



Testing different approaches to account for population changes in the coastal zone in the course of the 21st century on global scale

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The Shared Socioeconomic Pathways (SSPs) provide the IAV community with five scenarios of plausible population development on national level until 2100. So far, most studies on impact assessment put little emphasis on using population scenarios and prefer the simple assumption of constant population counts to assess exposure and risk in the next decades. Even those studies that use population projections usually do not differentiate on sub-national level and do therefore not consider urbanisation or different growth pattern between coastal and inland areas. In our study, we use the Dynamic Interactive Vulnerability Assessment (DIVA) framework to assess the global population exposed to 1 in 100-year coastal floods using three approaches: a) constant population, b) national-level SSP population projections and c) spatially explicit SSP population projections that consider urbanisation and differences in coastal and inland population growth on sub-national level. The study shows that by 2050 the population projections 'b' lead to an increase of exposure of 30 to 40% compared to the constant population approach 'a'. The combined population and urbanisation approach 'c' shows an increase of 60 to 80% compared to the constant population approach 'a'. We also find the differences between the three approaches to become larger with higher sea-level rise projections. As a disproportionate share of cities is located in the coastal zone, we recommend considering both, population and urbanisation projections in exposure and risk assessments to avoid underestimation of population located in coastal floodplains.