Changes in seagrass coverage after 21 years of climate impact: case of Inhambane Bay (southern Mozambique)

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Changes in seagrass coverage in Inhambane Bay (southern Mozambique) from 1992 to 2013 were assessed using Spot 5 and Landsat imagery mapping methods with support of extensive groundtruthing. In this 21-year period, the total seagrass area was reduced from 12,076 ha to 6,199 ha (51% of the original area). 2001 was the year when seagrass occupied the smallest area in Inhambane Bay with 5,641 ha, an effect of the Tropical cyclone Eline, category 4 (with winds over 200 Km/hour) and the longest-lasting (29 days) cyclone in the region with widespread damage on human and infrastructure; however, a steady seagrass recovery was observed between 2001 and 2004, whereby 958 ha in total area of seagrass were restored naturally. Eight seagrass species occur in Inhambane Bay forming six seagrass community types and the three largest communities were Thalassia hemprichii/Halodule uninervis with 2,305.5 ha, followed by Thalassodendrom ciliatum/Cymodocea serrulata with 2,280.3 ha and Halodule uninervis with 1,393.9 ha. The loss of seagrass occurred mainly with the following communities: Thalassia hemprichii/Halodule uninervis and Halodule uninervis. This loss was associated to changes in the marine environment as sediment deposition is occurring trigged by climate impact and human activities. A specific study on T. hemprichii conducted at Barra Peninsula and Ilha dos Porcos showed that the total seagrass biomass varied between 947.08 ± 31.09 g DWm-2 and 1636.82 ± 80.52 g DWm-2, respectively, being low at Barra Peninsula, where seagrass meadows have lower shoot density and are more exposed to cyclones compared to Ilha dos Porcos. This monitoring method creates a basis for better management and conservation and a continuation of these types of evaluation actions to predict trends on the impact of climate change on marine habitats are recommended.