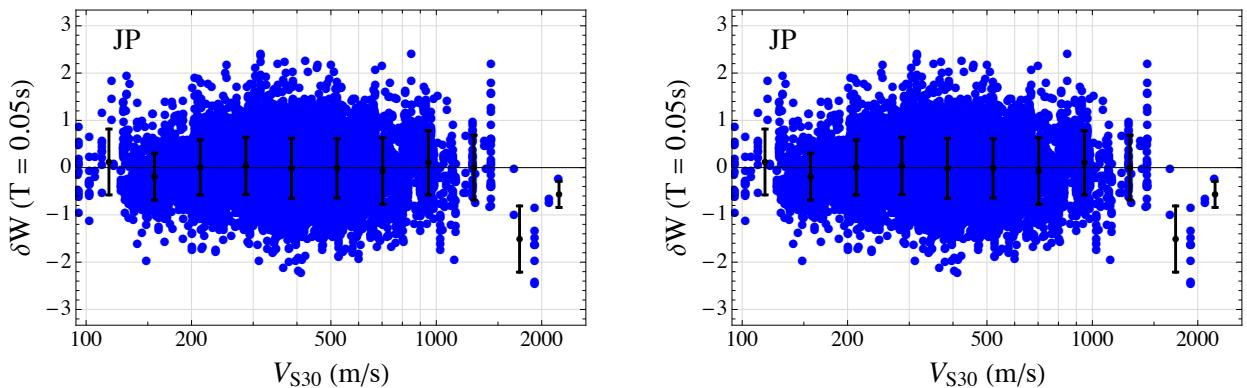


Figure 47: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.05 \text{ sec}$ (left) and $T = 0.075 \text{ sec}$ (right) for Japan.

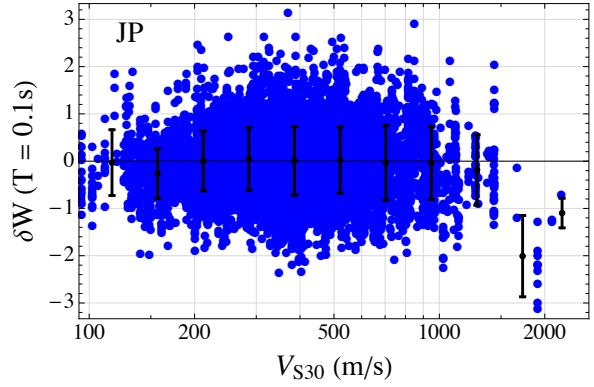
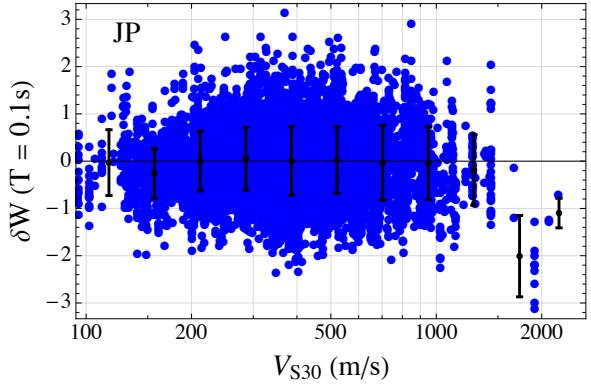


Figure 48: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.1$ sec (left) and $T = 0.15$ sec (right) for Japan.

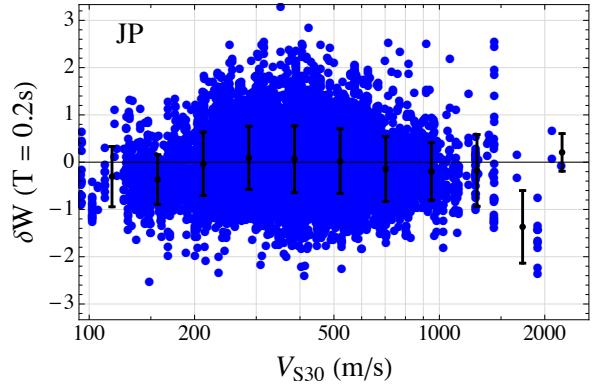
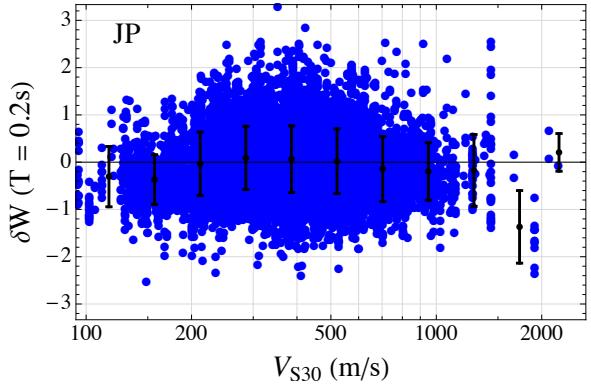


Figure 49: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.2$ sec (left) and $T = 0.25$ sec (right) for Japan.

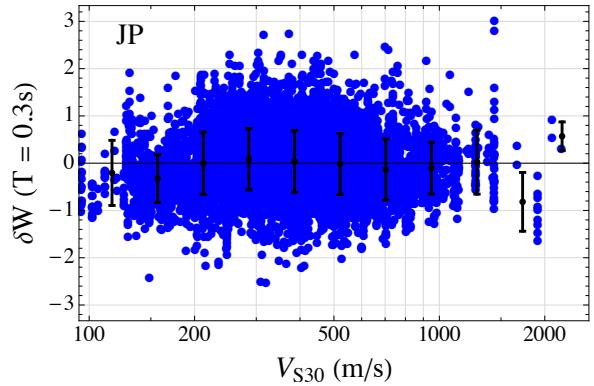
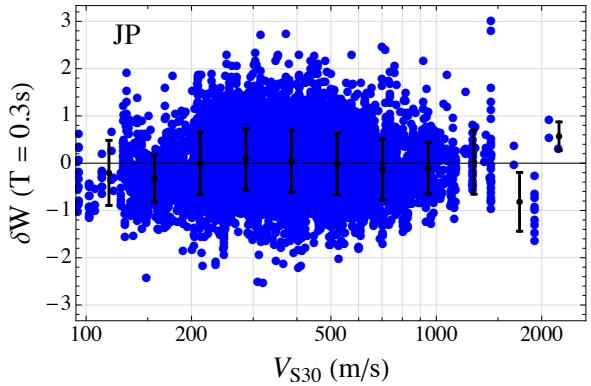


Figure 50: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.3$ sec (left) and $T = 0.4$ sec (right) for Japan.

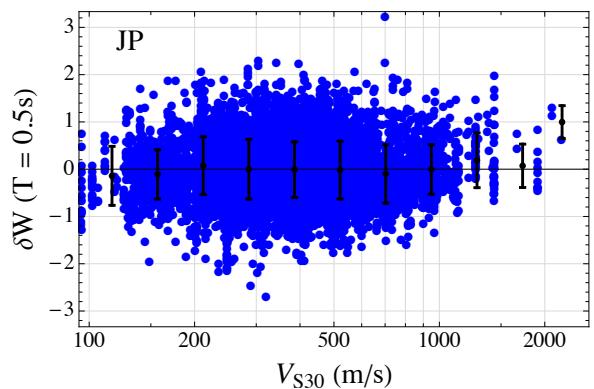
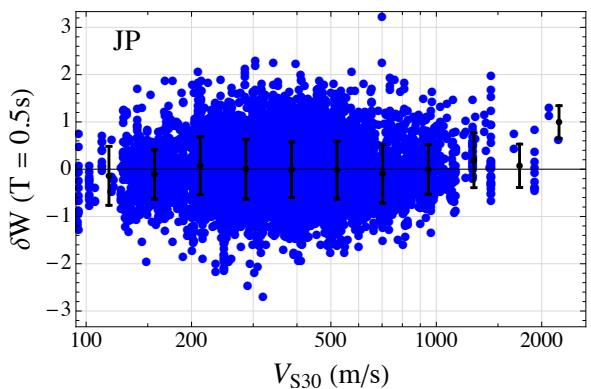


Figure 51: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.5$ sec (left) and $T = 0.75$ sec (right) for Japan.

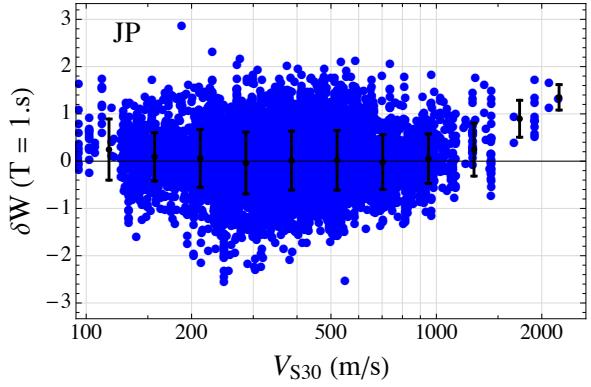
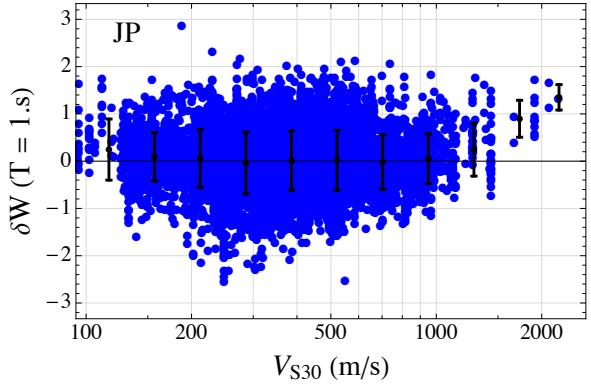


Figure 52: Plot of within-event residuals versus V_{S30} and PSA at $T = 1.$ sec (left) and $T = 1.5$ sec (right) for Japan.

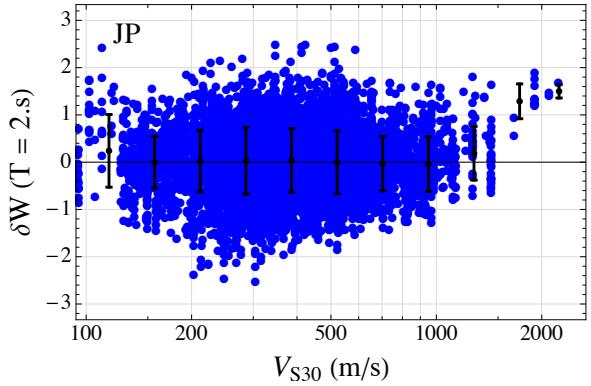
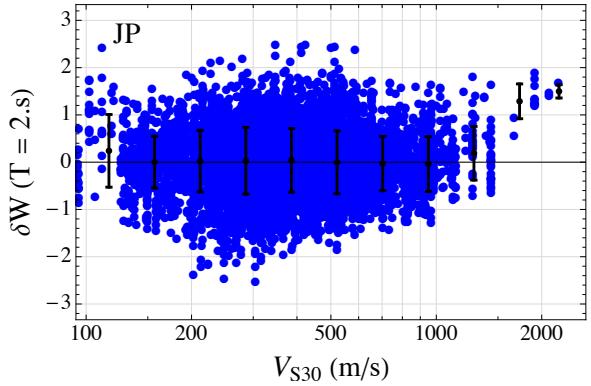


Figure 53: Plot of within-event residuals versus V_{S30} and PSA at $T = 2.$ sec (left) and $T = 3.$ sec (right) for Japan.

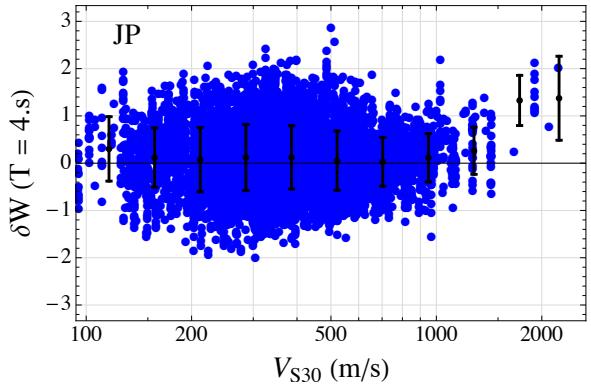
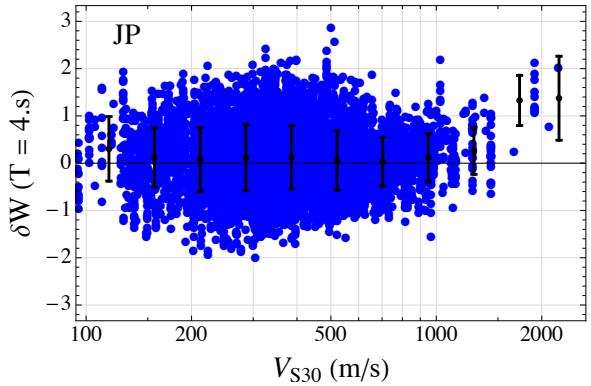


Figure 54: Plot of within-event residuals versus V_{S30} and PSA at $T = 4.$ sec (left) and $T = 5.$ sec (right) for Japan.

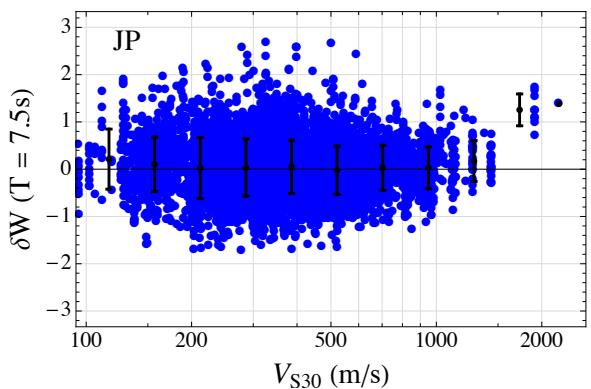
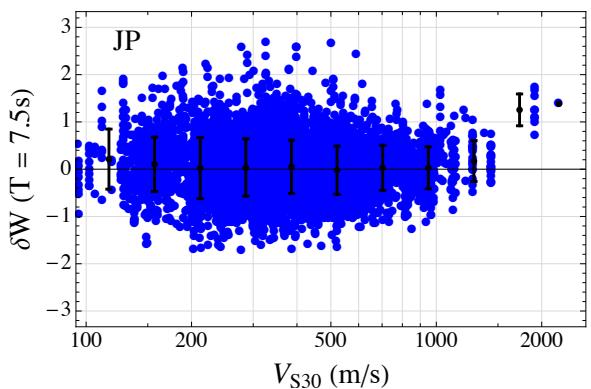


Figure 55: Plot of within-event residuals versus V_{S30} and PSA at $T = 7.5$ sec (left) and $T = 10.$ sec (right) for Japan.

1.6 NewZealand V_{S30}

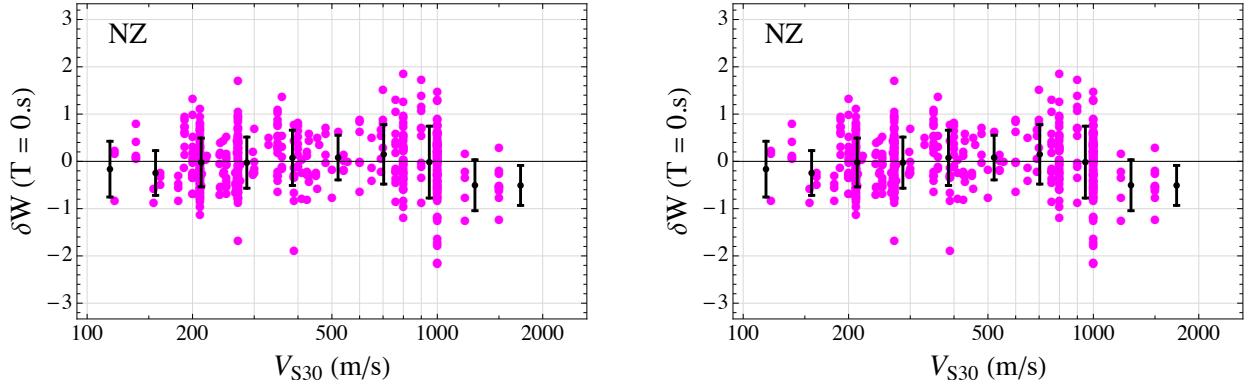


Figure 56: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.$ sec (left) and $T = 0.01$ sec (right) for New Zealand.

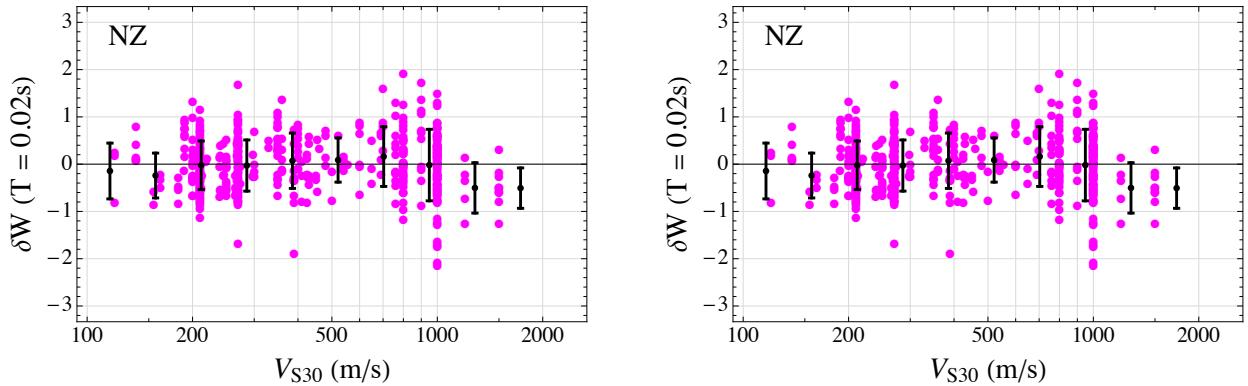


Figure 57: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.02$ sec (left) and $T = 0.03$ sec (right) for New Zealand.

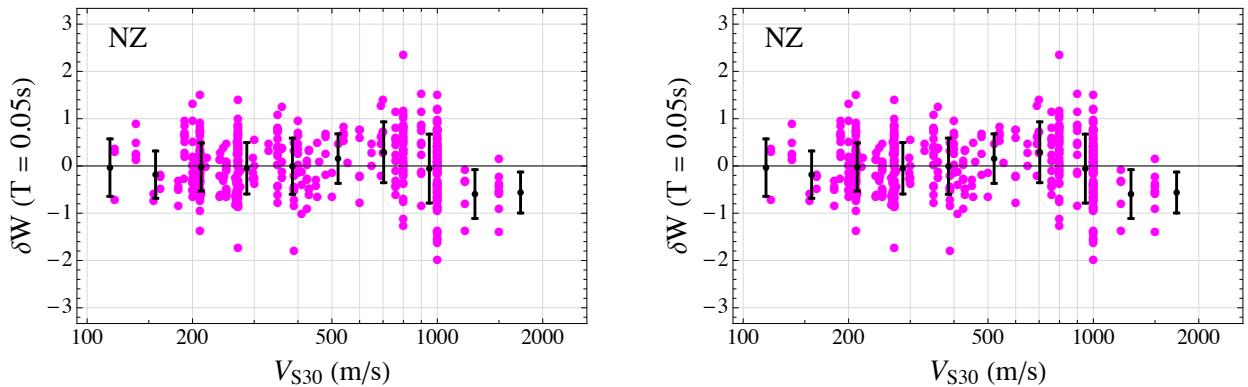


Figure 58: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.05$ sec (left) and $T = 0.075$ sec (right) for New Zealand.

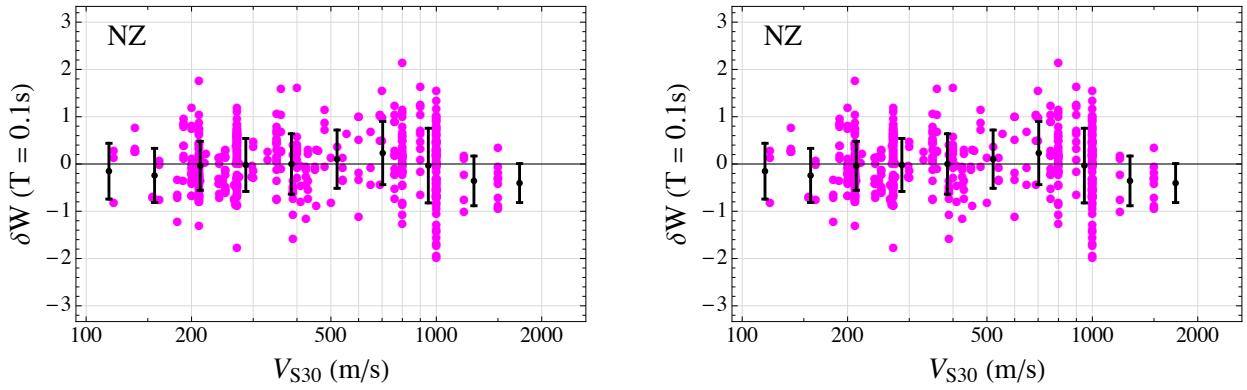


Figure 59: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.1$ sec (left) and $T = 0.15$ sec (right) for New Zealand.

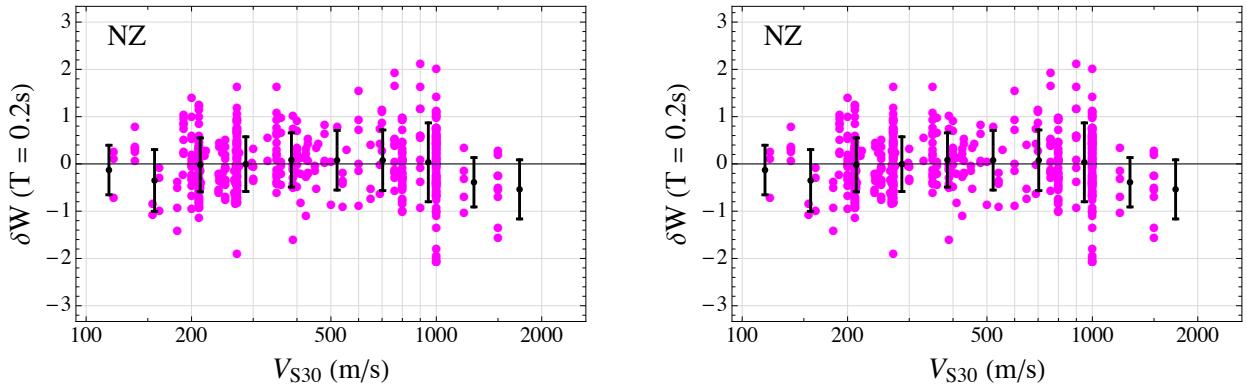


Figure 60: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.2$ sec (left) and $T = 0.25$ sec (right) for New Zealand.

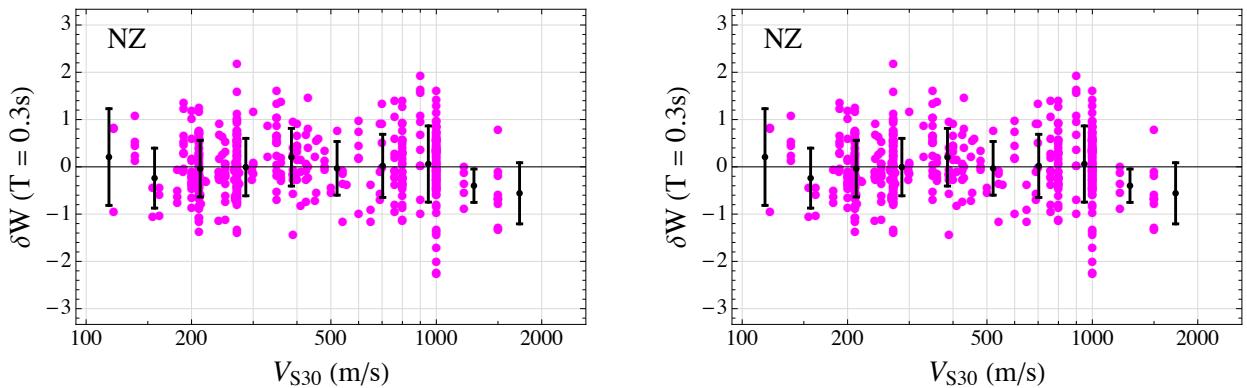


Figure 61: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.3$ sec (left) and $T = 0.4$ sec (right) for New Zealand.

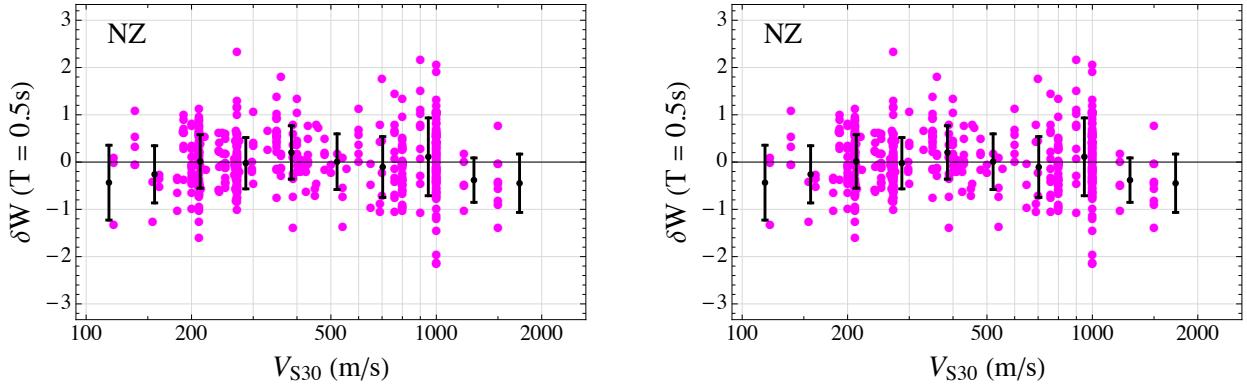


Figure 62: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.5$ sec (left) and $T = 0.75$ sec (right) for New Zealand.

