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Recurrent Coastal Erosion: A Case Study of Mousuni Island, Indian Sundarban

Shreya Das[a], TanushreeBose[a], KamalikaMondal[a], Kanailal Das, KarabiDas[b]

[a]Estuarine and Coastal Studies Foundation, West Bengal, India

[b]Department of Geography, Dr Kanailal Bhattacharyya College, Howrah, West Bengal, India

Corresponding Email:

karabidas139@yahoo.com

Located in the southern part of Ganges delta facing the Bay of Bengal Mousuni Island is a home of 3578 people (Census, 2011). Mousuni has faced the wrath of cyclones Aila (2009), Bulbul (2019), Amphan (2020) and Yaas (2021), of which the maximum devastation was caused during Yaas. Erosion resulting in reduction of land area along western and north western banks was around 3.82 sq. km (1979-2011) (Das, 2022). It was evident from the socio-economic survey that the local residents demand concrete embankments, especially Aila bandhs. The design of the embankments were studied using clinometer compass, beach profiling was done with the help of dumpy level, elevation of the beach is between 0.65 to 2m , a smooth slope towards Bay of Bengal was seen except a comparatively steep slope in the middle and a smooth slope ranging between 1.98 to 2.310 m. While the north western part has permanent concrete embankment (Aila embankment from Kusumtala to Baliara bazaar), the southern part is deprived of such facility. Temporary embankments using geo-jute are used in south. The upstream slope and length of this embankment is 25° and 5.06m respectively. Towards the settlement, the downstream slope and length is 19°and 2.13m. The total height of the embankment is 3.17m and the summit length is 0.91m. Concrete embankments designed as per the norms for Aila embankment along with a mangrove buffer in the current scenario of sea level rise of around 5.7 mm/yr at Diamond Harbour (INCCA,2010) should be maintained at Baliara. With this, the erosion accretion nature must be studied closely.

Keywords: Embankment, Embankment breaching, Saltwater Inundation.