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Pathways of change in the socio-shysical dynamics of the Western Indian Ocean deltas

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We present the output of a research combining field based, expert knowledge and remote sensing, based on Google Earth Engine, aimed at the identification of the rates of changes and pathways during the past 35 years, in four Western Indian Ocean River Catchments and Deltas: Tana River in Kenya, Rufiji River in Tanzania, Limpopo River in Mozambique and Betsiboka River in Madagascar. These findings are a set of preliminary results of the collaborative and multidisciplinary effort produced within the GDRI-Sud network DELTAS and as a follow-up of the West Indian Ocean Deltas Exchange and Research network (WIODER) project that brought together the National Museum of Kenya, , University of Dar Es Salaam in Tanzania, University Eduardo Mondlane in Mozambique, Centre National de Recherches sur l'Environnement in Madagascar, University of Southampton in UK, IHE Delft in the Netherlands, Institut de Recherche pour le Développement in France, and International Development Research Centre in Canada and Kenya.

We highlight the similarities in the physical environment and, where possible, also in the socio-economic-political environments that are leading the current changes, potentially affecting resilience of the local population and their sustainable development.

We focused on the substantial changes in the following aspects: precipitation seasonality, flooding patterns and frequency, land cover, dry forest cover, mangrove cover, crop production, fish population, human population, human migration flow, frequency of human conflicts within the delta population.

The observed changes call for reflection given the IPCC projections in climate towards an aridification of the Southern Africa river basins and a wetter condition in the Eastern Africa region. Some signals of these climatic forecast are already recorded in both regions and will be explored in the DIDEM project.