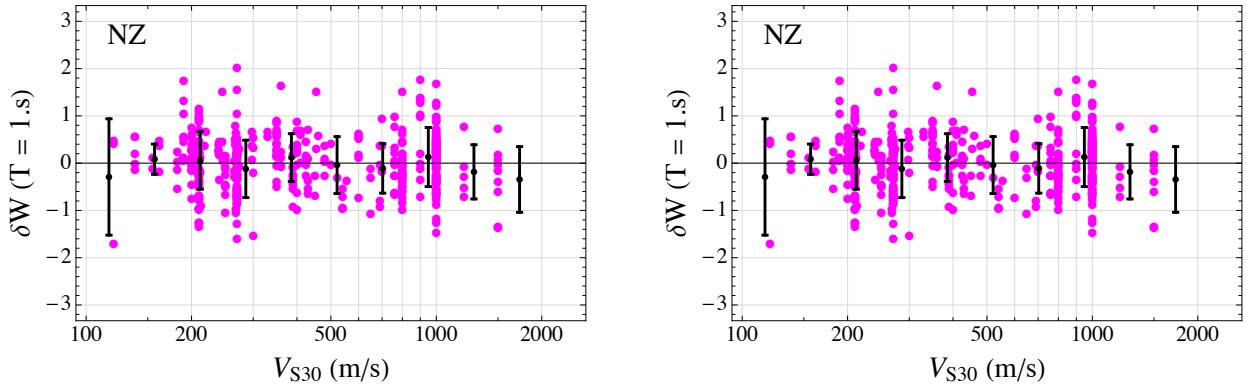


Figure 63: Plot of within-event residuals versus V_{S30} and PSA at $T = 1.$ sec (left) and $T = 1.5$ sec (right) for New Zealand.

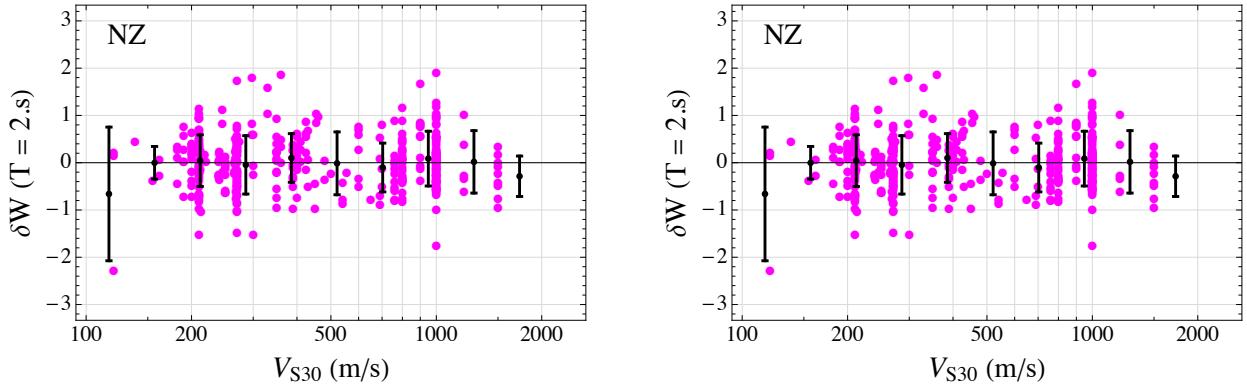


Figure 64: Plot of within-event residuals versus V_{S30} and PSA at $T = 2.$ sec (left) and $T = 3.$ sec (right) for New Zealand.

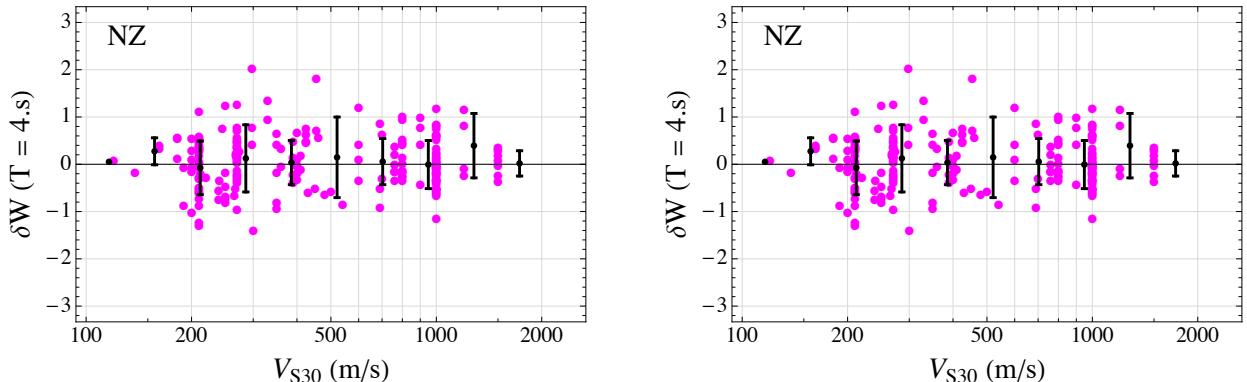


Figure 65: Plot of within-event residuals versus V_{S30} and PSA at $T = 4.$ sec (left) and $T = 5.$ sec (right) for New Zealand.

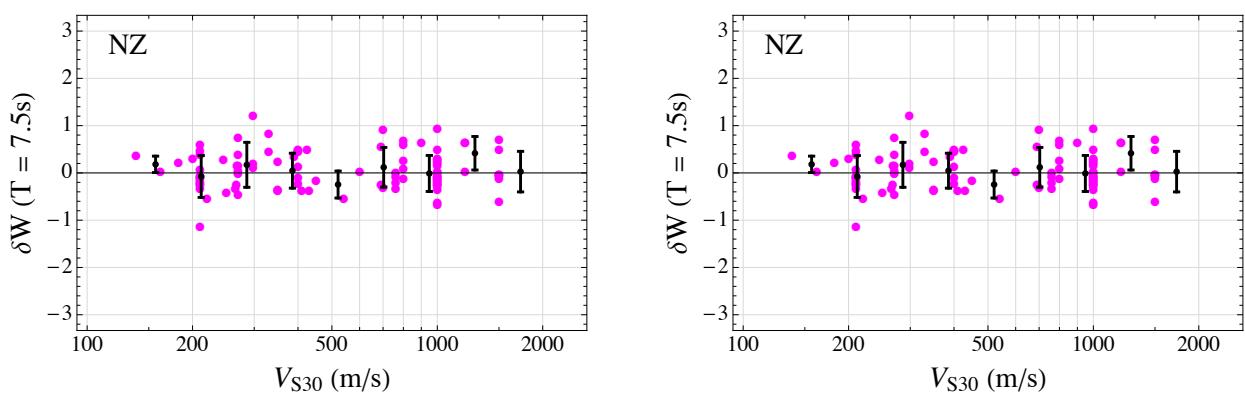


Figure 66: Plot of within-event residuals versus V_{S30} and PSA at $T = 7.5$ sec (left) and $T = 10.$ sec (right) for NewZealand.

1.7 SouthAmerica V_{S30}

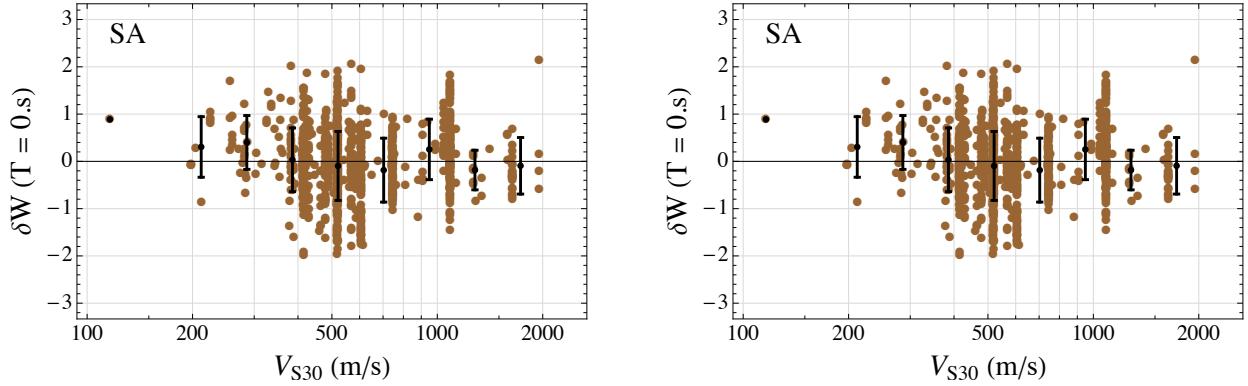


Figure 67: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.$ sec (left) and $T = 0.01$ sec (right) for SouthAmerica.

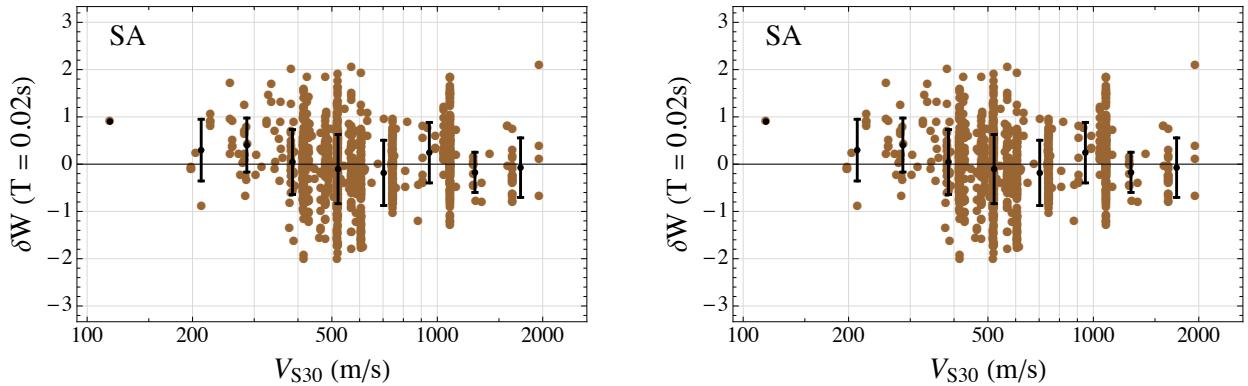


Figure 68: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.02$ sec (left) and $T = 0.03$ sec (right) for SouthAmerica.

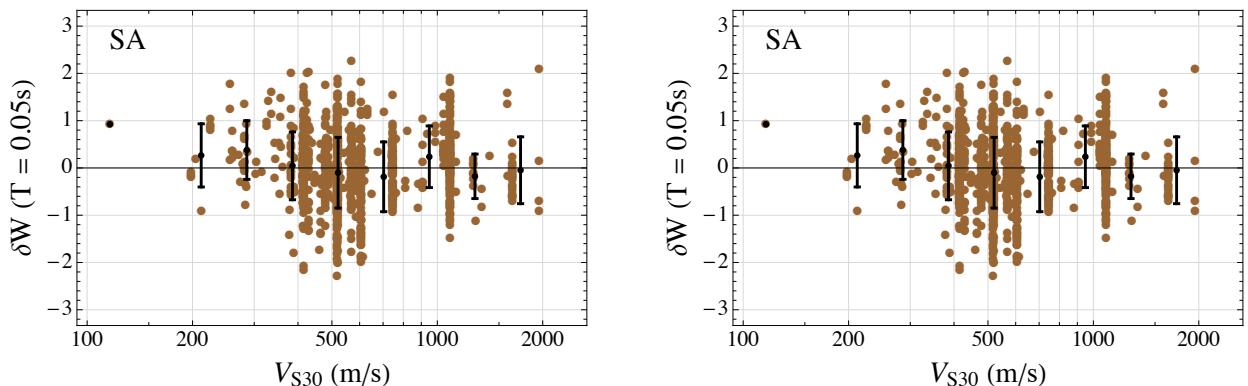


Figure 69: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.05$ sec (left) and $T = 0.075$ sec (right) for SouthAmerica.

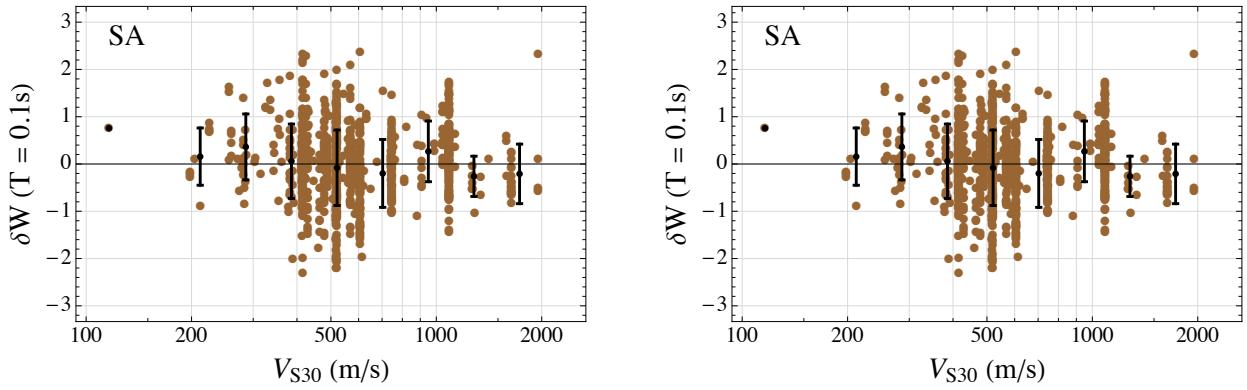


Figure 70: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.1$ sec (left) and $T = 0.15$ sec (right) for SouthAmerica.

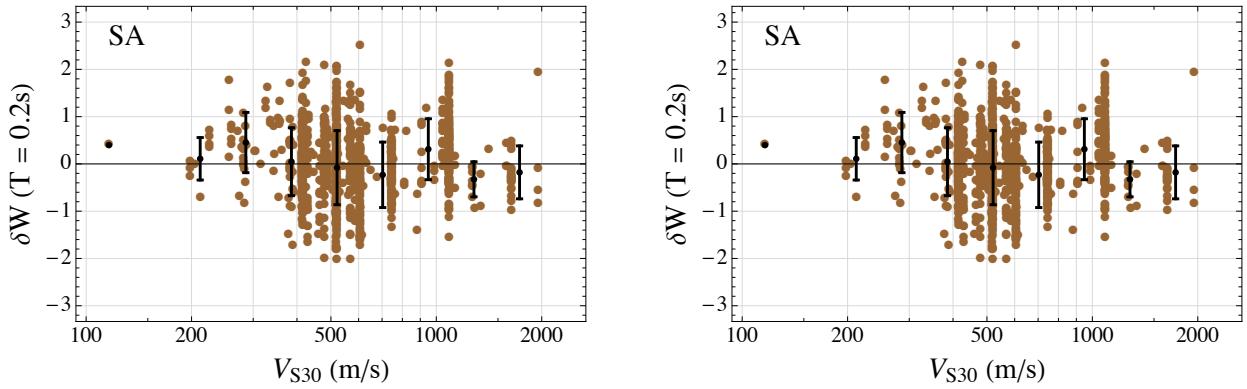


Figure 71: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.2$ sec (left) and $T = 0.25$ sec (right) for SouthAmerica.

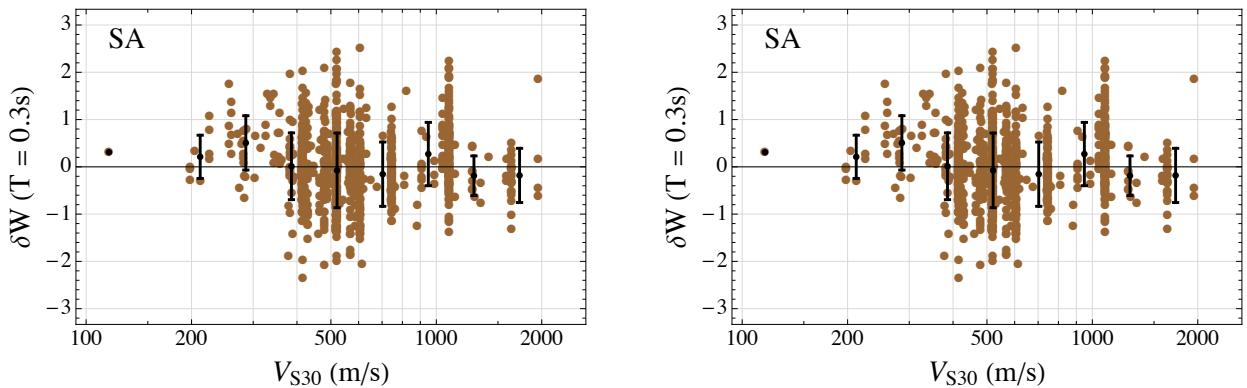


Figure 72: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.3$ sec (left) and $T = 0.4$ sec (right) for SouthAmerica.

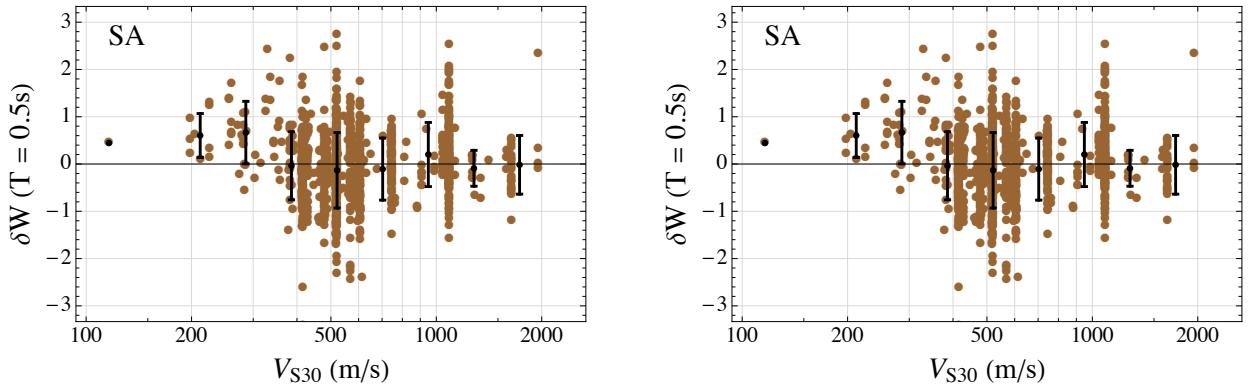


Figure 73: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.5$ sec (left) and $T = 0.75$ sec (right) for SouthAmerica.

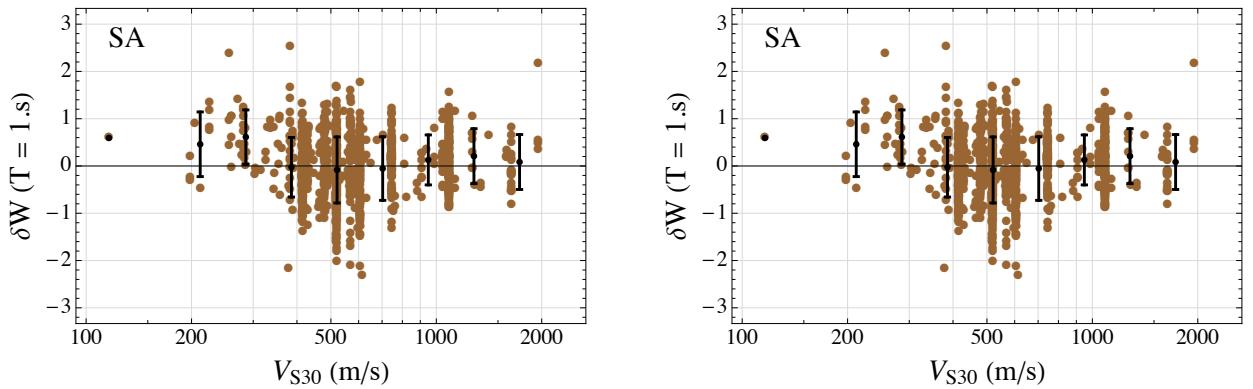


Figure 74: Plot of within-event residuals versus V_{S30} and PSA at $T = 1.$ sec (left) and $T = 1.5$ sec (right) for SouthAmerica.

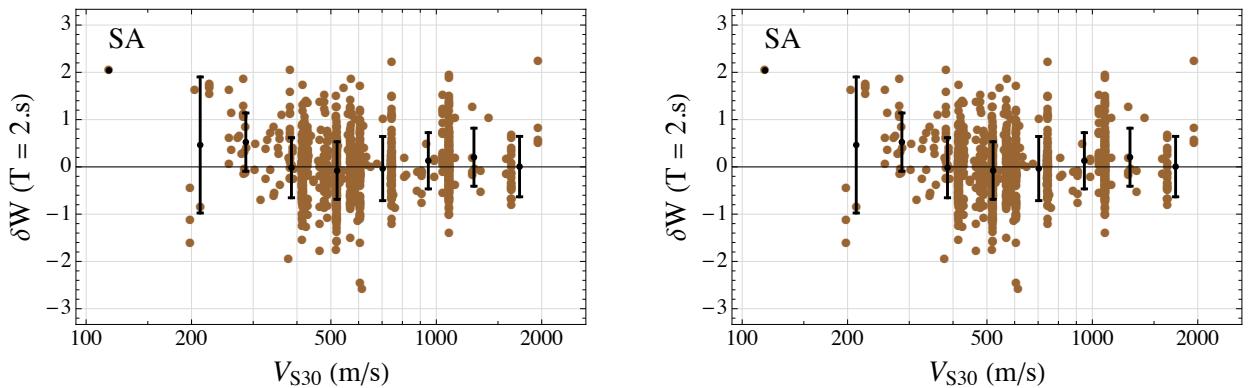


Figure 75: Plot of within-event residuals versus V_{S30} and PSA at $T = 2.$ sec (left) and $T = 3.$ sec (right) for SouthAmerica.

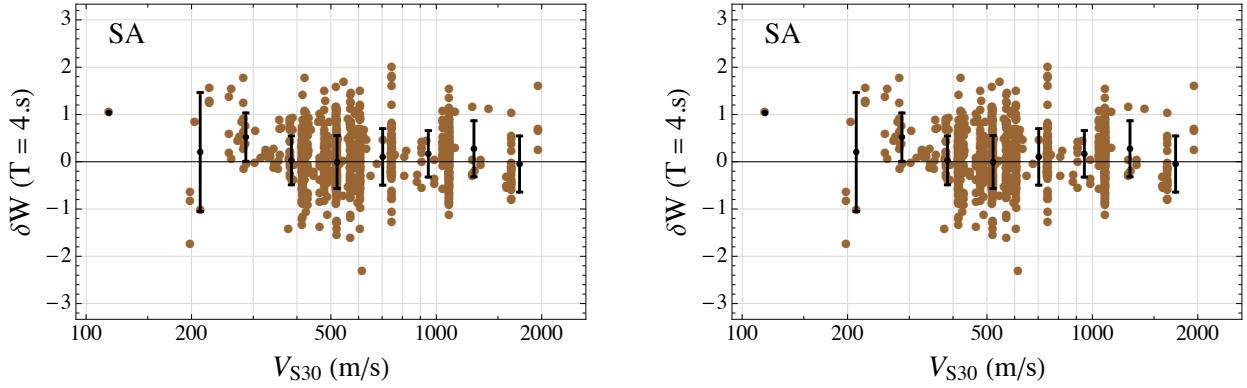


Figure 76: Plot of within-event residuals versus V_{S30} and PSA at $T = 4.$ sec (left) and $T = 5.$ sec (right) for SouthAmerica.

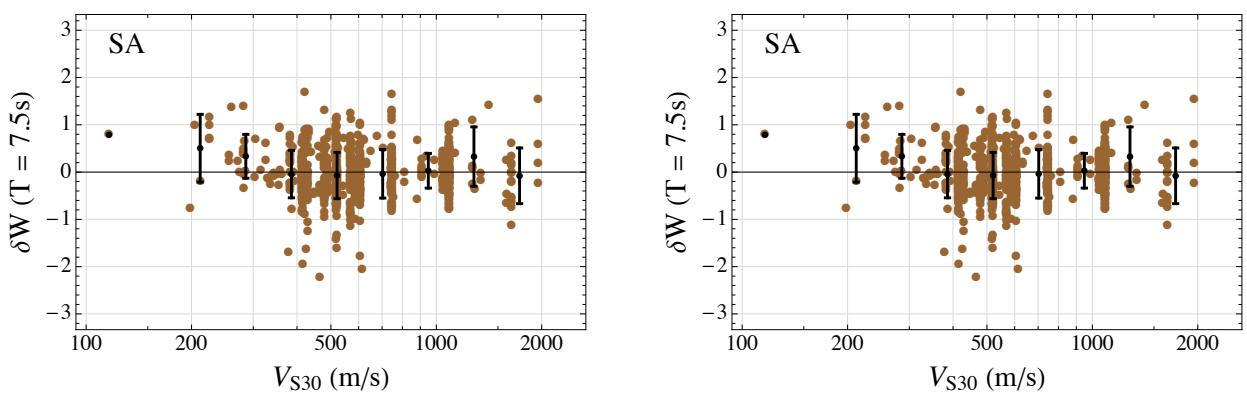


Figure 77: Plot of within-event residuals versus V_{S30} and PSA at $T = 7.5$ sec (left) and $T = 10.$ sec (right) for SouthAmerica.

1.8 Taiwan V_{S30}

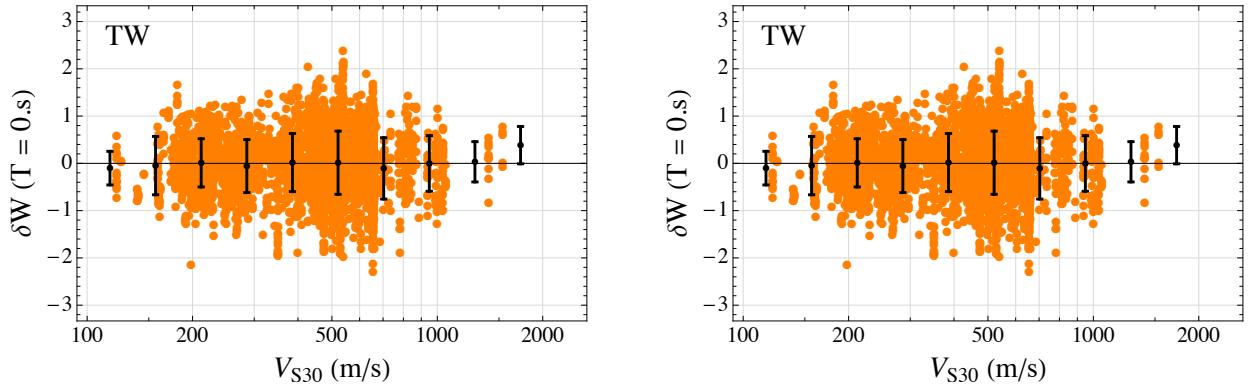


Figure 78: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.$ sec (left) and $T = 0.01$ sec (right) for Taiwan.

