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Salinity intrusion in the Mekong Delta in a changing climate

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Mekong Delta in Vietnam is the home of more than 18 million inhabitants. In this region, the major economic activities are agriculture and aquaculture. Saltwater intrusion has a great influence on these activities in the large part of the delta. The pattern of the intrusion is changing. And the change can be attributed to both human influence (e.g. canalisation, tidal gate construction,. . .) and natural forcings. In this study we aims at quantifying the possible future change mainly triggered by the latter. To do this the long flow series at Kratie, the main fresh water source for the Mekong Delta will be analyzed by a developed non-stationary approach. At the downtream of this multi-channel estuary system, we consider also the future sea level rise estimation. These two main hydraulic sources will be used into a large-scale hydraulic-based advection-dispersion model developed for the whole Mekong Delta in order to simulate the salinity intrusion process. The uncertainty is examined in a Monte Carlo framework. This results in a number of novel probabilistic hazard maps of saltwater intrusion which may give a better view for future planing of the mixed agri- and aquaculture pattern in the Mekong Delta.