

River-ocean interaction at the Ganges-Brahmaputra river mouth

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The Ganges-Brahmaputra river is a major source of freshwater for the Bay of Bengal. River discharge occurs through the Ganges-Brahmaputra Delta, which consists of multiple river mouths. The seasonal cycle of this river discharge is observed with a minimum from late winter to early spring and a maximum from late summer to early fall. The seasonal cycle of the sea surface height for the Bay of Bengal, on the other hand, shows the presence of the Kelvin waves propagating from the equatorial Indian Ocean. We investigated how these two processes may interact at the river mouths based on a high-resolution numerical model that resolves the various channels of the Ganges-Brahmaputra Delta. The model simulates the basic seasonal cycle of the river discharge that is comparable to observations, with a river plume forming from the major river mouth and along the coast. Preliminary results suggest significant river-ocean interaction in narrow channels and, at times, reverse the direction of the river flow.

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