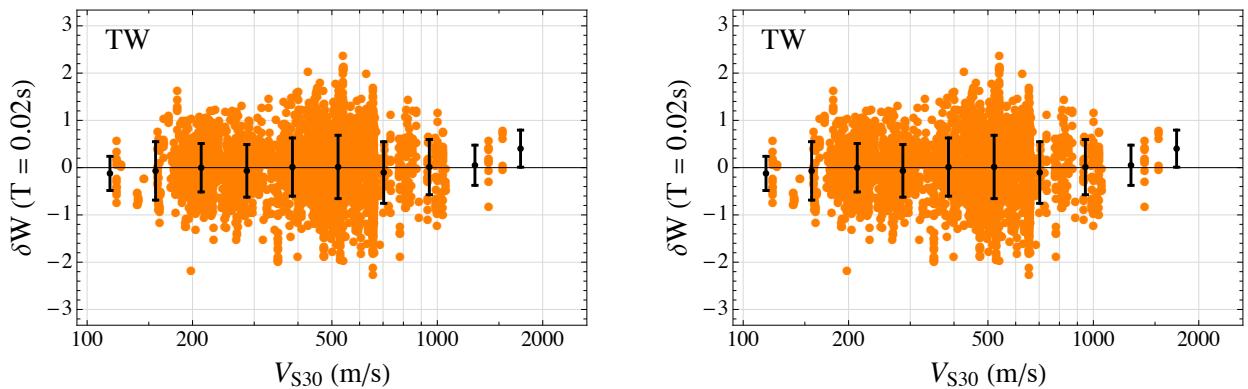


Figure 79: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.02$ sec (left) and $T = 0.03$ sec (right) for Taiwan.

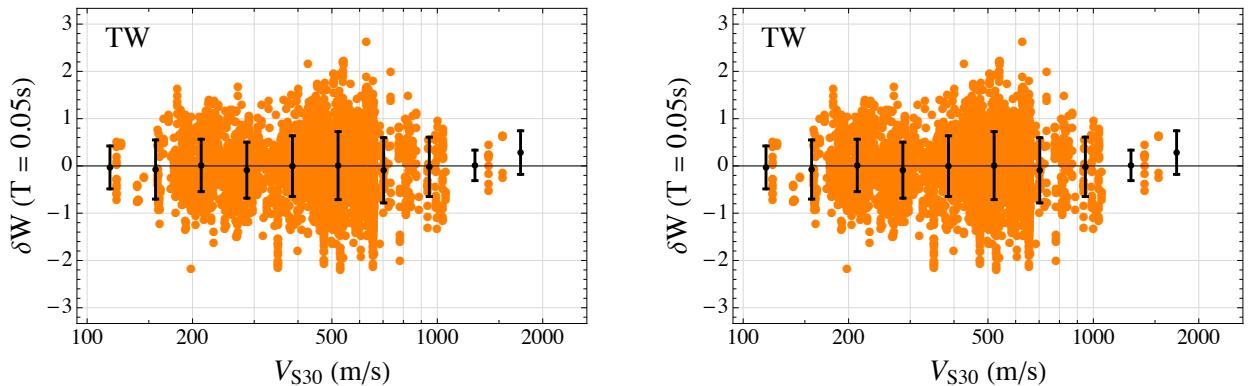


Figure 80: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.05$ sec (left) and $T = 0.075$ sec (right) for Taiwan.

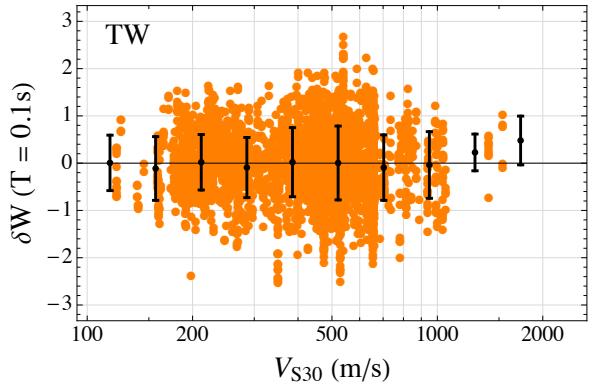
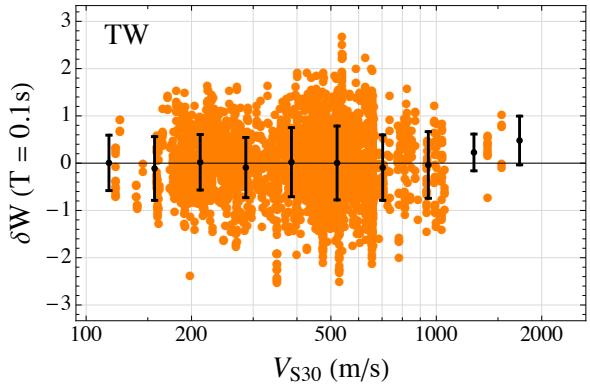


Figure 81: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.1$ sec (left) and $T = 0.15$ sec (right) for Taiwan.

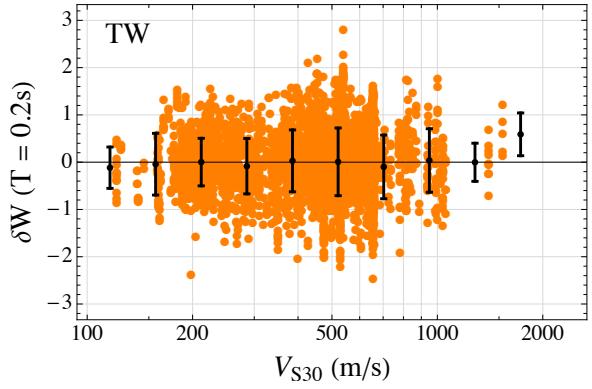
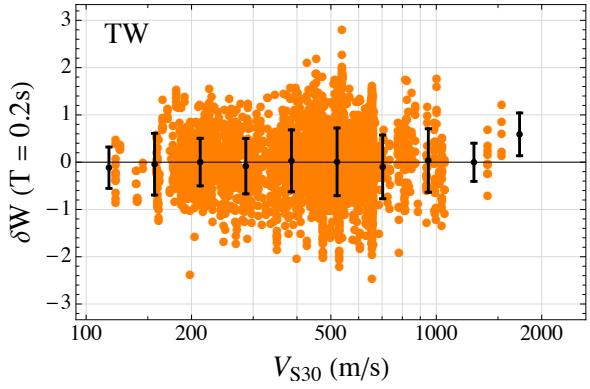


Figure 82: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.2$ sec (left) and $T = 0.25$ sec (right) for Taiwan.

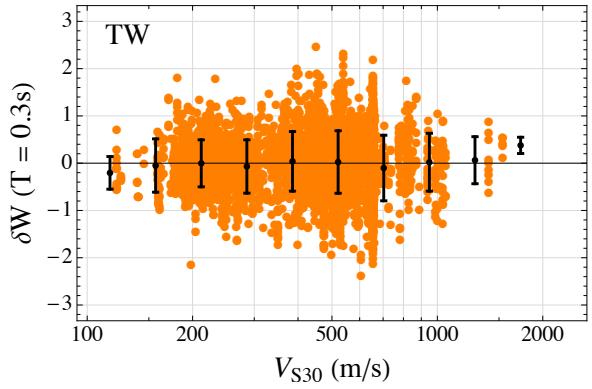
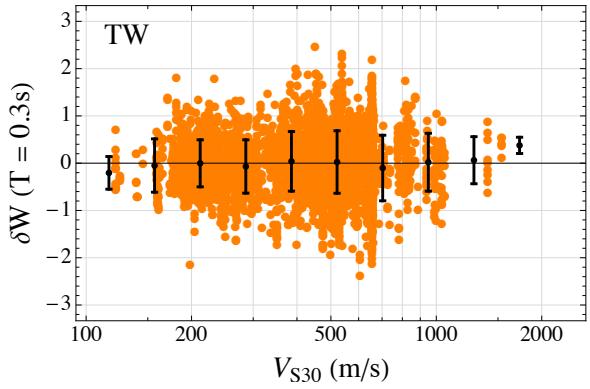


Figure 83: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.3$ sec (left) and $T = 0.4$ sec (right) for Taiwan.

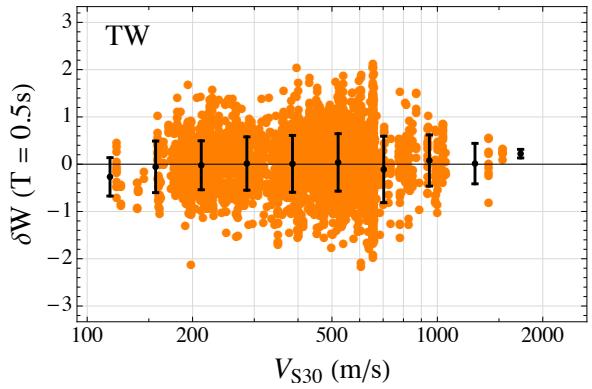
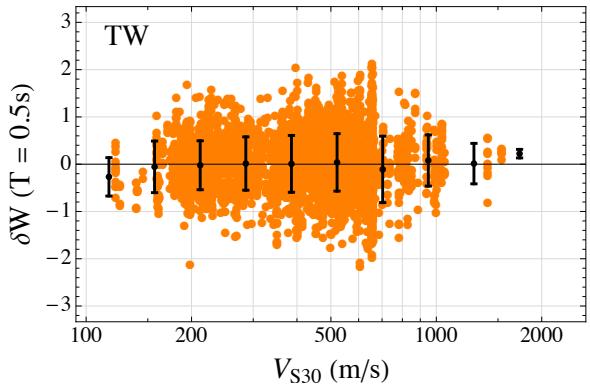


Figure 84: Plot of within-event residuals versus V_{S30} and PSA at $T = 0.5$ sec (left) and $T = 0.75$ sec (right) for Taiwan.

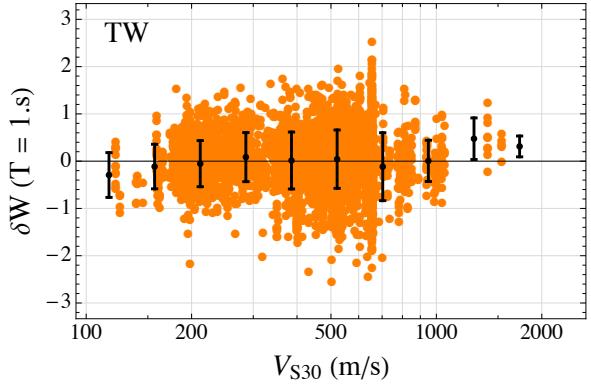
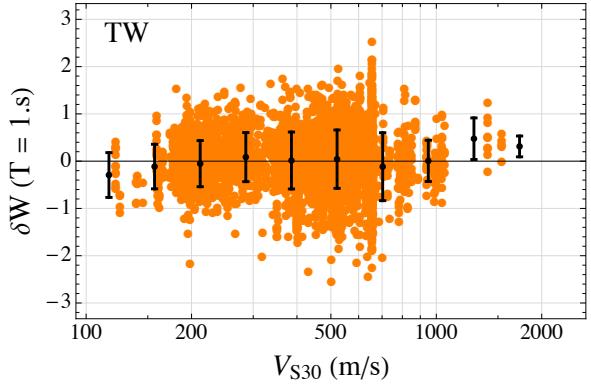


Figure 85: Plot of within-event residuals versus V_{S30} and PSA at $T = 1.$ sec (left) and $T = 1.5$ sec (right) for Taiwan.

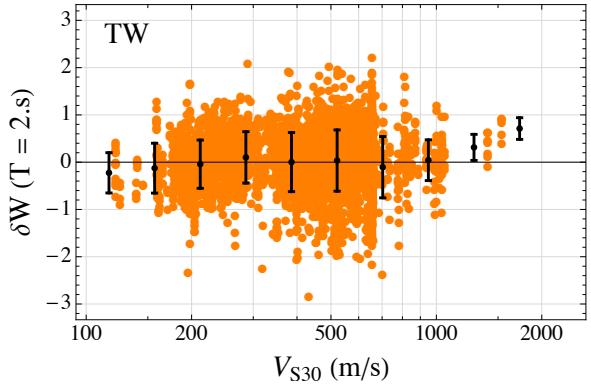
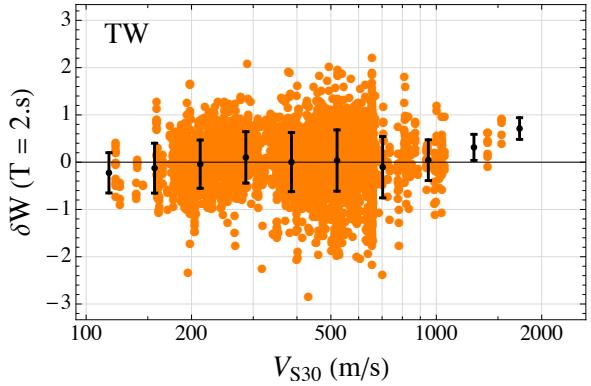


Figure 86: Plot of within-event residuals versus V_{S30} and PSA at $T = 2.$ sec (left) and $T = 3.$ sec (right) for Taiwan.

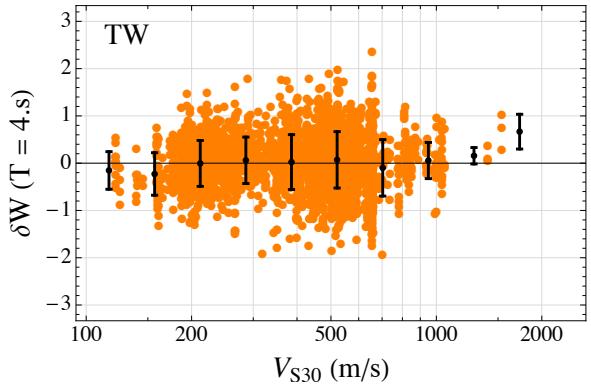
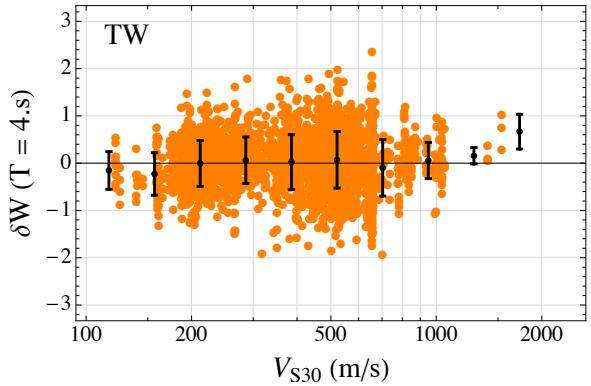


Figure 87: Plot of within-event residuals versus V_{S30} and PSA at $T = 4.$ sec (left) and $T = 5.$ sec (right) for Taiwan.

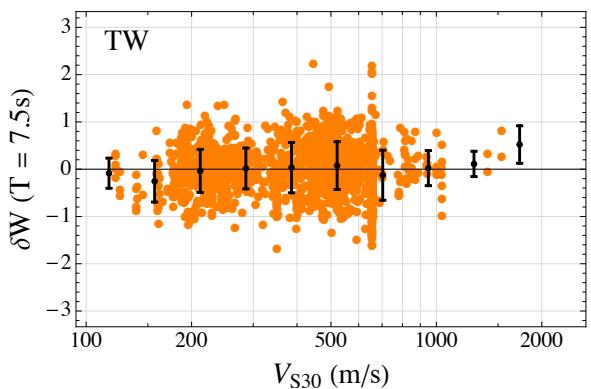
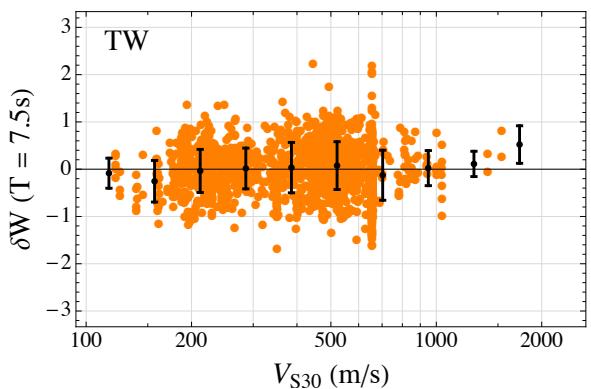


Figure 88: Plot of within-event residuals versus V_{S30} and PSA at $T = 7.5$ sec (left) and $T = 10.$ sec (right) for Taiwan.

1.9 Cascadia $Z_{2.5}$

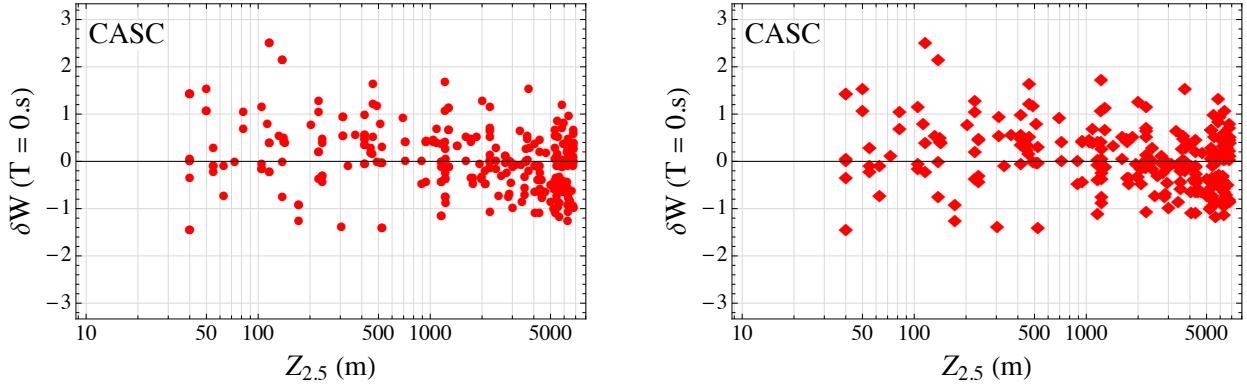


Figure 89: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

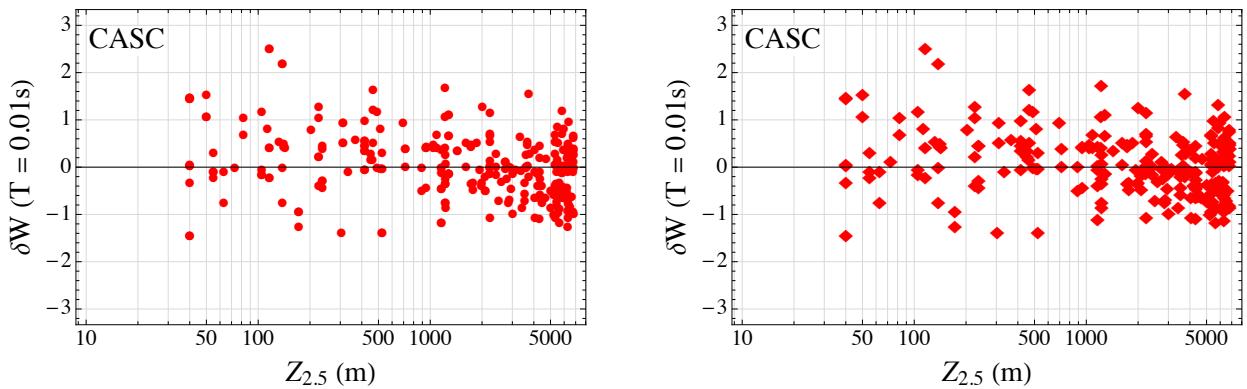


Figure 90: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.01$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

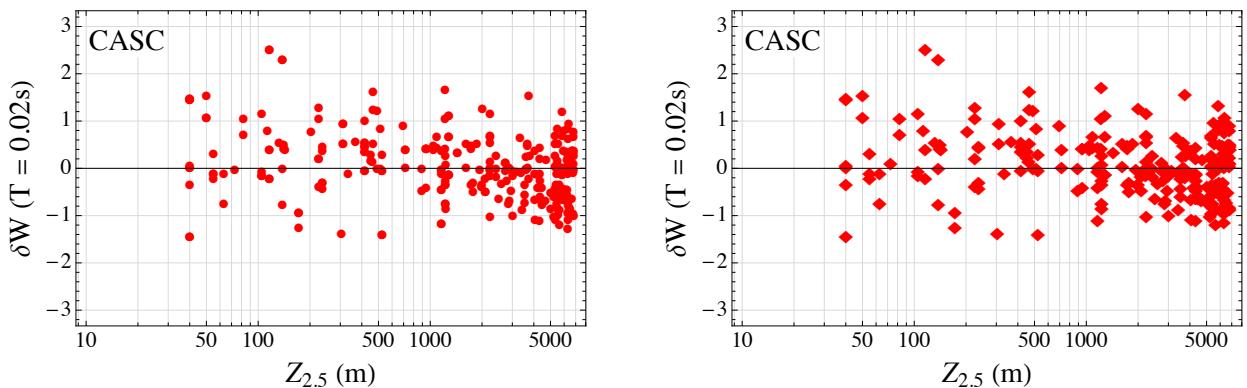


Figure 91: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.02$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

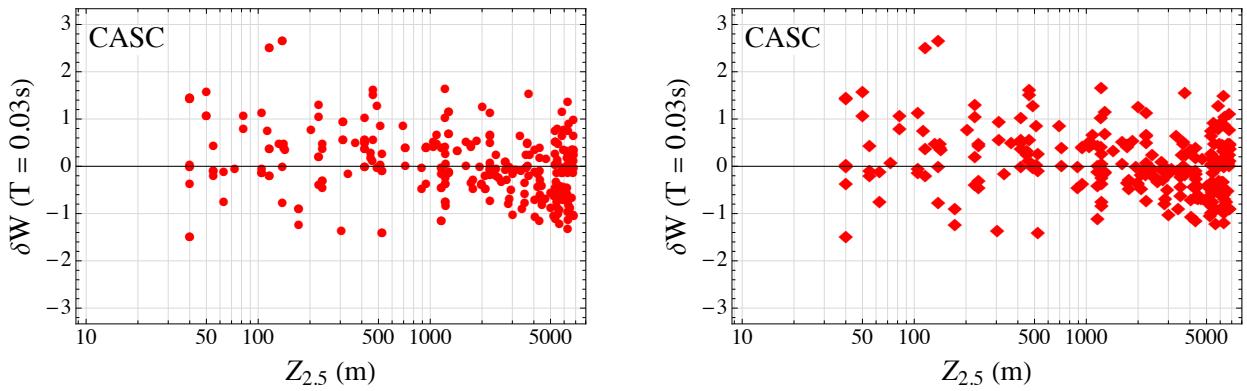


Figure 92: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.03$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

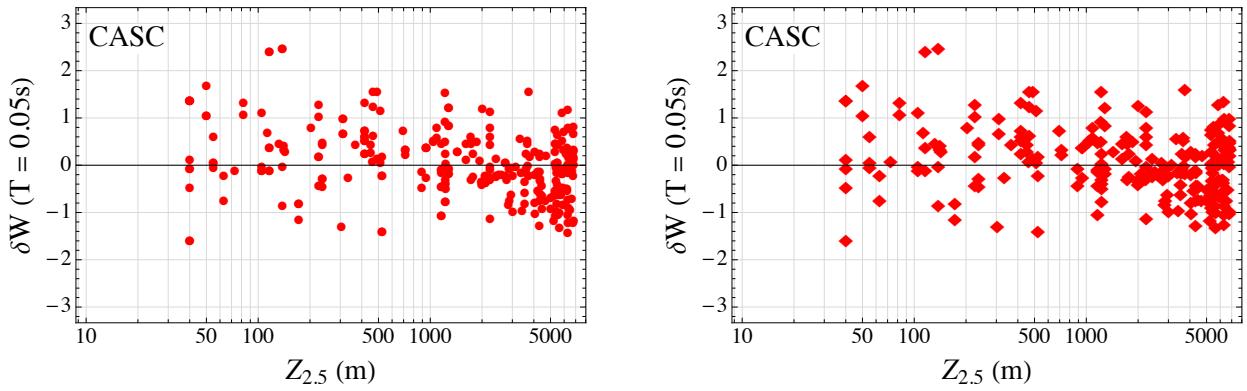


Figure 93: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.05$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

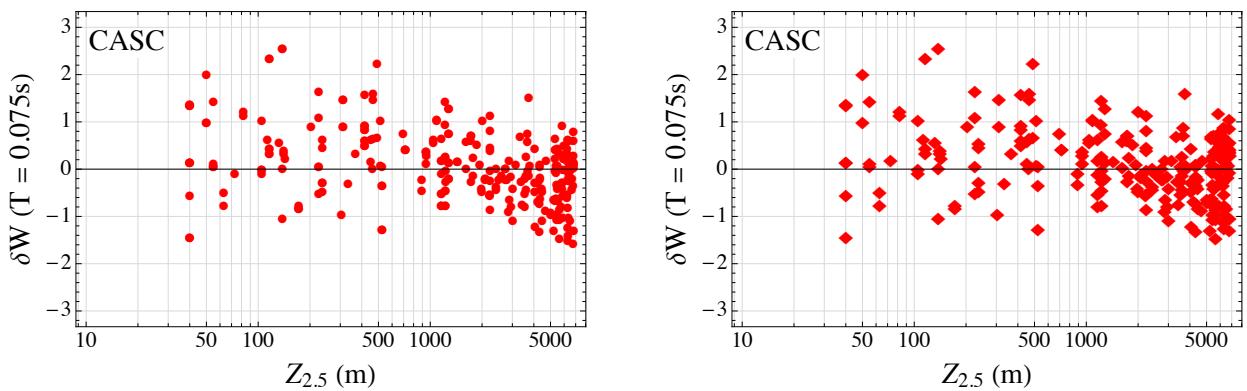


Figure 94: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.075$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

