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Past and Future in the Ayeyawady Megadelta

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The Ayeyawady delta is the last Asian megadelta whose evolution has remained essentially unexplored so far. Unlike most other deltas across the world, the Ayeyawady has not yet been affected by dam construction providing a unique view on largely natural deltaic processes benefiting from abundant sediment loads affected by tectonics and monsoon hydroclimate. To alleviate the information gap and provide a baseline for future work, a first model for the Holocene development of this megadelta is presented based on radiocarbon and optically stimulated luminescence-dated trench and drill core sediments collected in 2016 and 2017, together with a re-evaluation of published maps, charts and scientific literature. Based on this model, future hazards to the Ayeyawady delta are discussed including river avulsion due to increased extreme flooding, sediment deficit if planned dams are constructed on the river and tributaries, climate-controlled wave-driven sediment redistribution along the coast. The expected increase in hazard risk collides with a rapid increase in delta population and requires specific management solutions that are yet to be defined and implemented.