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A catchment to coast framework for the evolution of a coastal mangove wetland

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Coastal wetlands are at the interface between land and sea, receiving water, sediment and nutrients from upstream catchments and also being subject to tides, wave and changing sea levels. Analysis of their future evolution requires the analysis of the entire catchment to coast system, including the effects of climate variability and change and land use changes. We have developed a modelling framework that is able to include both catchment and coastal processes into the evolution of coastal wetlands by coupling an ecogeomorphological wetland evolution model with a hydrosedimentological catchment model to include both tidal and catchment runoff inputs. We drive the model with storm events and sea-level variations and analyse scenarios of future climate and land use for a catchment in Vanua Levu, Fiji that includes a mangrove wetland at the catchment outlet. We inform our model with field, remote sensing and historical data on land use, tides, sediment and nutrient transport and cyclone activity.