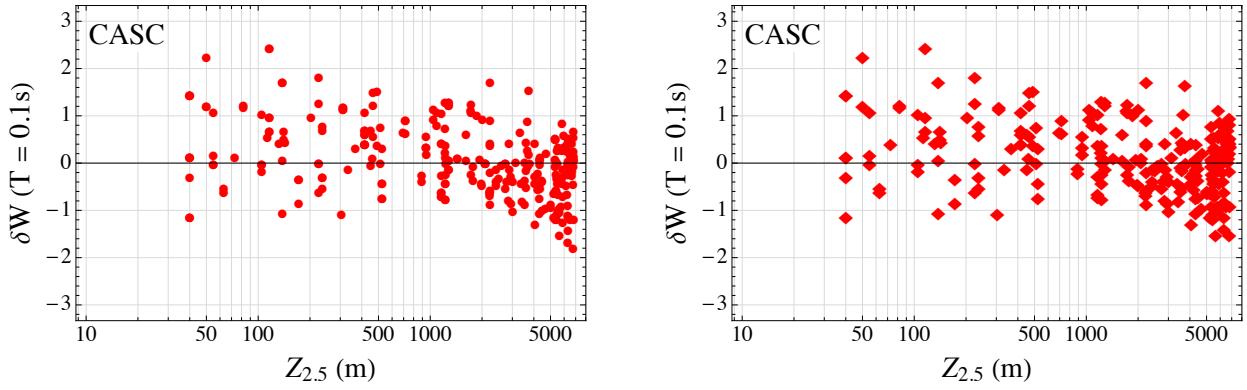


Figure 95: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.1$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

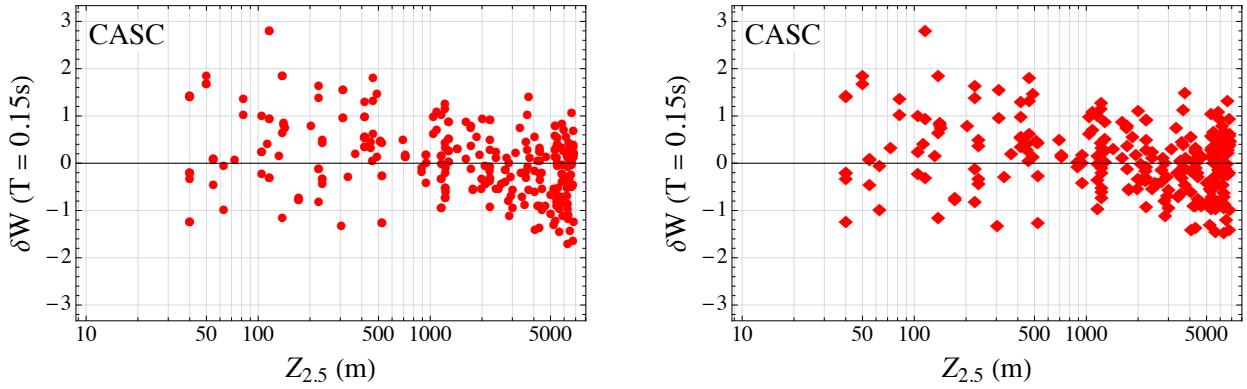


Figure 96: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.15$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

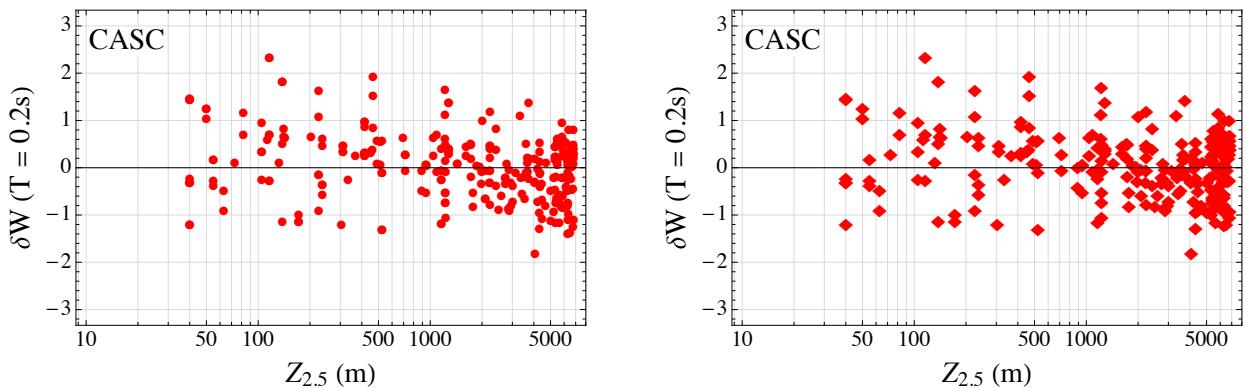


Figure 97: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.2$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

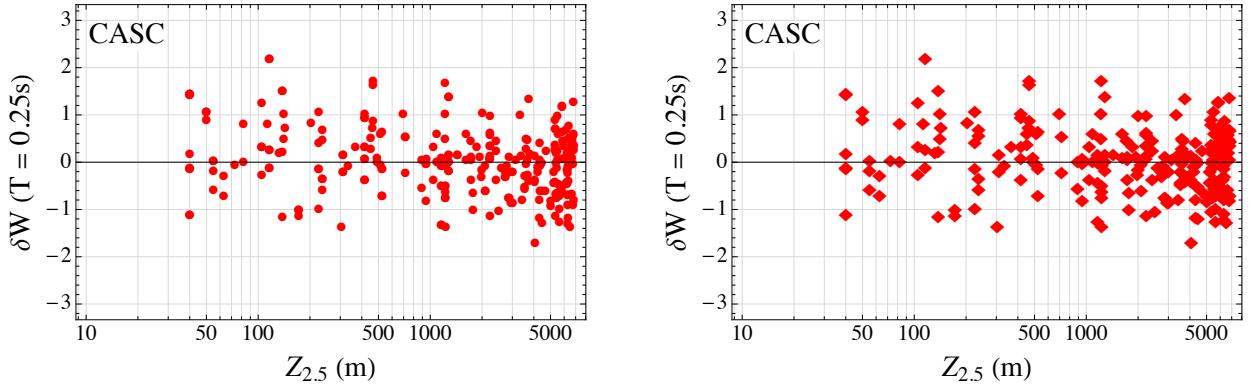


Figure 98: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.25$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

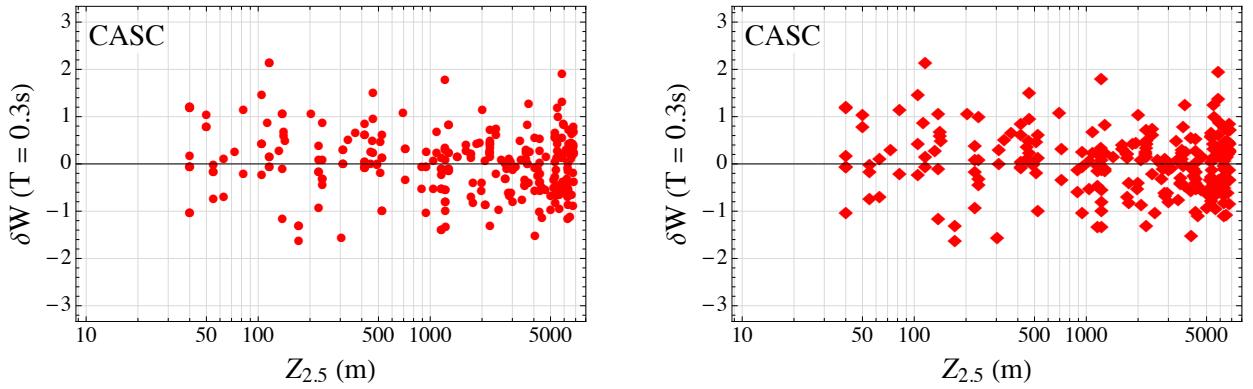


Figure 99: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.3$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

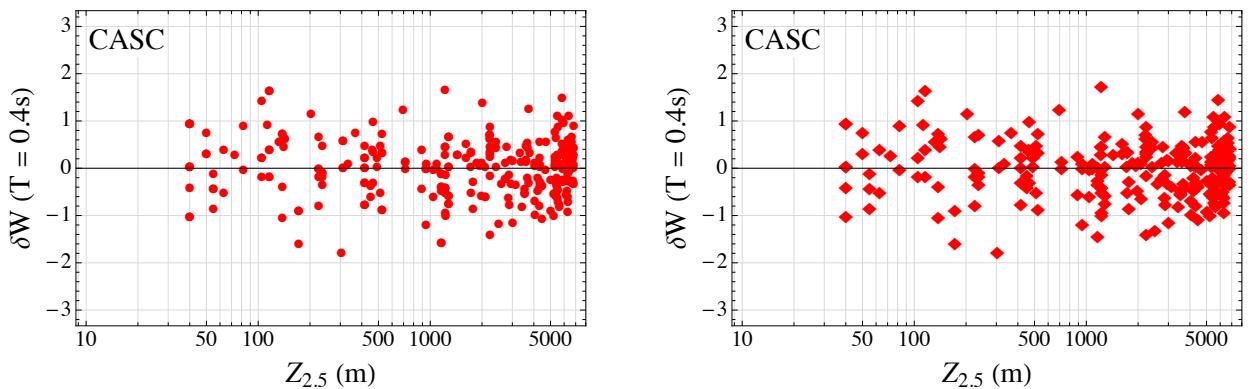


Figure 100: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.4$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

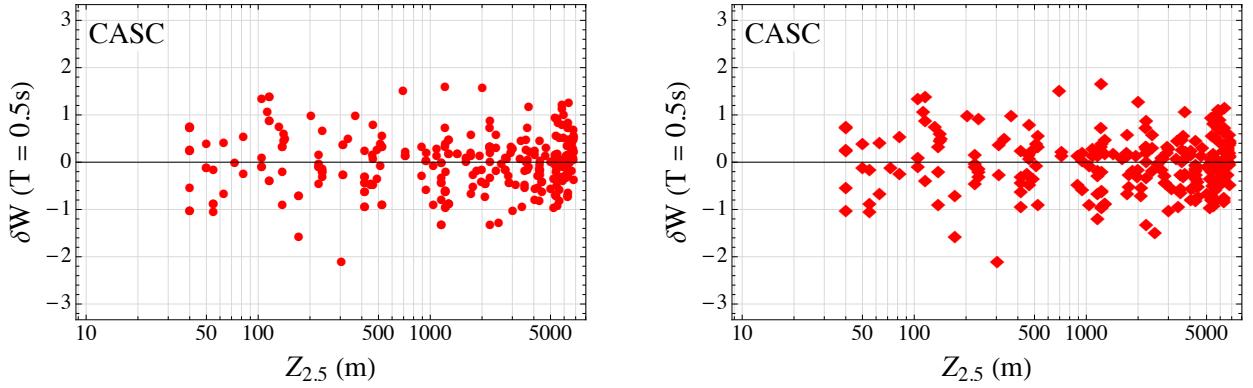


Figure 101: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.5$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

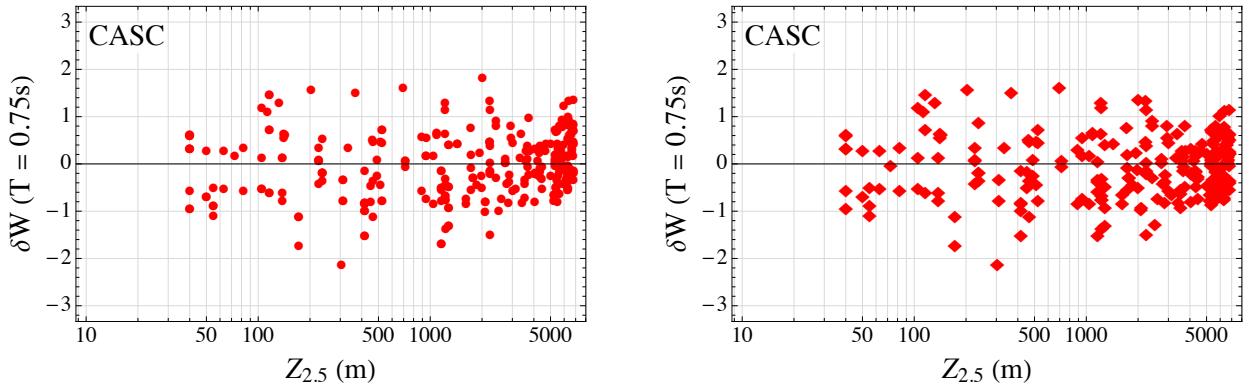


Figure 102: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.75$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

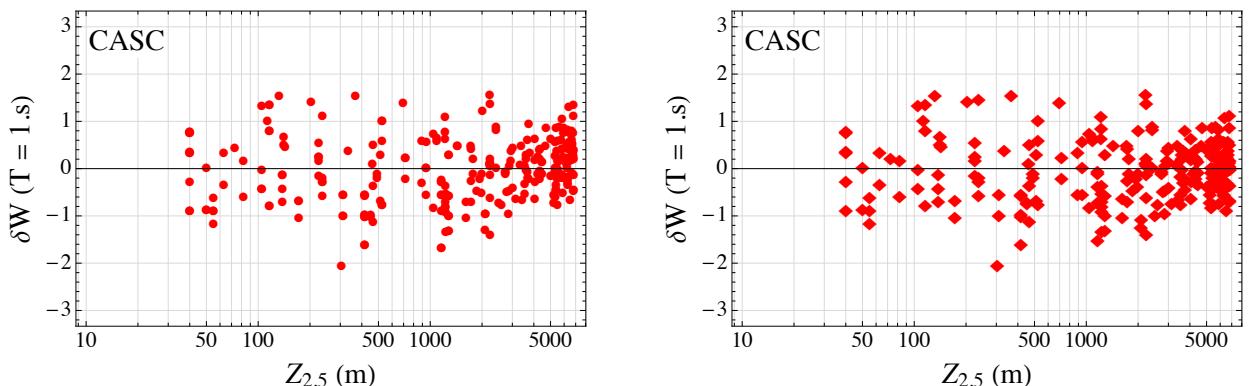


Figure 103: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 1.$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

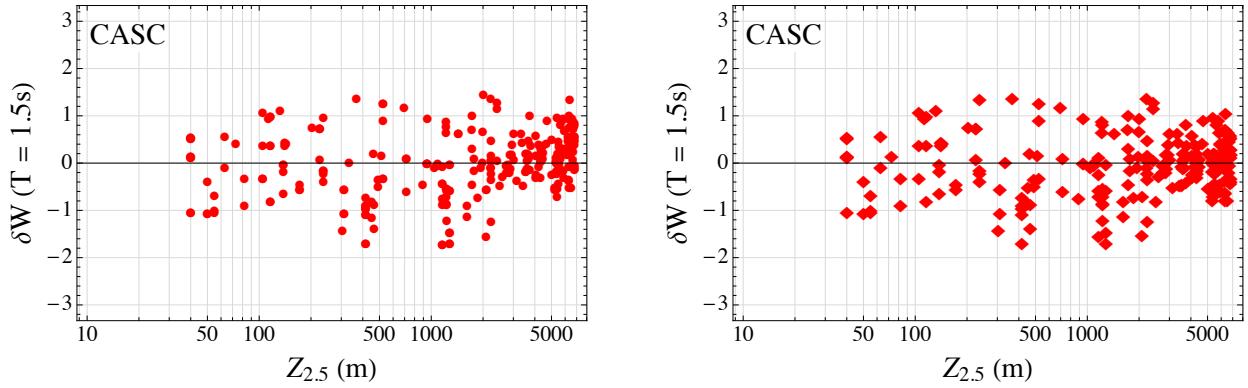


Figure 104: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 1.5$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

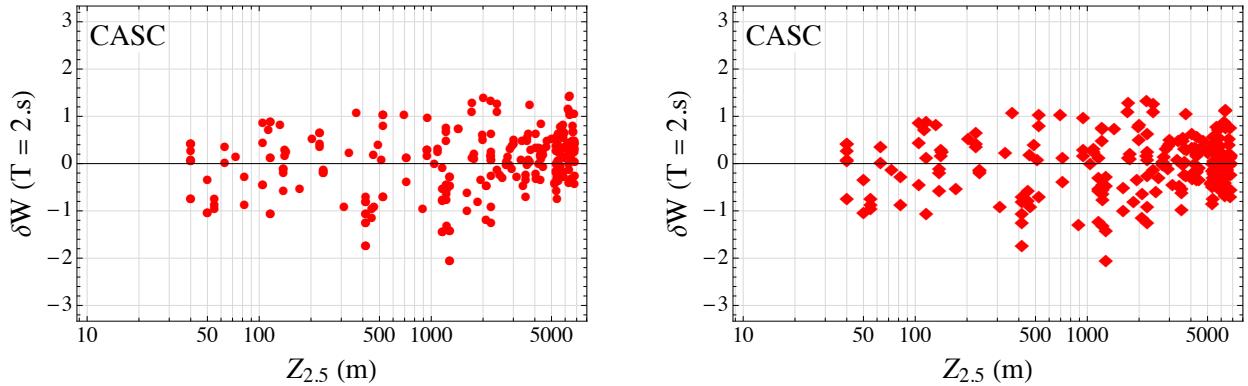


Figure 105: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 2.$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

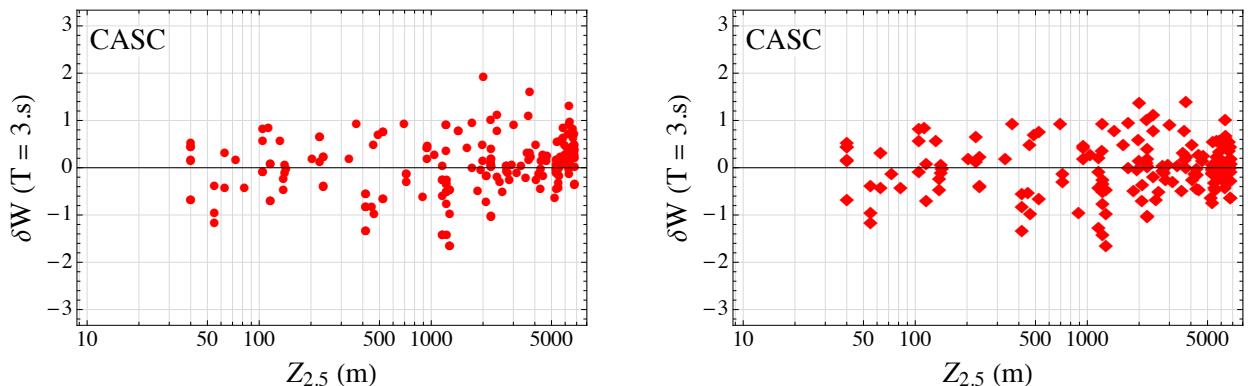


Figure 106: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 3.$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

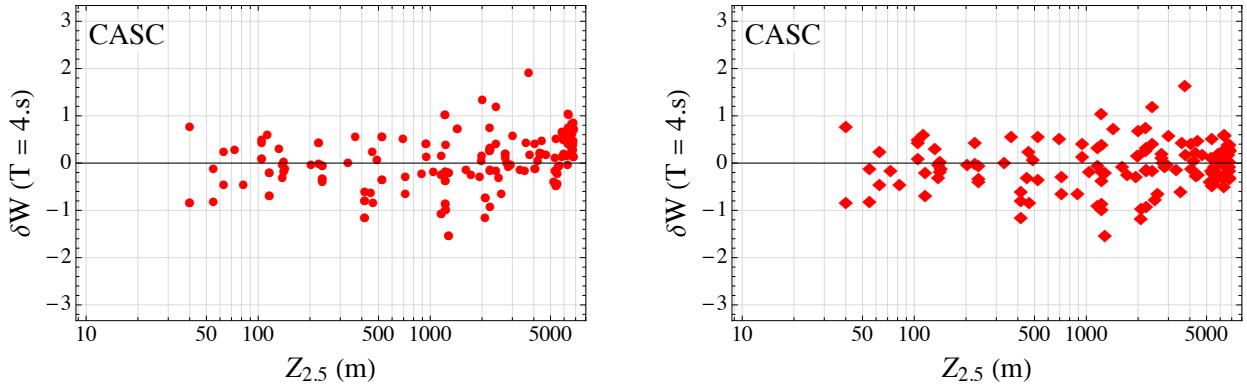


Figure 107: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 4.$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

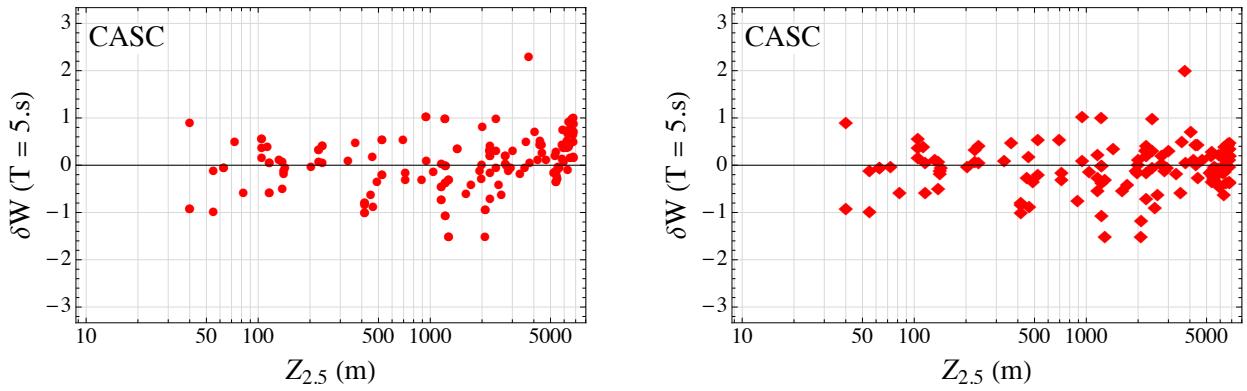


Figure 108: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 5.$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

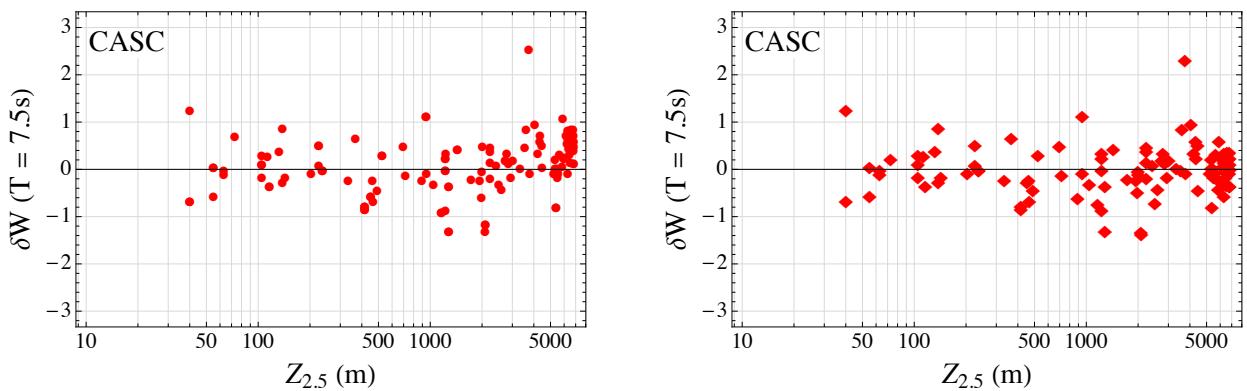


Figure 109: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 7.5$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

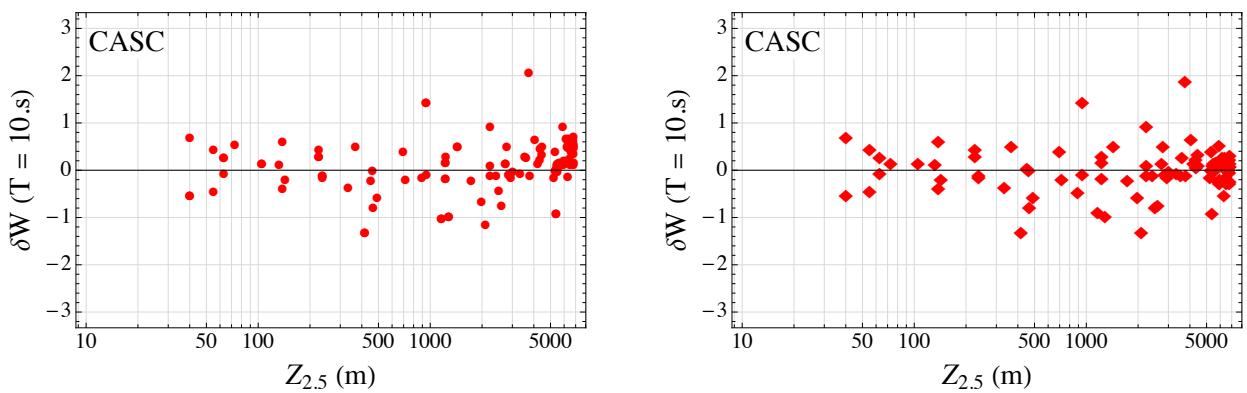


Figure 110: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 10.$ sec for Cascadia. Left: without Z-model; Right: with Z-model.

