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Application of regression analysis for suspended sediment yield estimation in rivers of the Kamchatsky Krai (Far East of Russia)

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The total suspended sediment yield of rivers in the Kamchatsky Krai into the Pacific Ocean, the Bering Sea and the Sea of Okhotsk is estimated including river basins without stationary monitoring data. Regression equations of specific suspended sediment yield from determinative parameters (such as basin area, specific water discharge, mean river slope, average river slope, mean basin height, mean basin slope, river density, percentage of forest land, tributaries draining volcano flanks, and friable volcanic deposits in the catchment) are elaborated for erosive regions (Kuksina and Alexeevsky 2016) in the Kamchatsky Krai. These regressions were used for suspended sediment yield estimation from the 129 non-studied river basins. According our estimations, the total suspended sediment yield of Kamchatsky Krai rivers into the Pacific Ocean, the Bering Sea and the Sea of Okhotsk is 11.4 Mt per year. The maximum of suspended sediments (∼50%) is transported by rivers of the eastern Kamchatka coast into the Pacific Ocean. Approximately one quarter of suspended sediments is transported into the Bering Sea, and almost the same amount proceeds into the Sea of Okhotsk. Such distribution of suspended sediment yield is mainly connected with volcanoes location in the territory (only one of them is situated in the western coast, while 41 of them are in the east of Kamcahtka) and the difference in specific water discharges. Approximately one third of the total suspended sediment yield is transported by two largest rivers in the region (the Kamchatka River and the Penzhina River).
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