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# Distribution of flexural deflection in the worldwide outer rise area

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The outer rise on the fringe of a subduction system is caused by an accreted load on the flexed oceanic lithosphere. The magnitude of the deflection is usually linked to the stress state beard by the oceanic plate. In a coupled subduction zone, the stress is abundantly accumulated across the plate boundary which should affect the flexural properties of the subducted plate. Thus, the variation of the outer rise in shape may reflect the seismogenic characteristics of the subduction system. In this study, we intent to find the correlation between the flexure deflection (Wb) of the outer rise and the subduction zone properties by comparing several slab parameters and the Wb distribution. The estimation of Wb is performed based on the available bathymetry data and the statistic analysis of earthquakes is from the global ISC earthquake catalog for the period of 1900-2015. Our result shows a progressive change of Wb in space, suggesting a robust calculation. The average Wb of worldwise subduction system spreads from 348 to 682 m. No visible distinction in the ranging of Wb was observed for different subduction zones. However, in a weak coupling subduction system, the standard variation of Wb has generally larger value. Relatively large Wb generally occurs in the center of the trench system, whereas small Wb for the two ends of trench. The comparison of Wb and several slab parameters shows that the Wb may be correlated with the maximal magnitude and the number of earthquakes. Otherwise, no clear relationship with other parameters can be obtained.