1.10 Japan $Z_{2.5}$

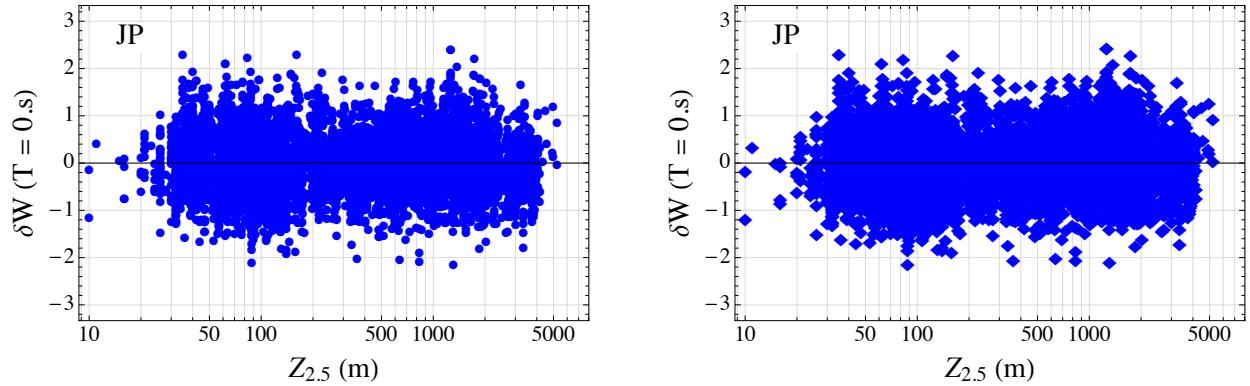


Figure 111: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.$ sec for Japan. Left: without Z-model; Right: with Z-model.

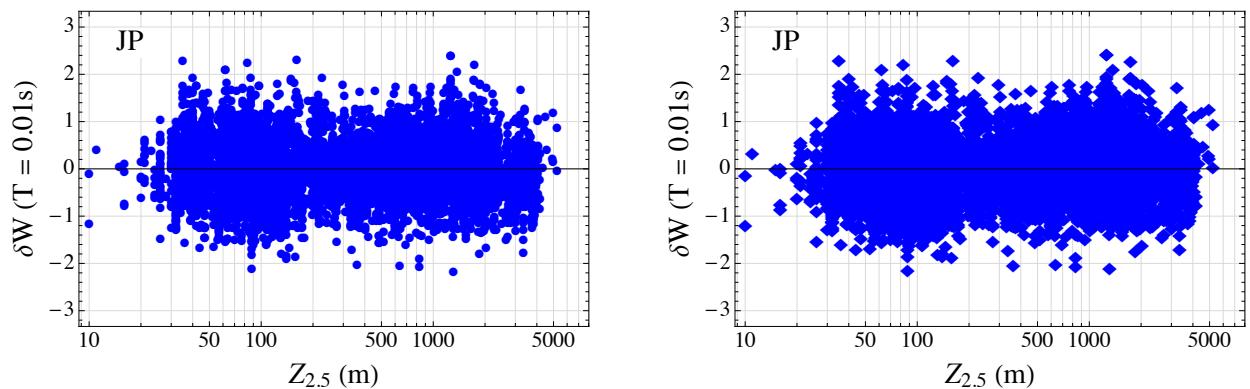


Figure 112: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.01$ sec for Japan. Left: without Z-model; Right: with Z-model.

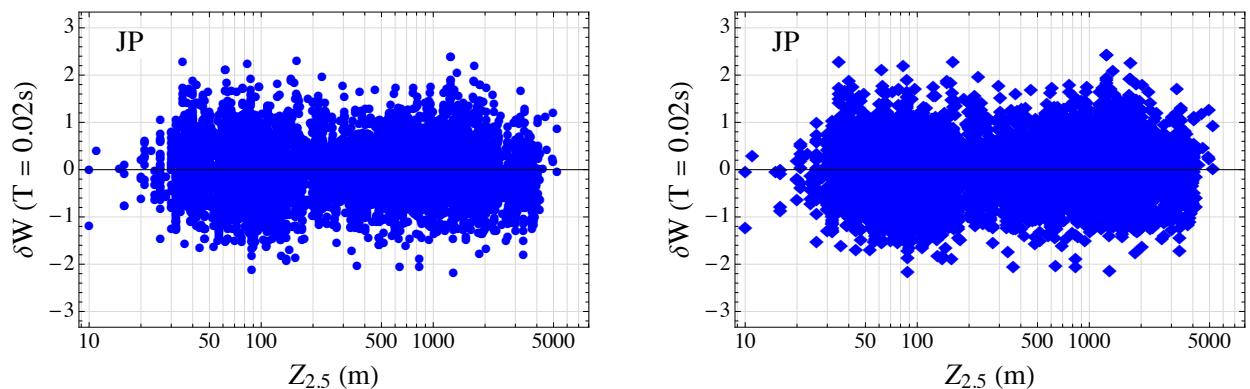


Figure 113: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.02$ sec for Japan. Left: without Z-model; Right: with Z-model.

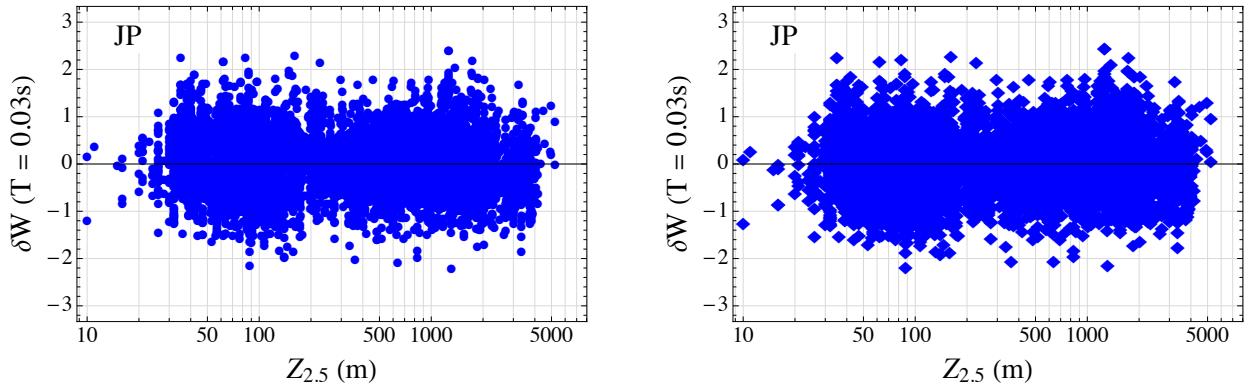


Figure 114: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.03$ sec for Japan. Left: without Z-model; Right: with Z-model.

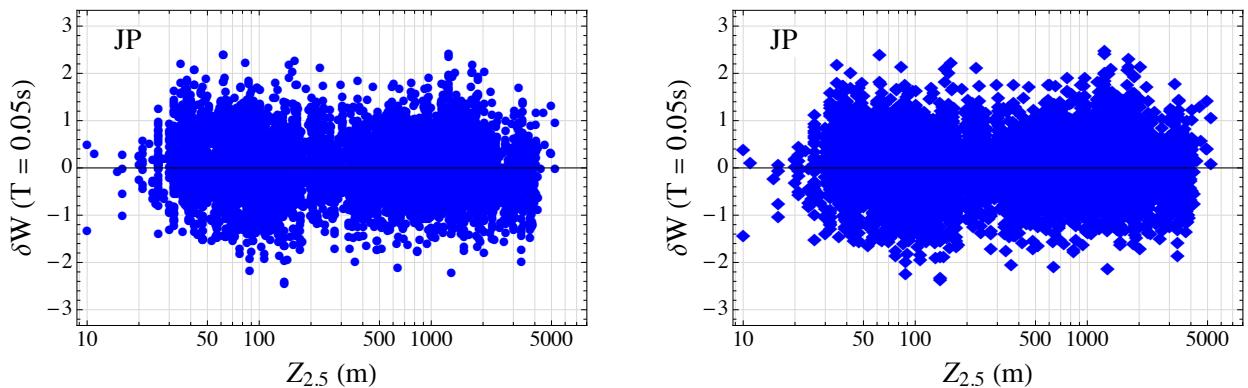


Figure 115: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.05$ sec for Japan. Left: without Z-model; Right: with Z-model.

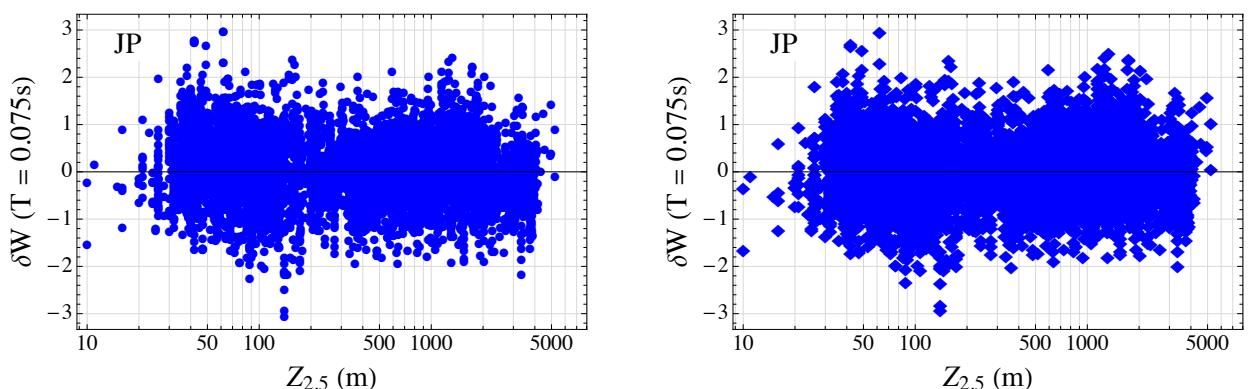


Figure 116: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.075$ sec for Japan. Left: without Z-model; Right: with Z-model.

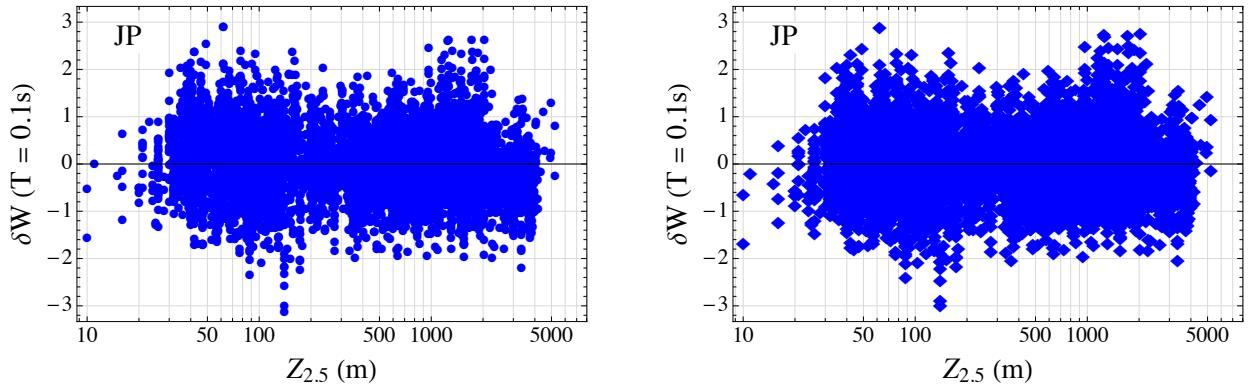


Figure 117: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.1$ sec for Japan. Left: without Z-model; Right: with Z-model.

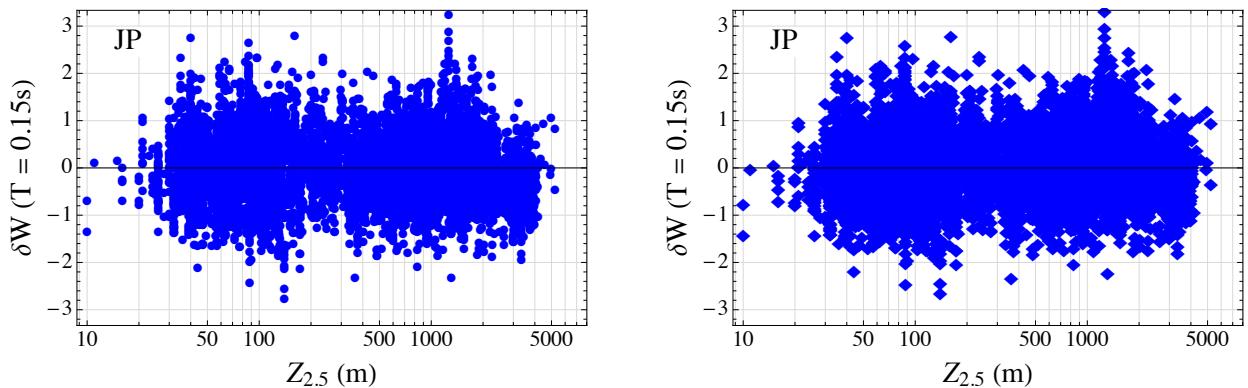


Figure 118: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.15$ sec for Japan. Left: without Z-model; Right: with Z-model.

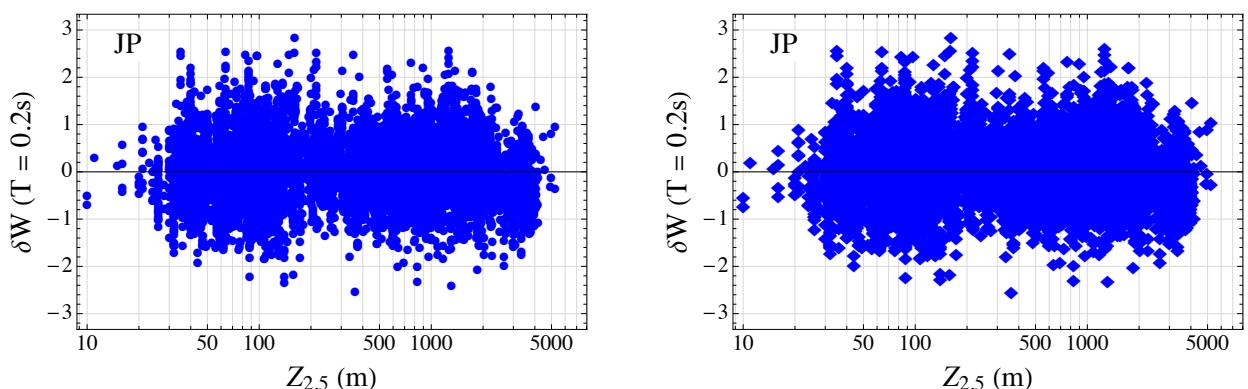


Figure 119: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.2$ sec for Japan. Left: without Z-model; Right: with Z-model.

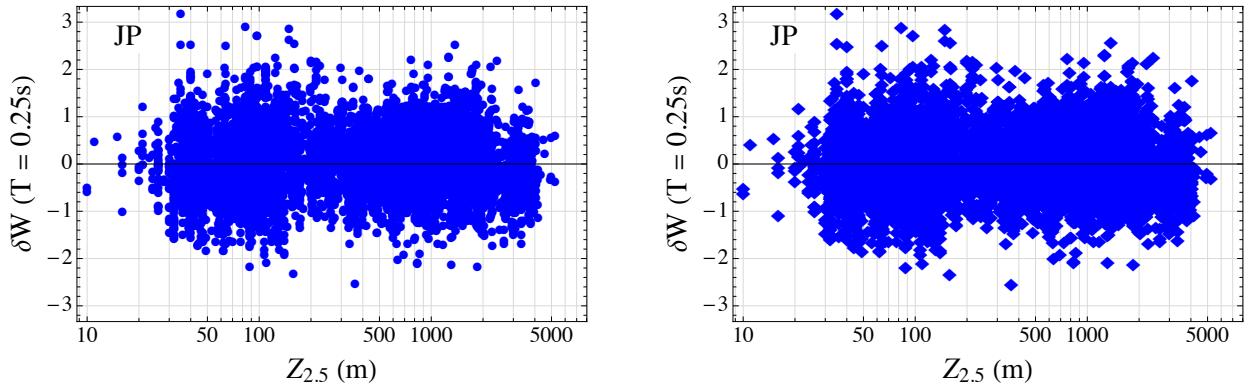


Figure 120: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.25$ sec for Japan. Left: without Z-model; Right: with Z-model.

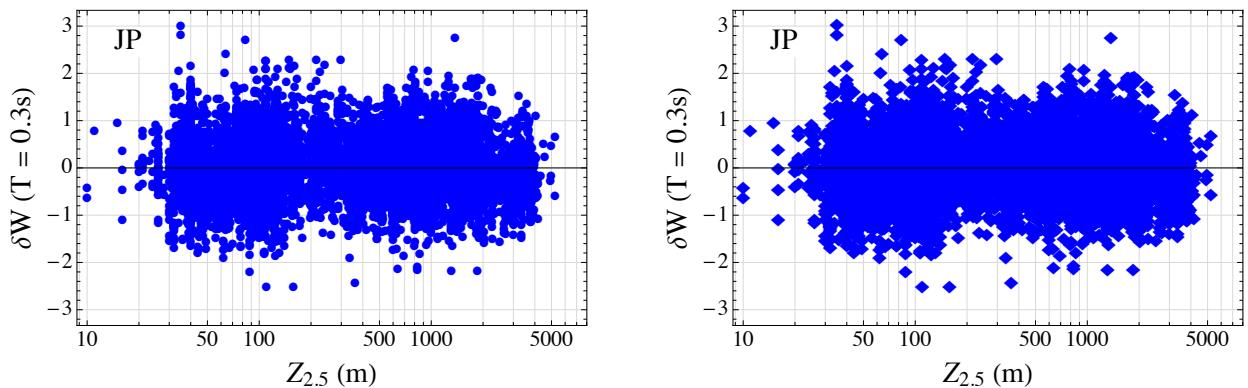


Figure 121: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.3$ sec for Japan. Left: without Z-model; Right: with Z-model.

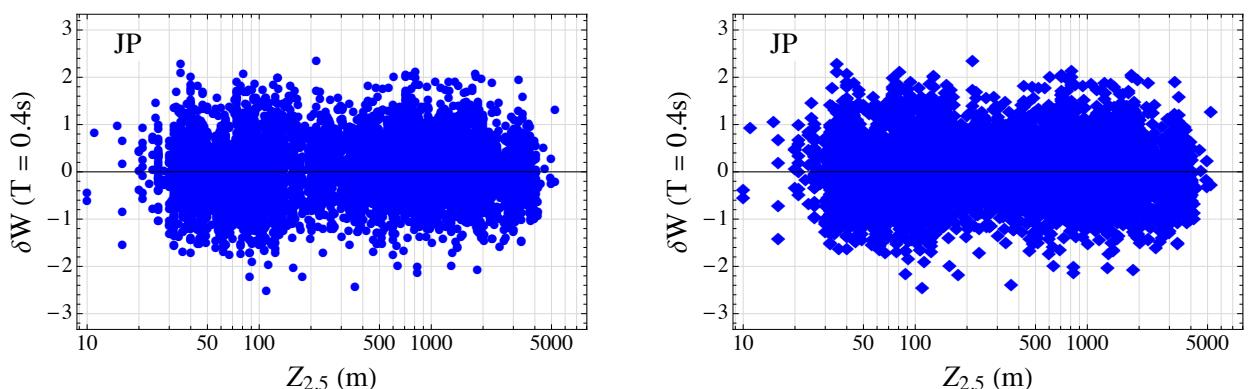


Figure 122: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.4$ sec for Japan. Left: without Z-model; Right: with Z-model.

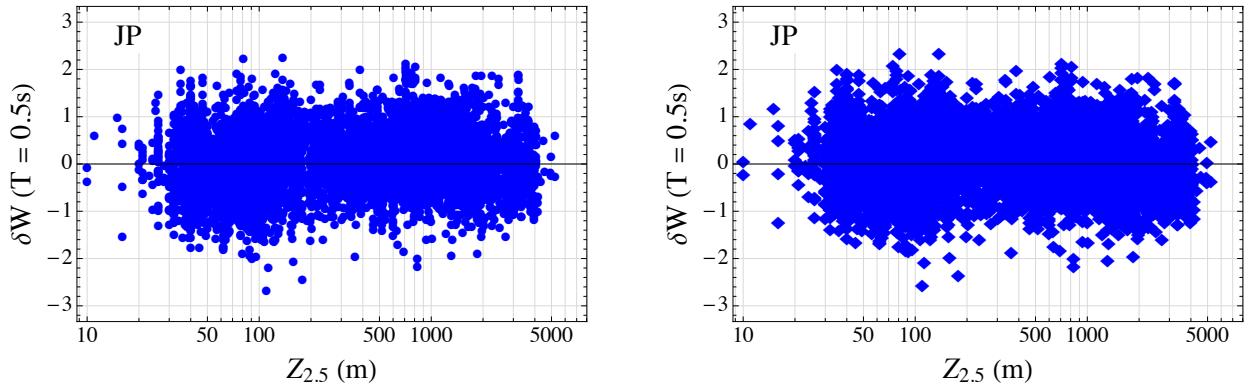


Figure 123: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.5$ sec for Japan. Left: without Z-model; Right: with Z-model.

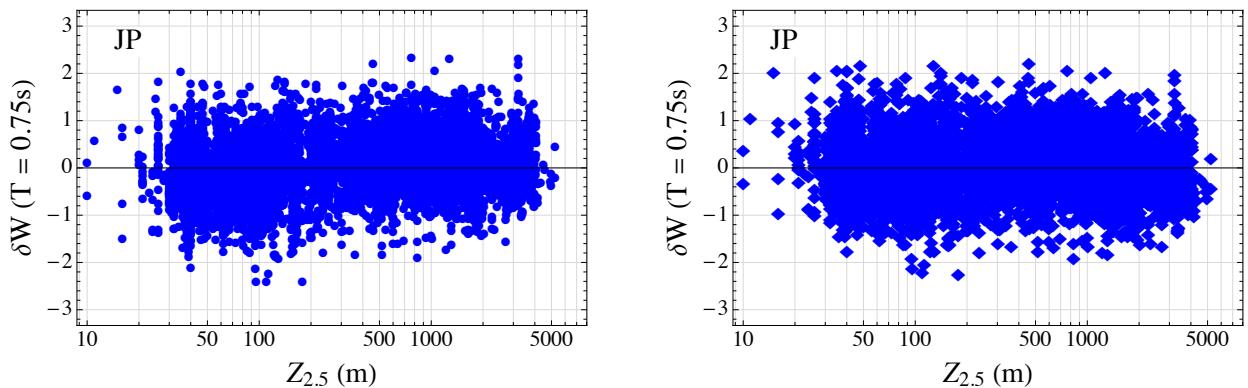


Figure 124: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 0.75$ sec for Japan. Left: without Z-model; Right: with Z-model.

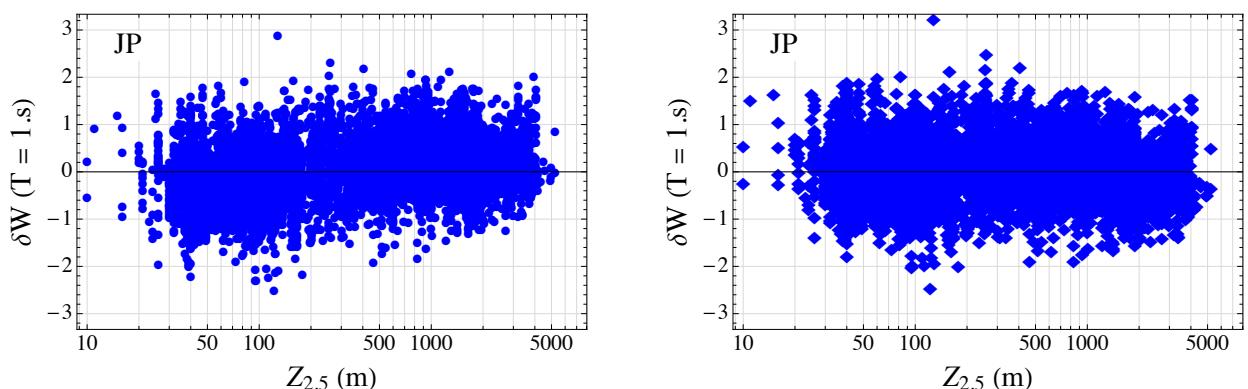


Figure 125: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 1.$ sec for Japan. Left: without Z-model; Right: with Z-model.

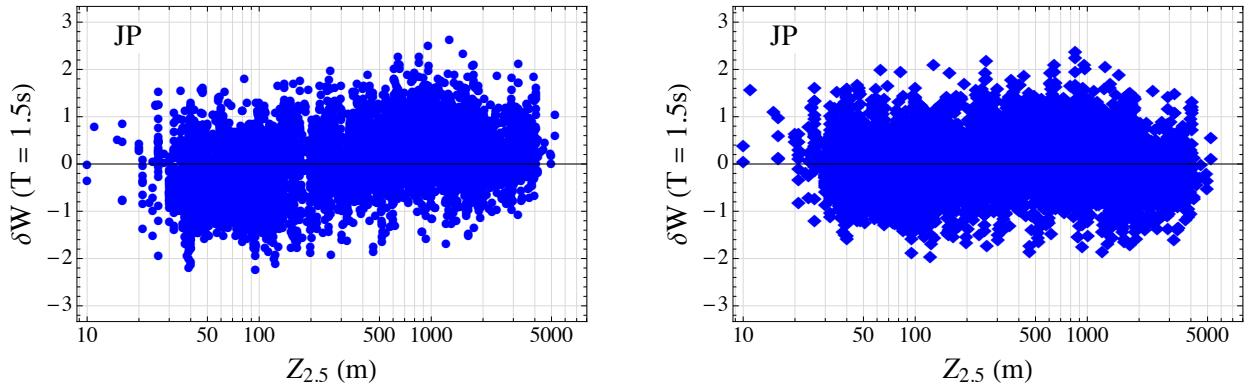


Figure 126: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 1.5$ sec for Japan. Left: without Z-model; Right: with Z-model.

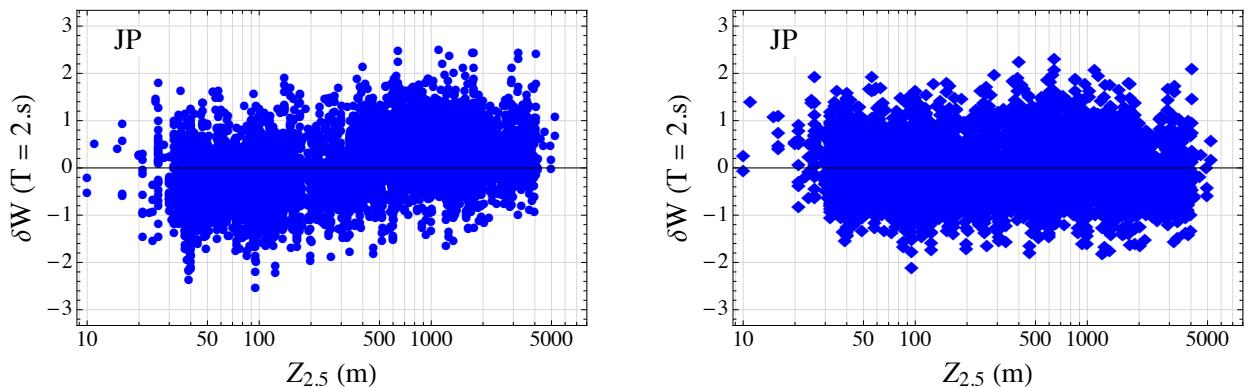


Figure 127: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 2.0$ sec for Japan. Left: without Z-model; Right: with Z-model.

