Storm-driven overwash fans deposited in the back-barrier lagoon transgress barrier islands and can make them keep pace with sea level (McGee, 1890).

Flood-tidal delta deposits are a sink of littoral sediment brought through tidal inlets, and can also transgress barrier islands (Pierce, 1969).

The model is dynamic under steady boundary conditions, with periods of large storm-overwash deposition interrupted by periods of rapid inlet migration and flood-tidal delta deposition.

Inlets can be important in barrier transgression. The inlet fraction of the transgressive flux is high if the environment supports ephemeral and rapidly migrating inlets.

Barrier facies are generally a good indicator of past inlet activity and of the importance of inlets in barrier transgression. The extra transgressive flux can also keep barriers above sea-level.

We developed a numerical model (BRIE) to assess the combined effects of overwash and tidal inlets on barrier response to sea-level rise.

Inlets can be important in barrier transgression. The inlet fraction of the transgressive flux is high if the environment supports ephemeral and rapidly migrating inlets.