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# Modeling storm water mass emissions to the Southern California Bight

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## ABSTRACT

Storm water runoff is perceived as a major source of pollutants that results in adverse environmental effects, but large-scale assessments are rarely conducted. The problem is particularly pronounced in southern California where 17 million people have rapidly developed coastal watersheds. The goal of this study was to make regionwide estimates of mass emissions, assess the relative contribution from urbanized watersheds, and compare pollutant flux from different land uses. A geographic information system-based storm water runoff model was used to estimate pollutant mass emissions based on land use, rainfall, runoff volume, and local water-quality information. Local monitoring data were used to derive runoff coefficients; over 1,700 storm water sampling events were used to calibrate and validate annual loadings. An average rainfall year produced 1,073 x $10^9$ L of runoff, 118,000 metric tons (MT) of suspended solids, 1,940 MT of nitrate-N, 108 MT of zinc, and 15 kg of diazinon. The majority of mass emissions were from urbanized watersheds except for suspended solids, total DDT, and chlorpyrifos. Agricultural areas had the greatest fluxes for pesticides, including total DDT and chlorpyrifos while open areas typically had the smallest.