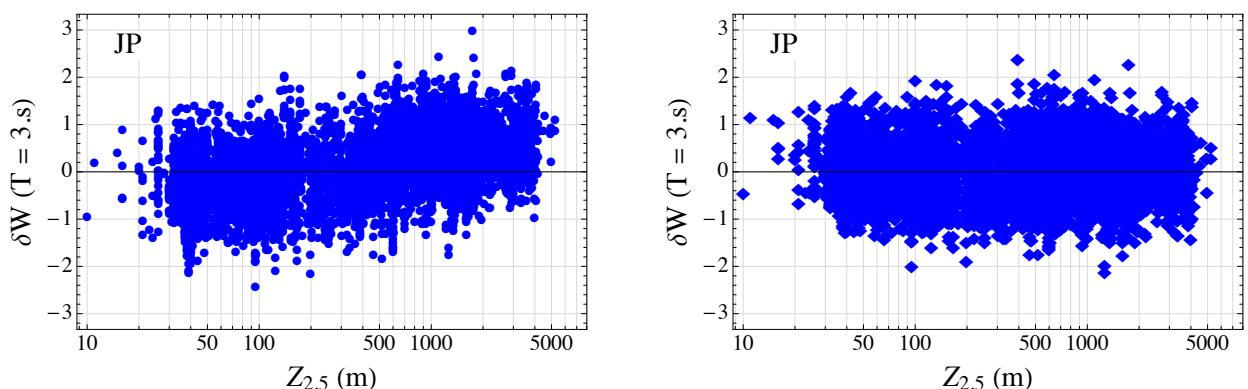


Figure 128: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 3.0$ sec for Japan. Left: without Z-model; Right: with Z-model.

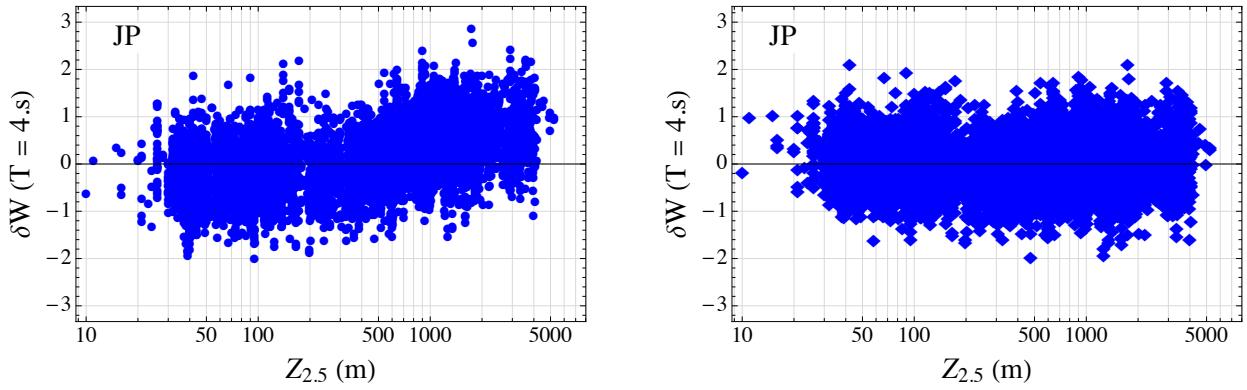


Figure 129: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 4.$ sec for Japan. Left: without Z-model; Right: with Z-model.

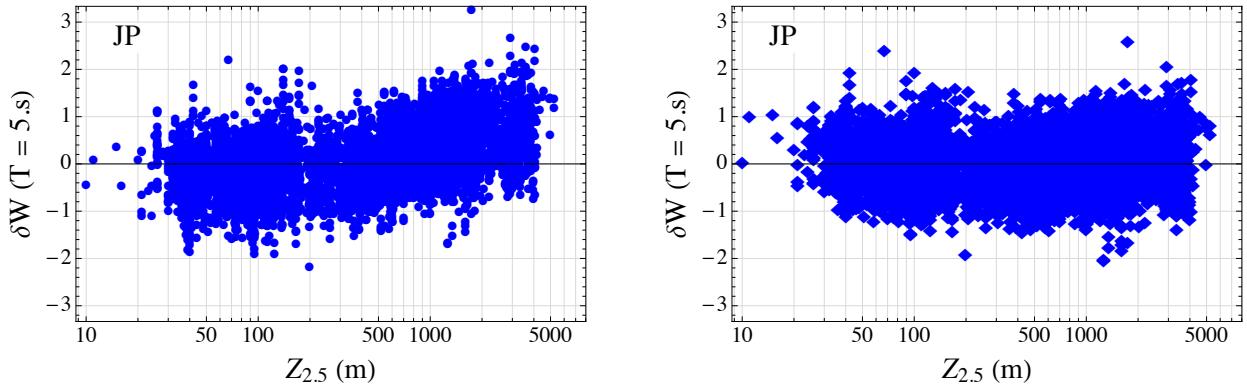


Figure 130: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 5.$ sec for Japan. Left: without Z-model; Right: with Z-model.

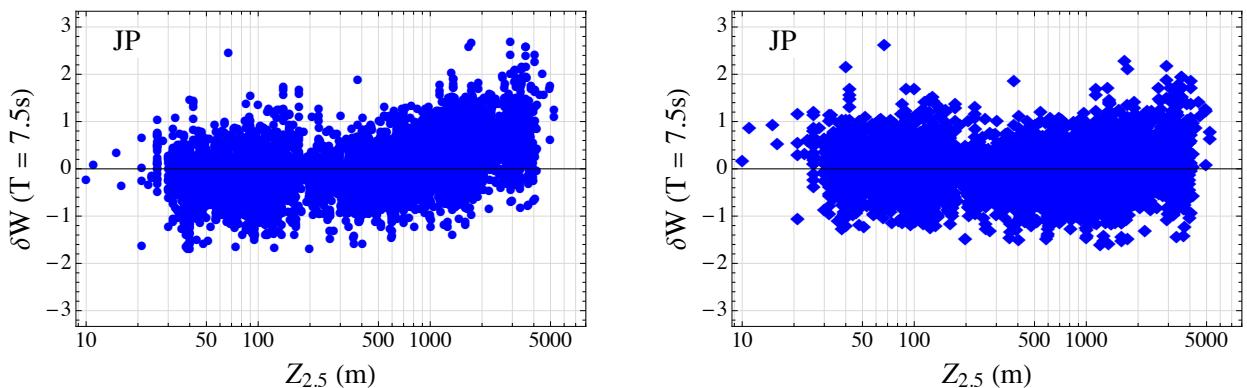


Figure 131: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 7.5$ sec for Japan. Left: without Z-model; Right: with Z-model.

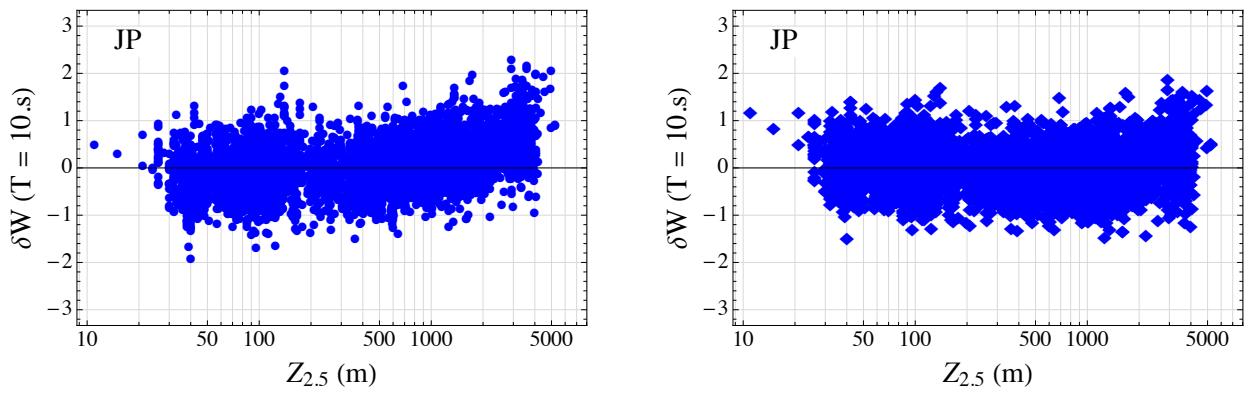


Figure 132: Plot of within-event residuals versus $Z_{2.5}$ and PSA at $T = 10$. sec for Japan. Left: without Z-model; Right: with Z-model.

1.11 NewZealand $Z_{1.0}$

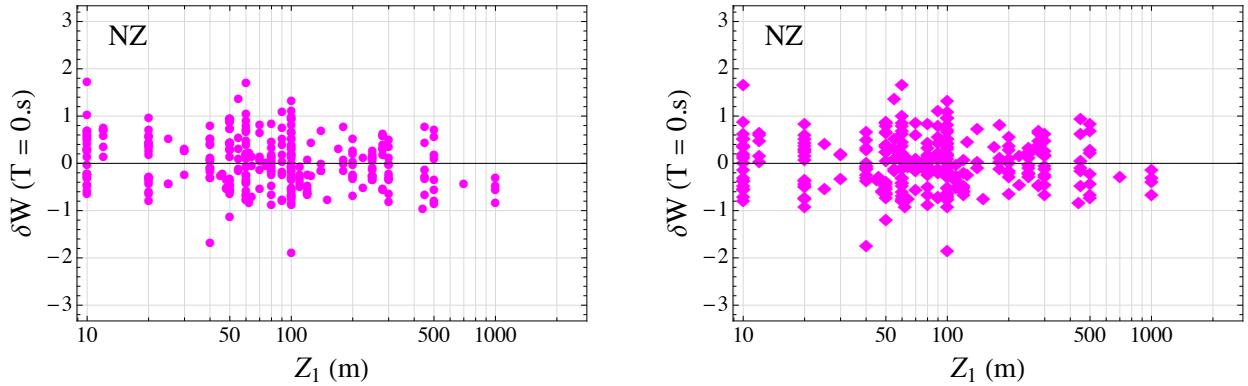


Figure 133: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

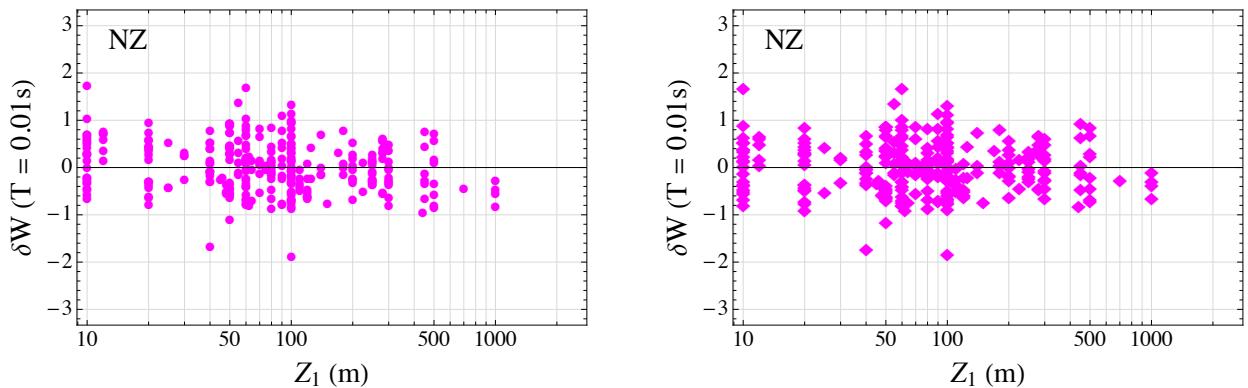


Figure 134: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.01$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

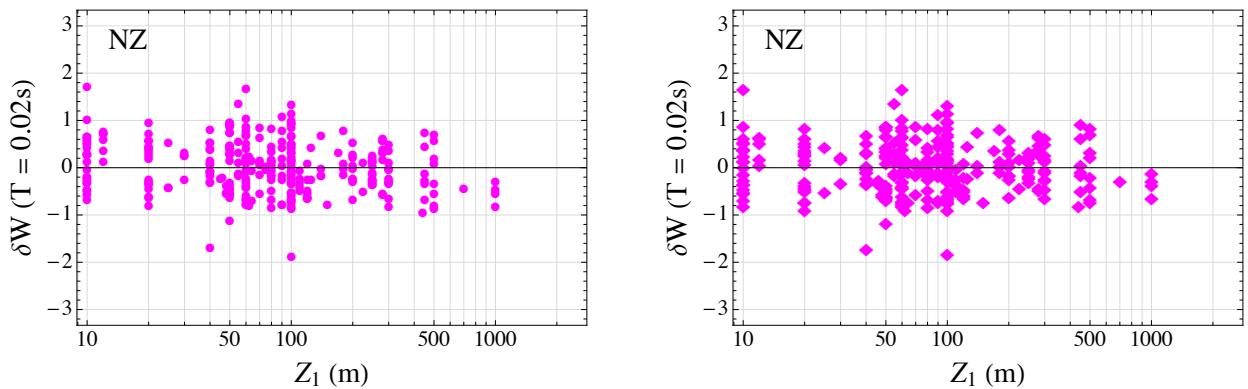


Figure 135: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.02$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

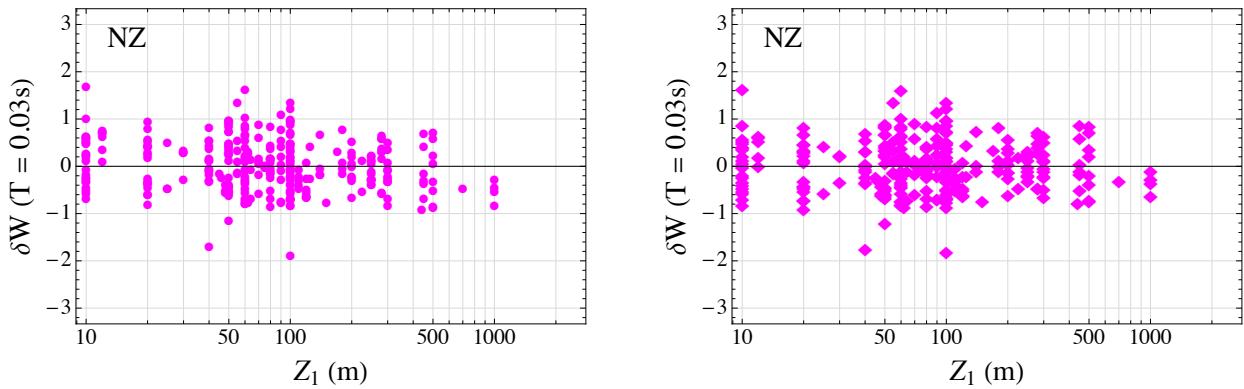


Figure 136: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.03$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

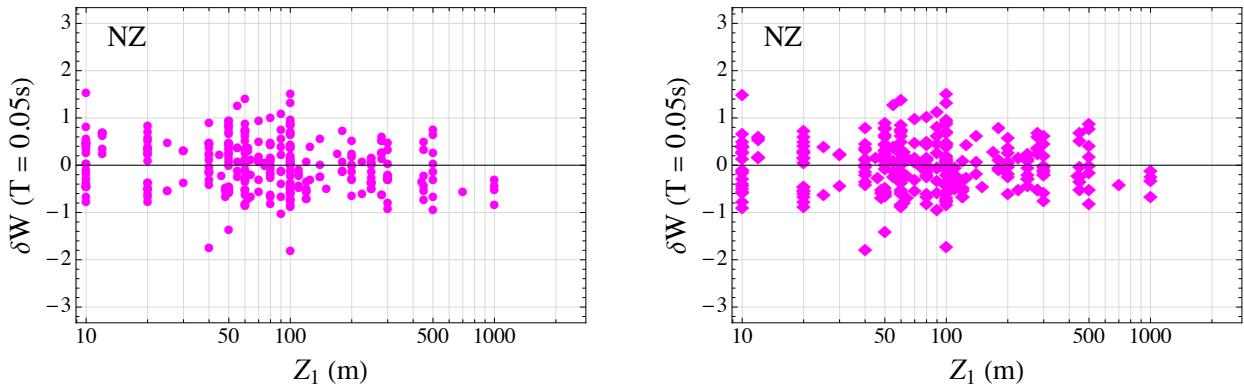


Figure 137: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.05$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

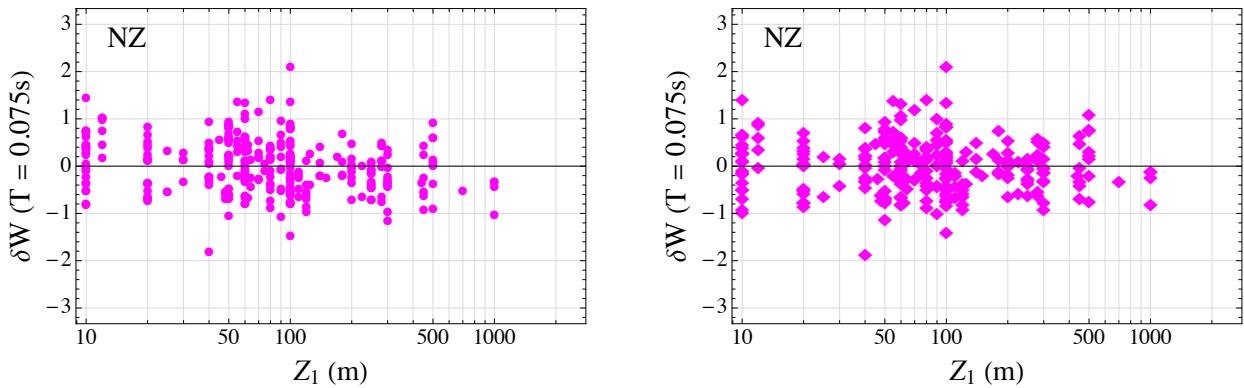


Figure 138: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.075$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

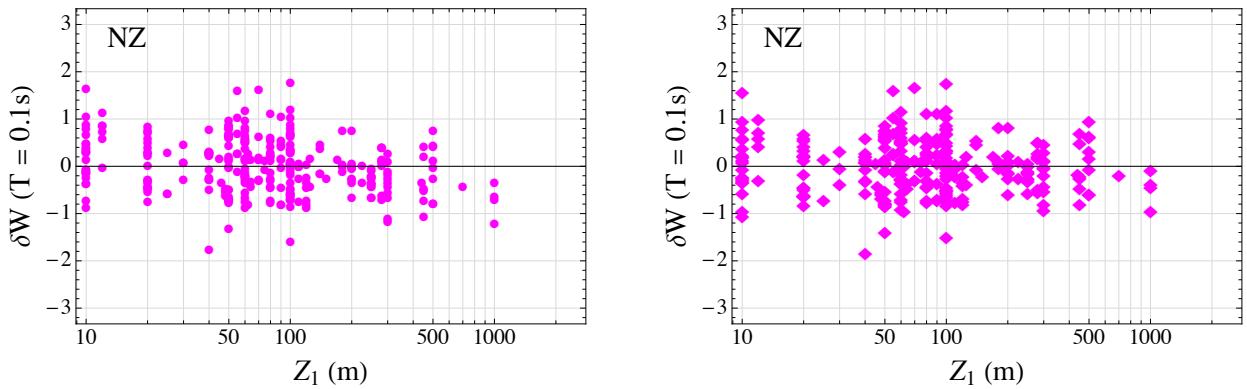


Figure 139: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.1$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

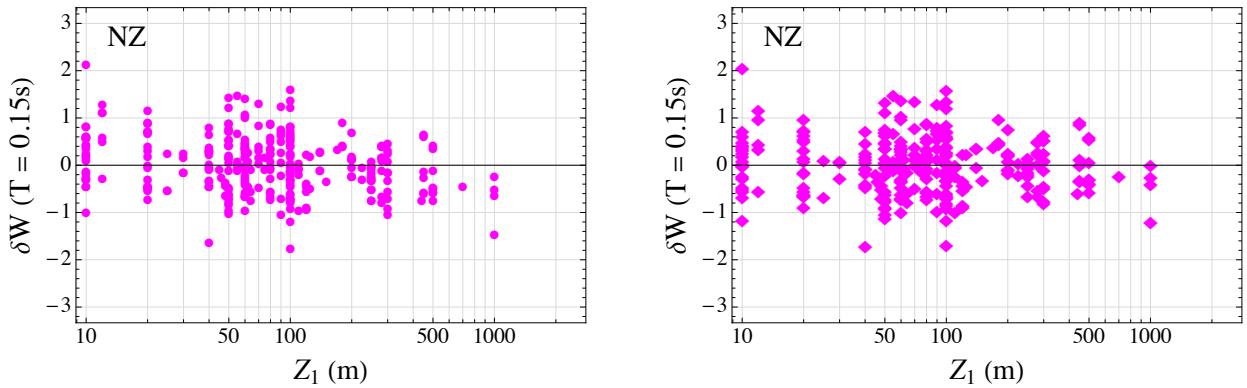


Figure 140: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.15$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

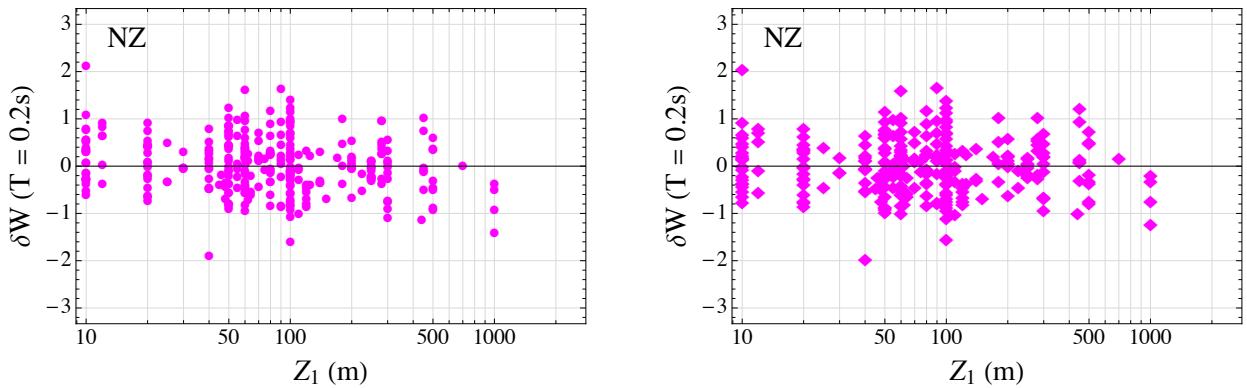


Figure 141: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.2$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

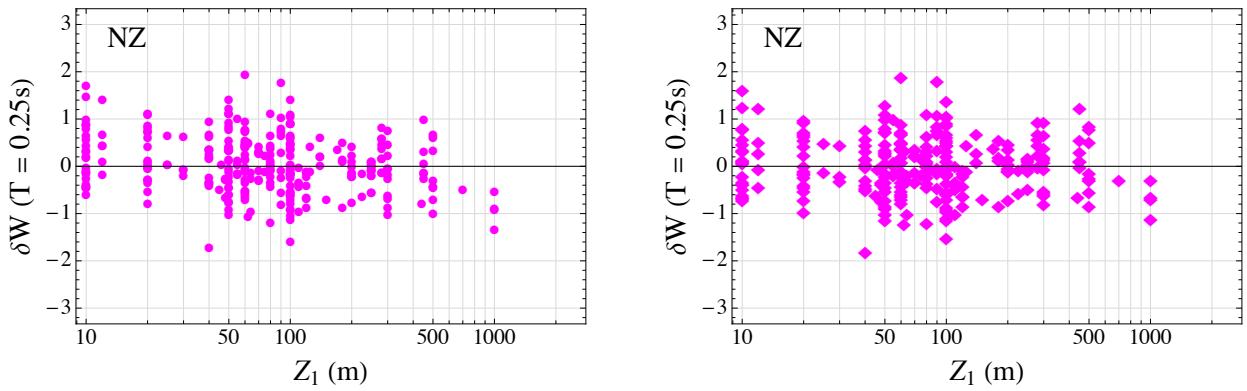


Figure 142: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.25$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

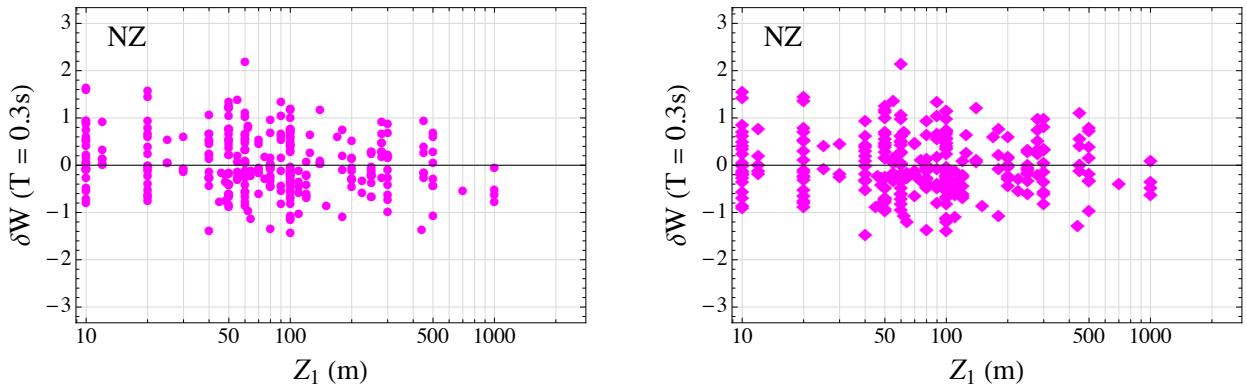


Figure 143: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.3$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

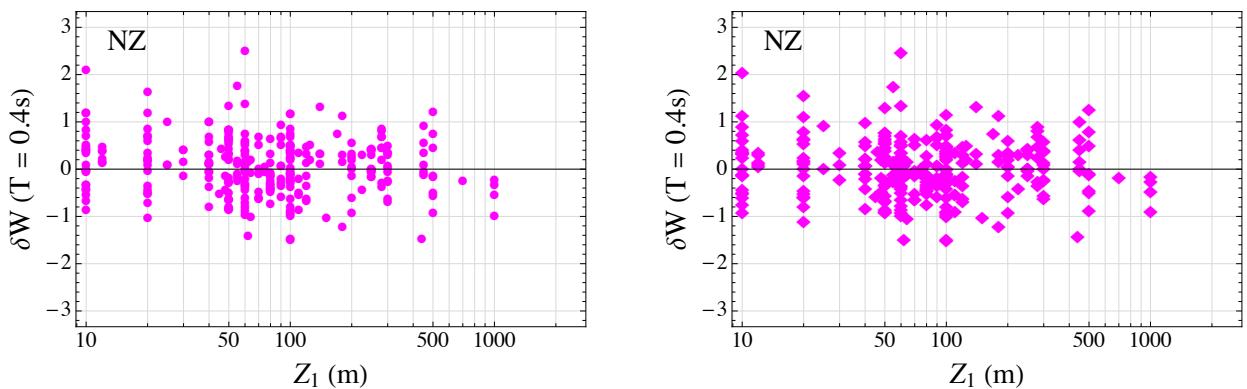


Figure 144: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.4$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

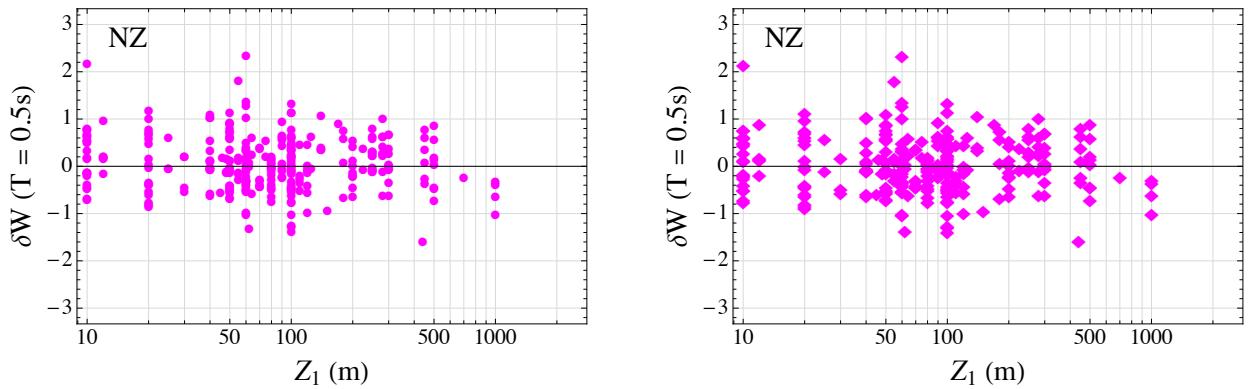


Figure 145: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.5$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

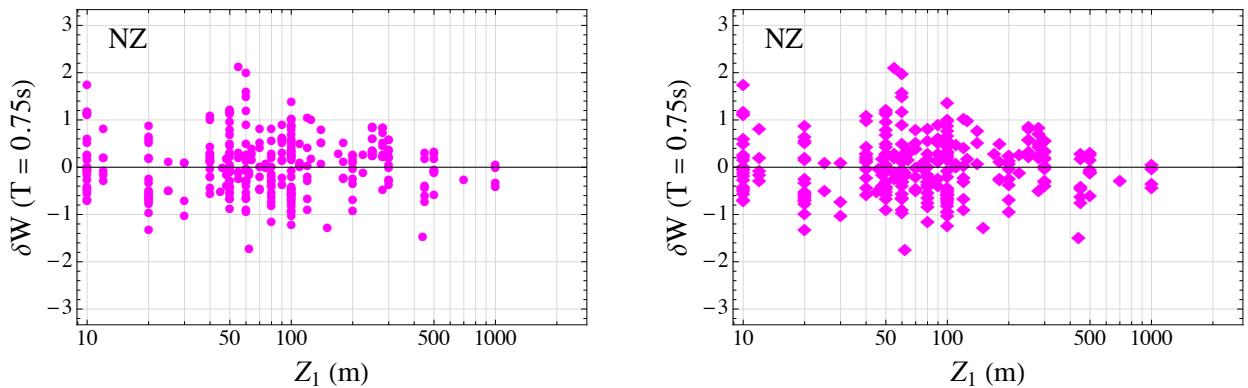


Figure 146: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.75$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

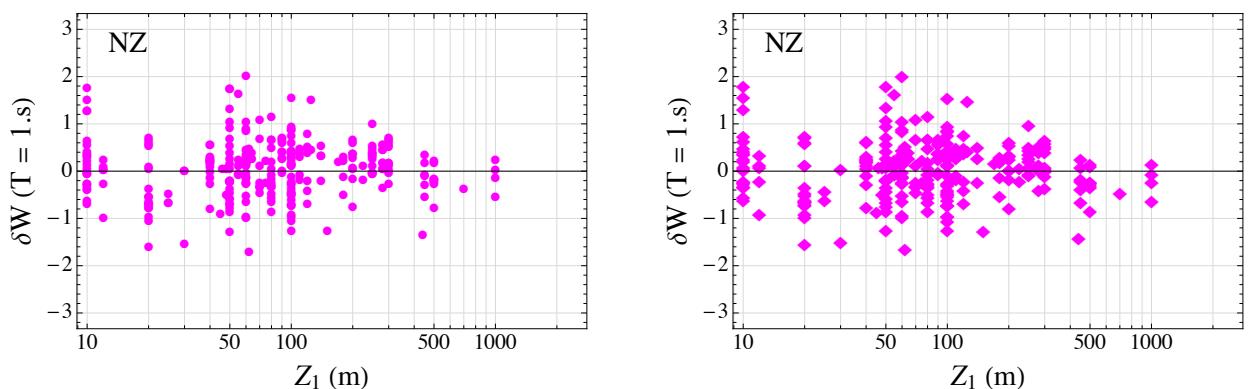


Figure 147: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 1.$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

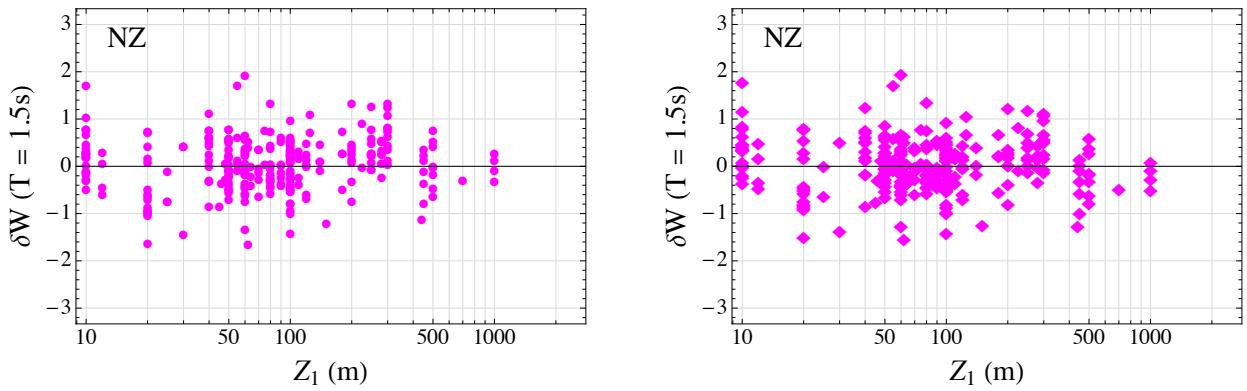


Figure 148: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 1.5$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

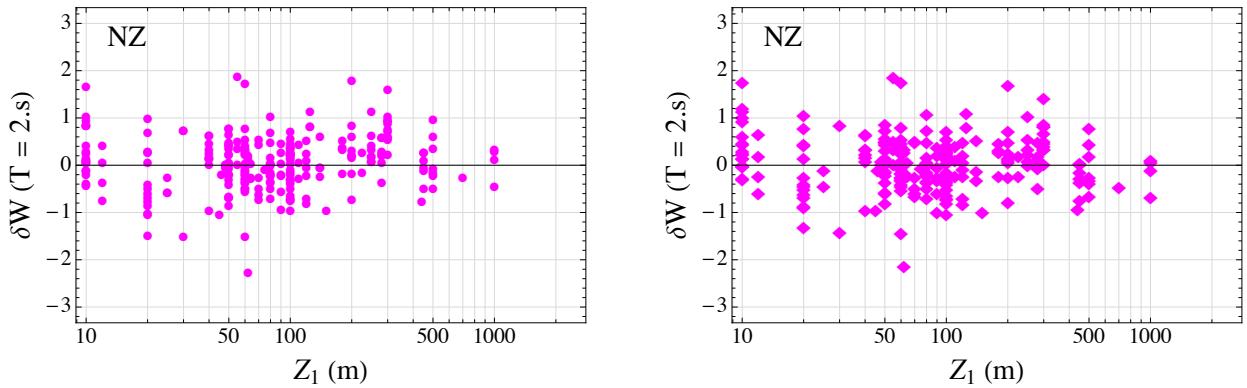


Figure 149: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 2.$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

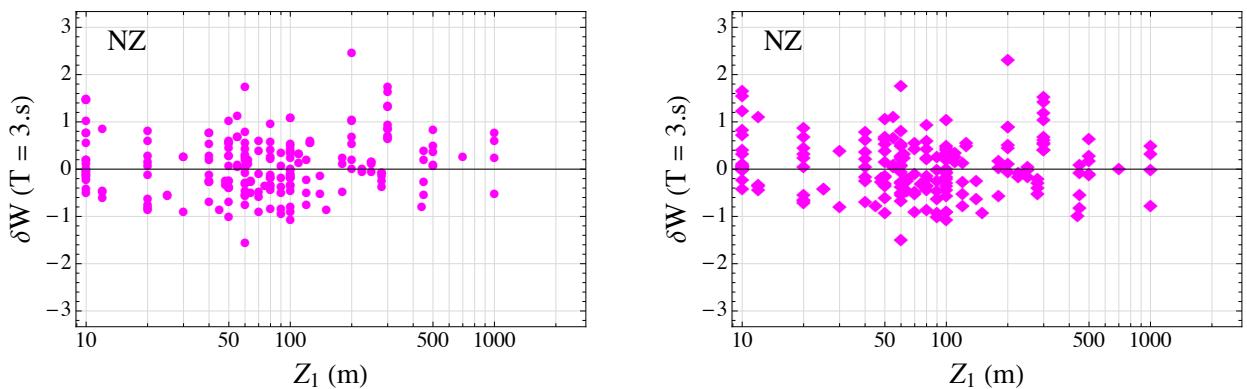


Figure 150: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 3.$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

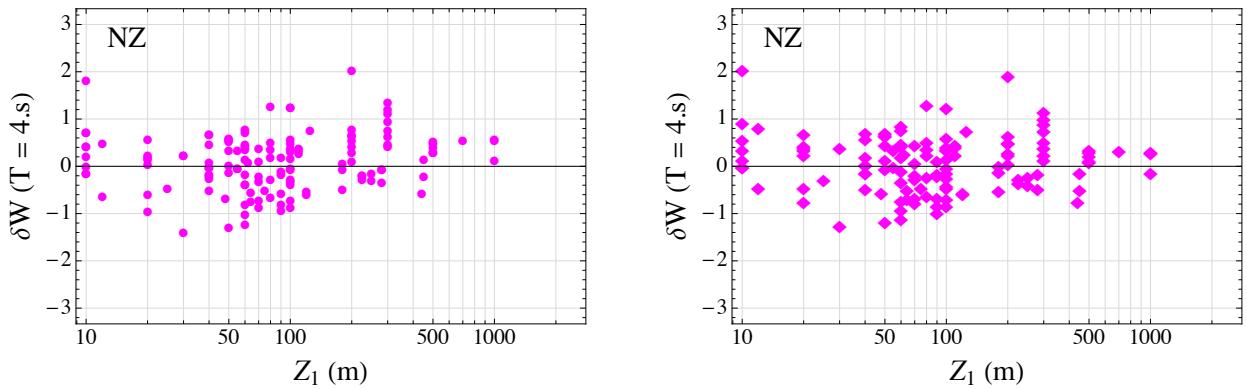


Figure 151: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 4.$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

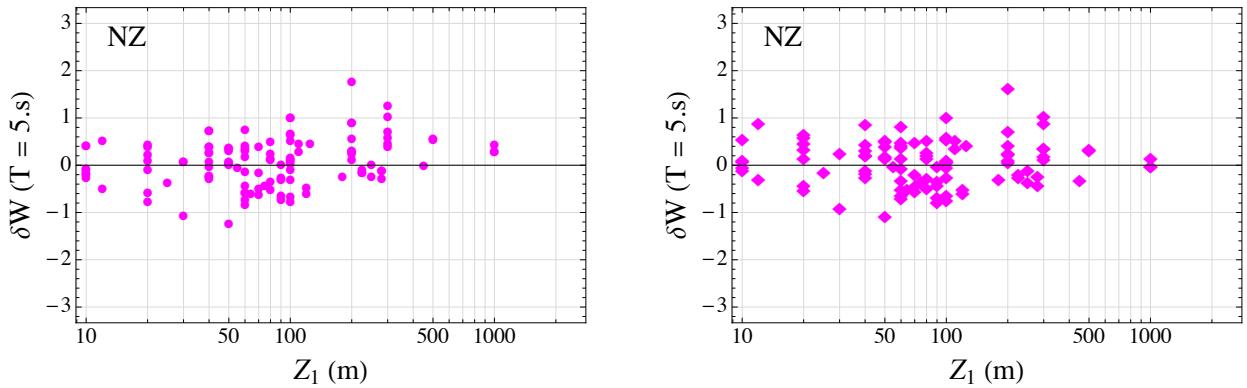


Figure 152: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 5.$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

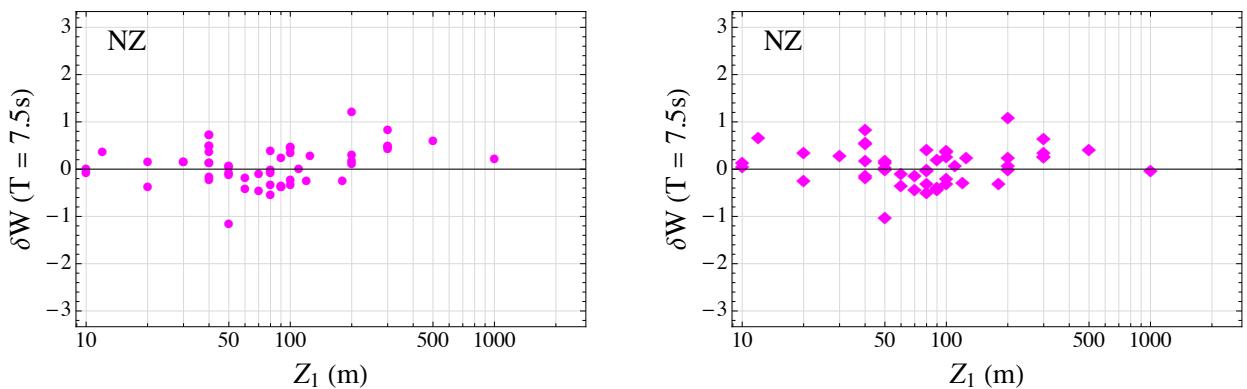


Figure 153: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 7.5$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

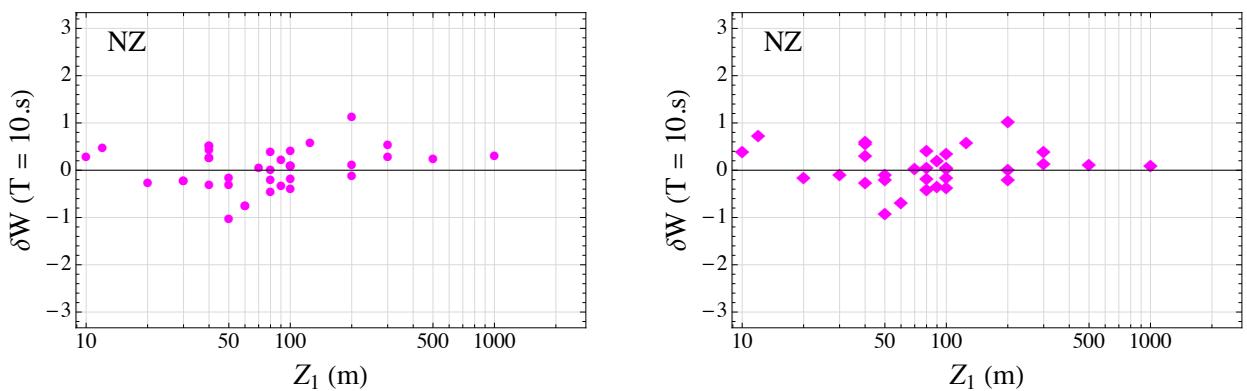


Figure 154: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 10.$ sec for NewZealand. Left: without Z-model; Right: with Z-model.

1.12 Taiwan $Z_{1.0}$

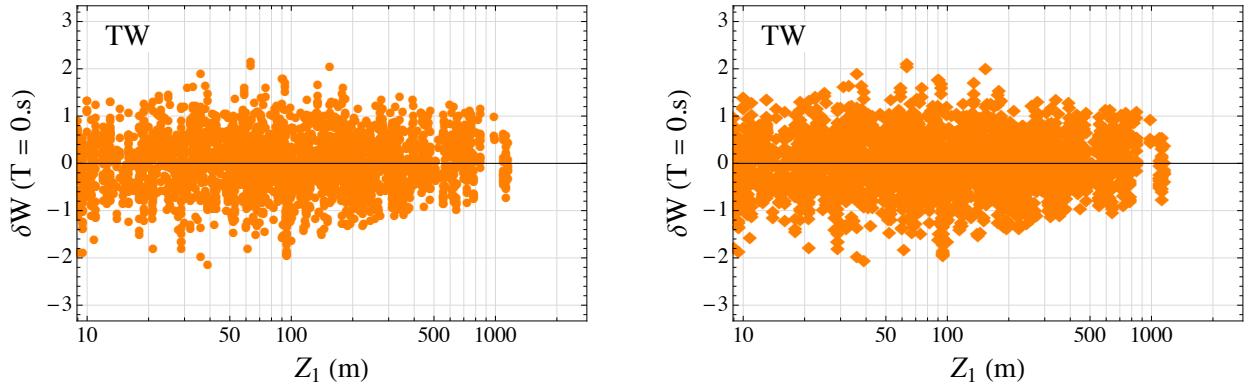


Figure 155: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

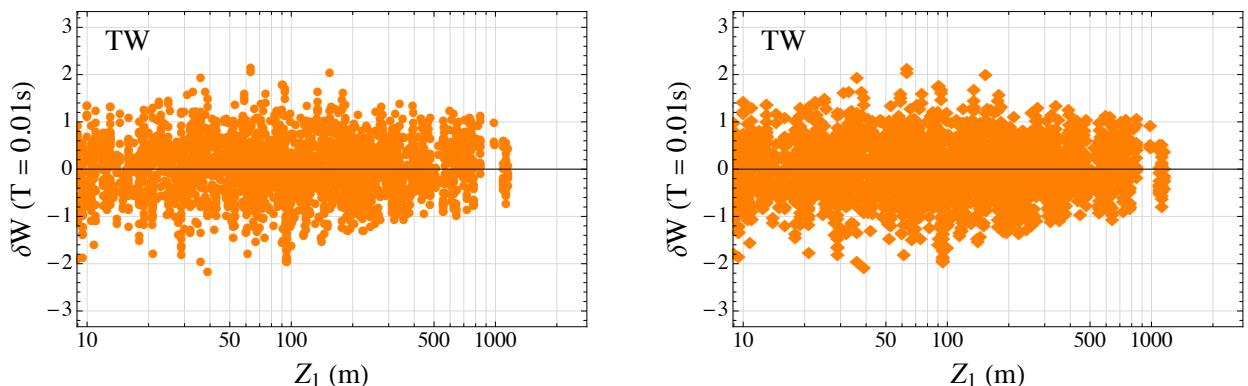


Figure 156: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.01$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

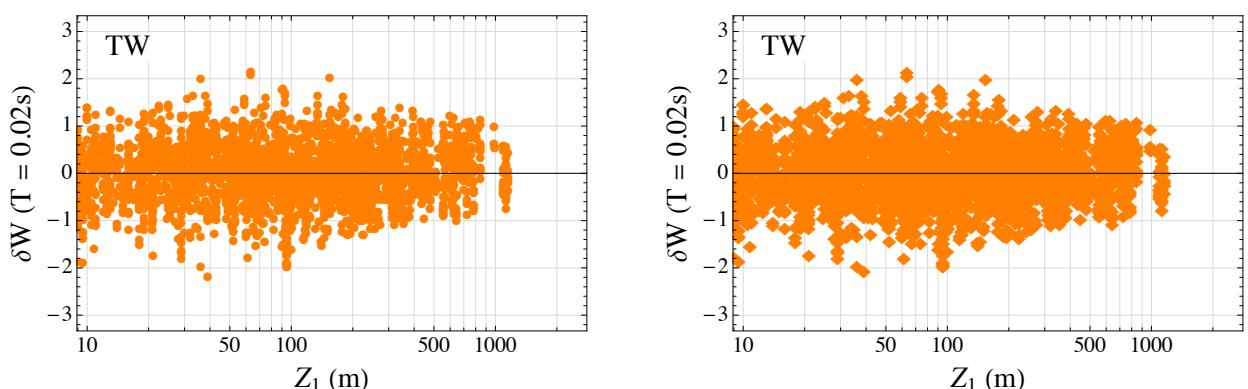


Figure 157: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.02$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

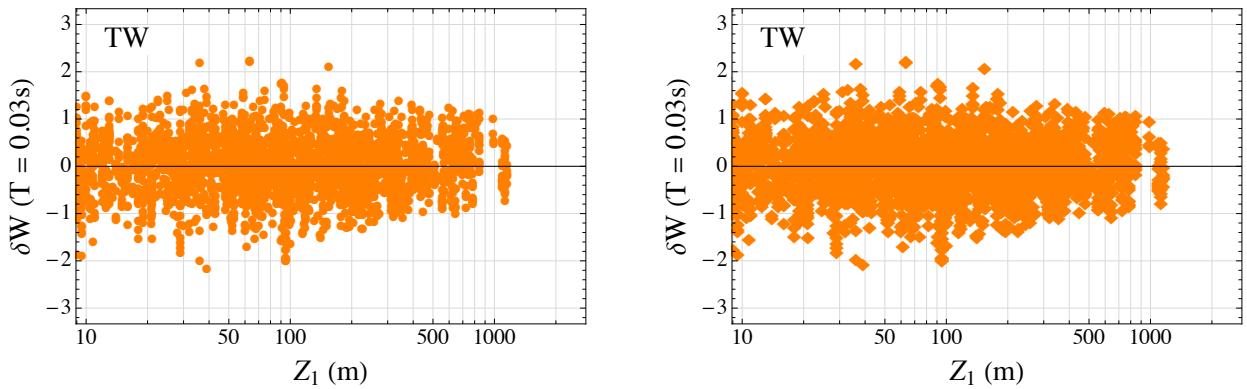


Figure 158: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.03$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

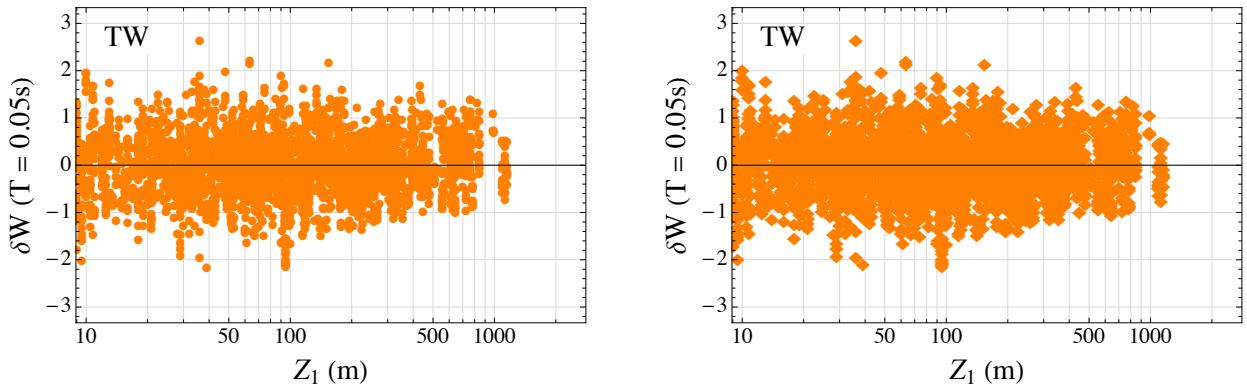


Figure 159: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.05$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

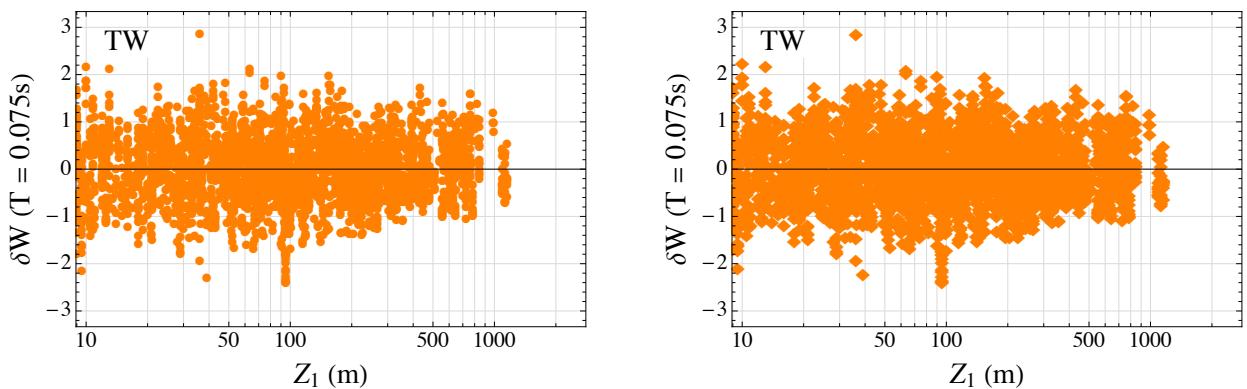


Figure 160: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.075$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

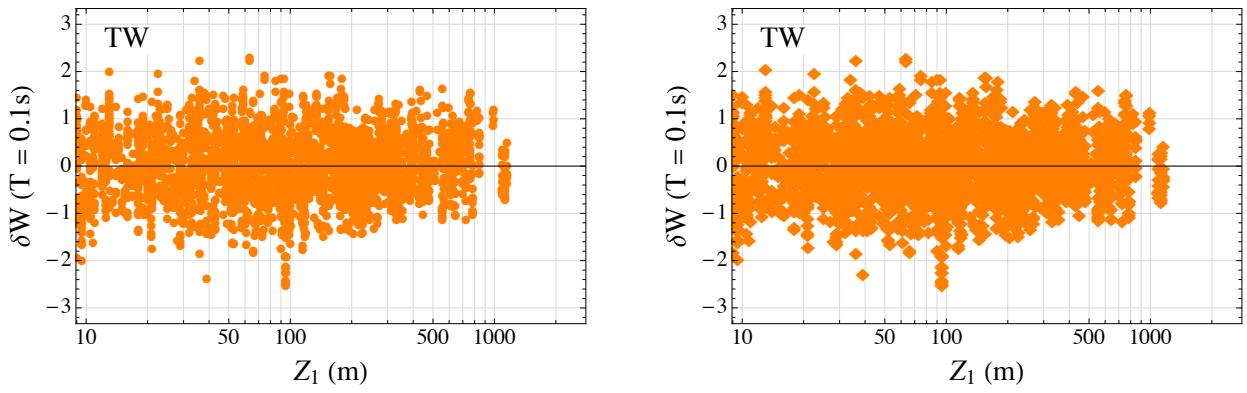


Figure 161: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.1$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

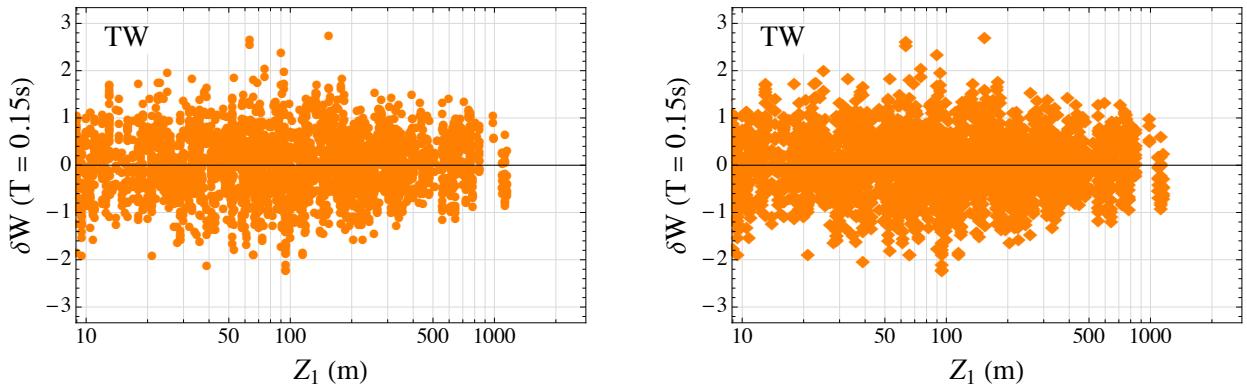


Figure 162: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.15$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

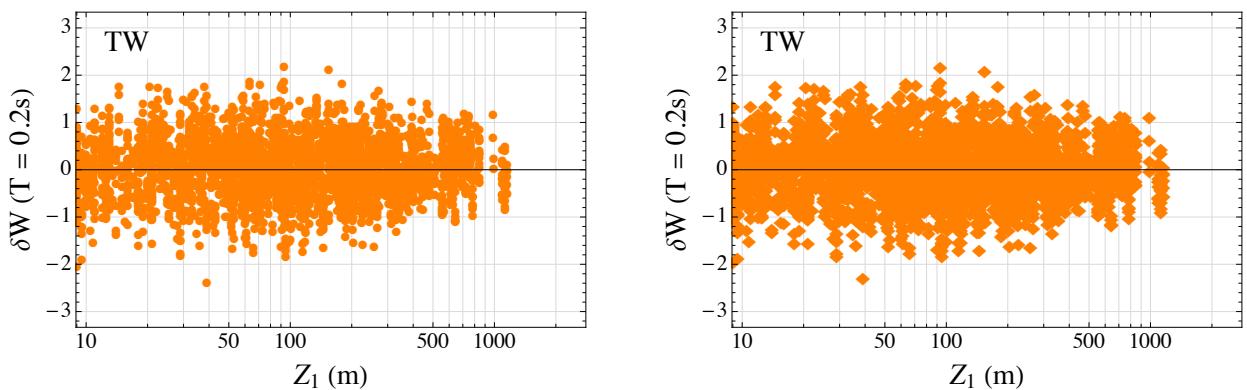


Figure 163: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.2$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

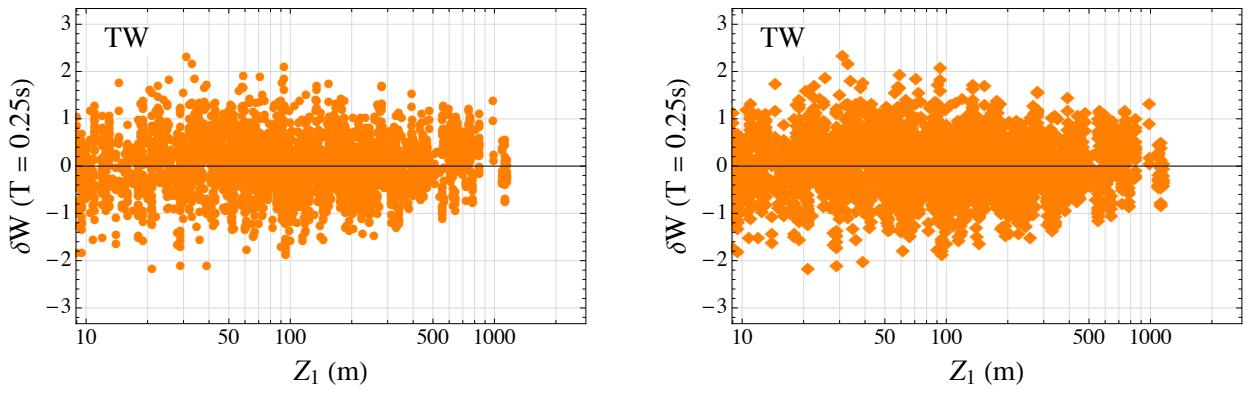


Figure 164: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.25$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

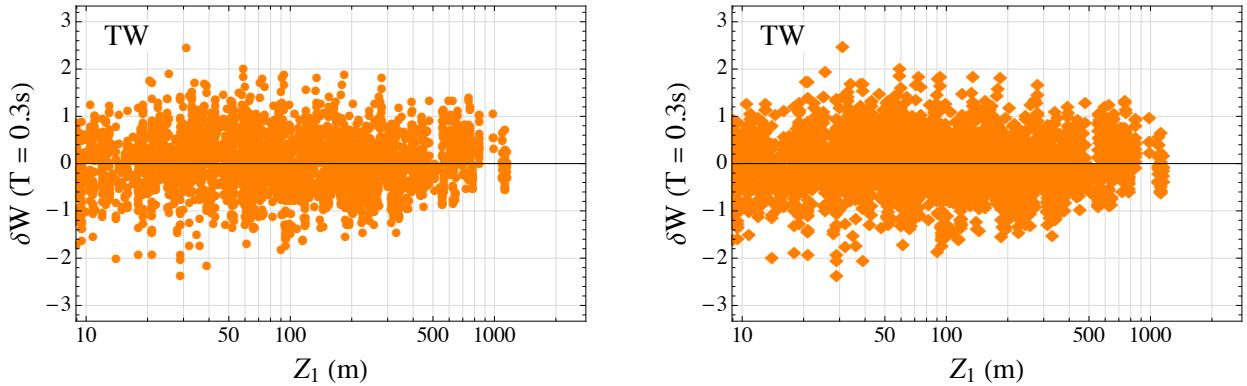


Figure 165: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.3$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

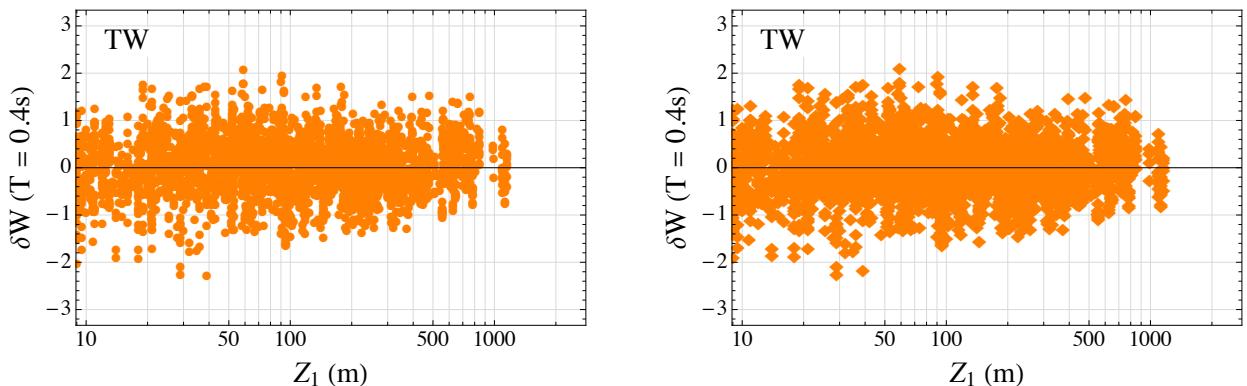


Figure 166: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.4$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

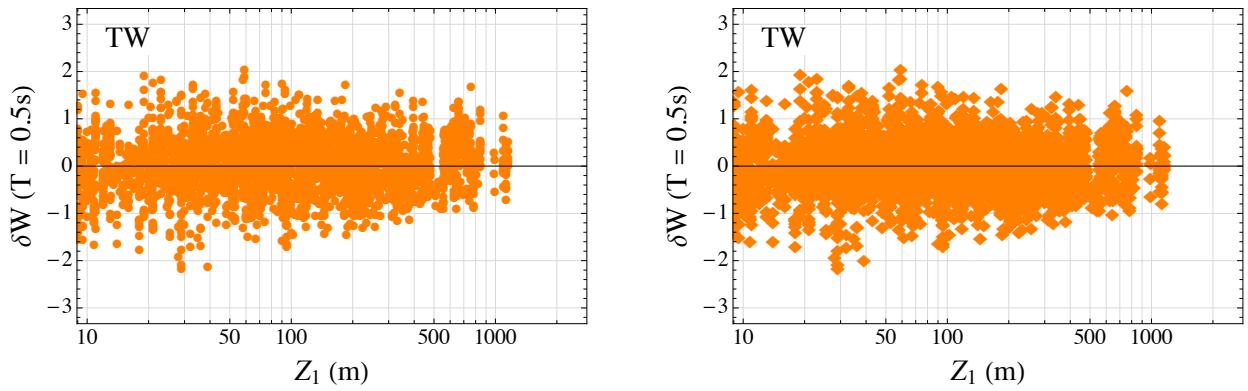


Figure 167: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.5$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

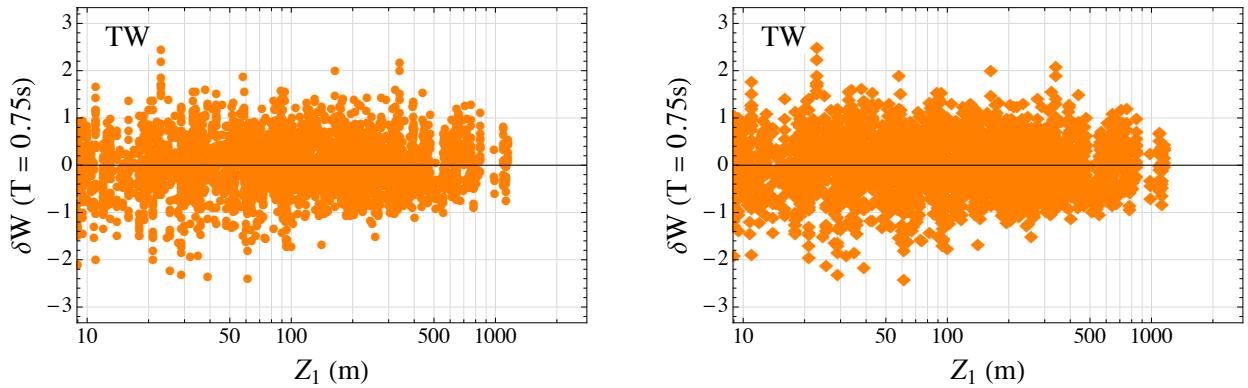


Figure 168: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 0.75$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

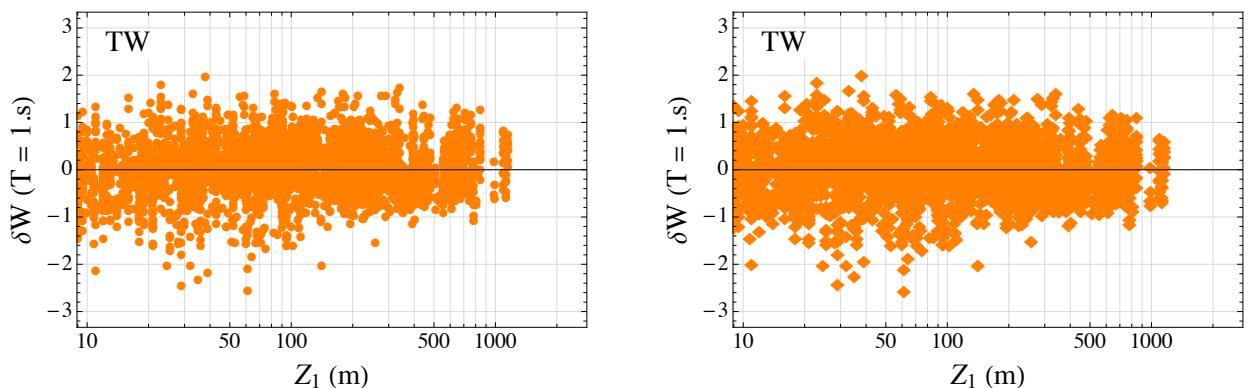


Figure 169: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 1.$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

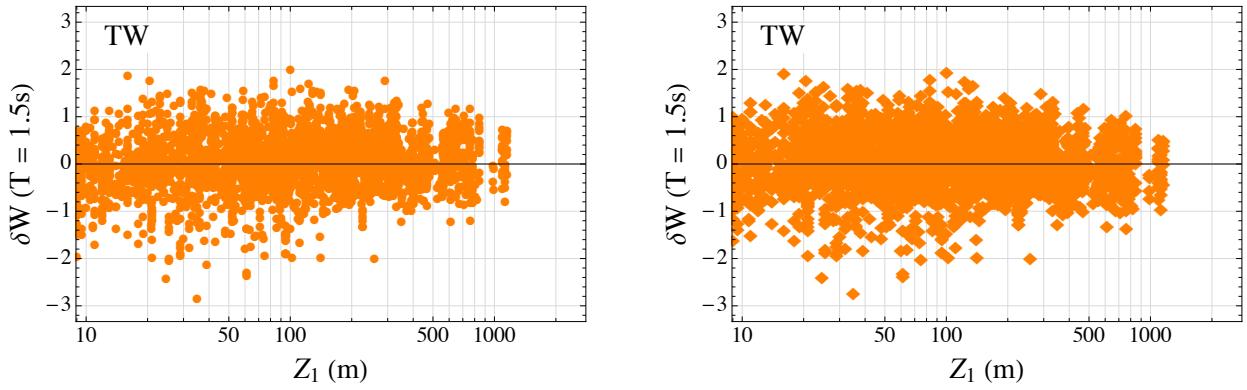


Figure 170: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 1.5$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

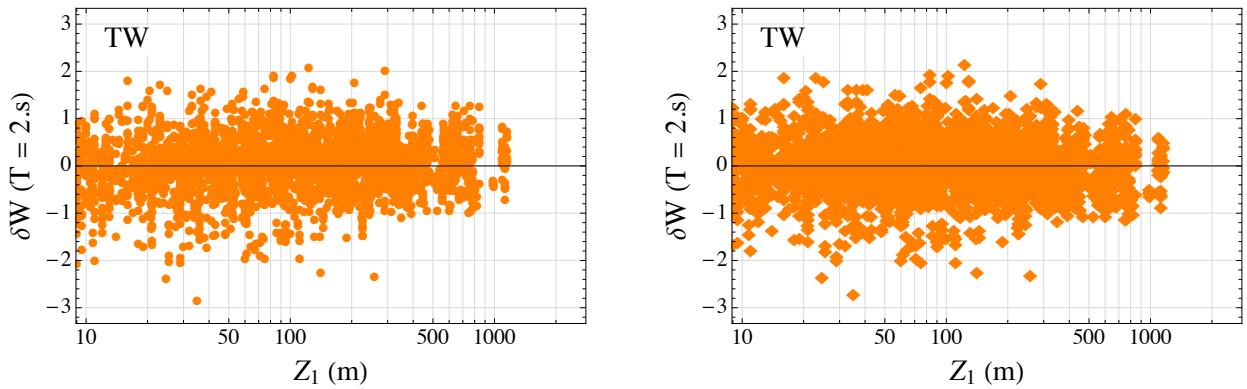


Figure 171: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 2.$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

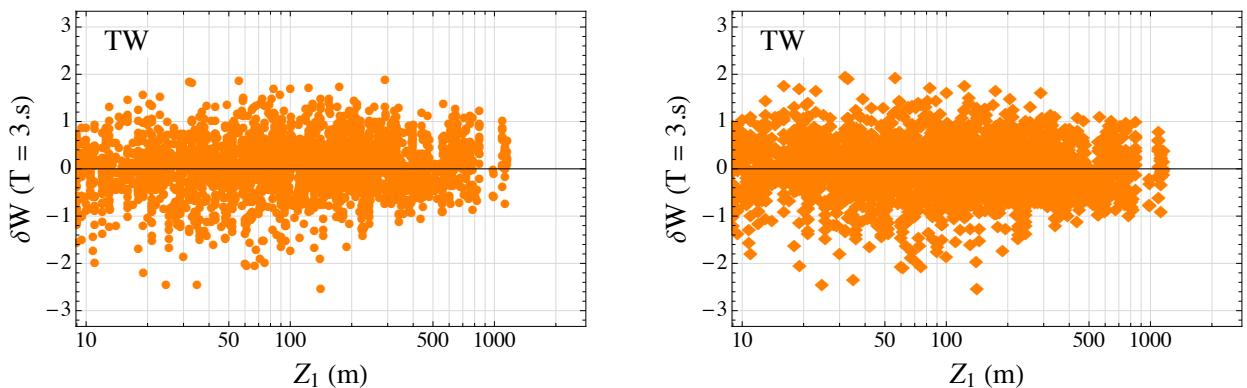


Figure 172: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 3.$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

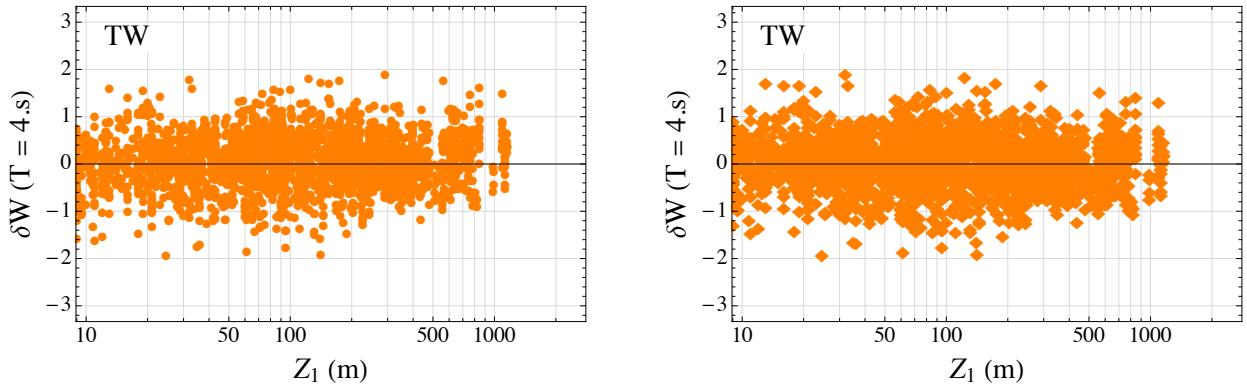


Figure 173: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 4$. sec for Taiwan. Left: without Z-model; Right: with Z-model.

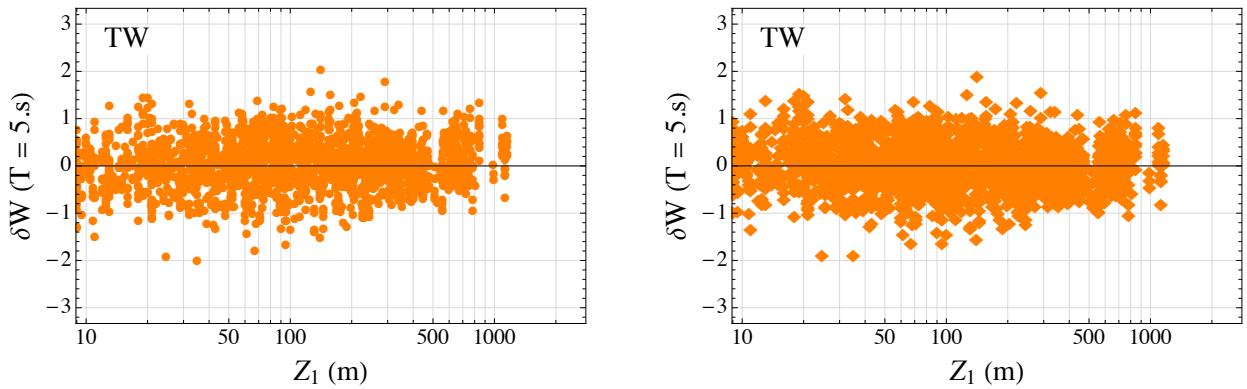


Figure 174: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 5$. sec for Taiwan. Left: without Z-model; Right: with Z-model.

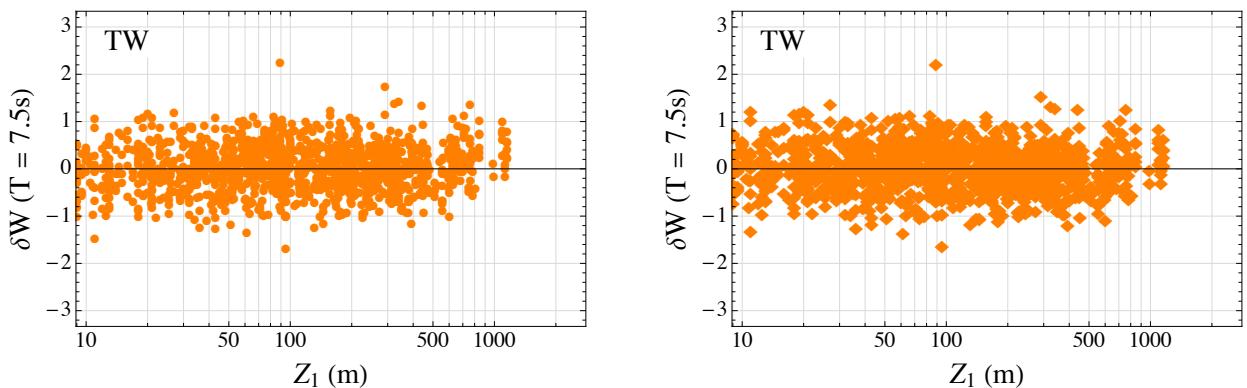


Figure 175: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 7.5$ sec for Taiwan. Left: without Z-model; Right: with Z-model.

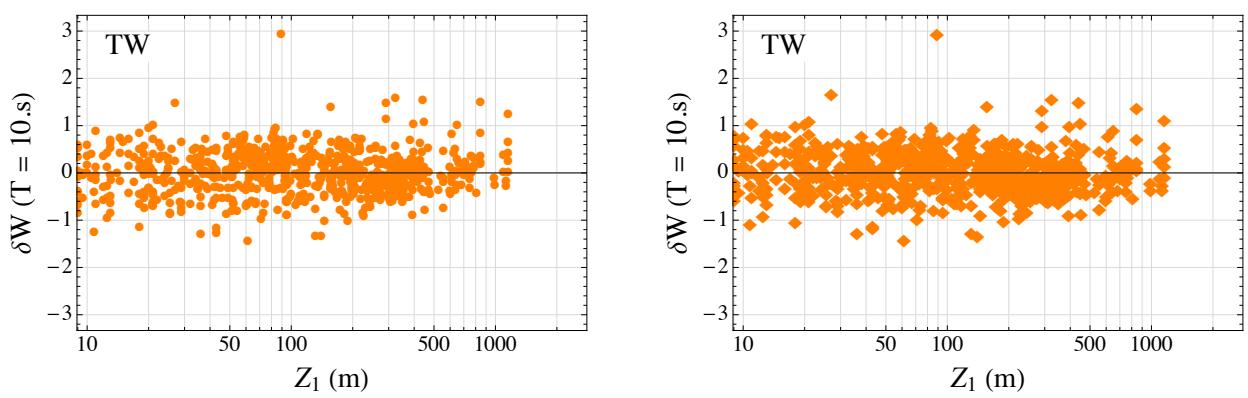


Figure 176: Plot of within-event residuals versus $Z_{1.0}$ and PSA at $T = 10.$ sec for Taiwan. Left: without Z-model; Right: with Z-model.