

# FEEDBACKS BETWEEN OVERWASH DEPOSITION AND FLOOD-TIDAL DELTA

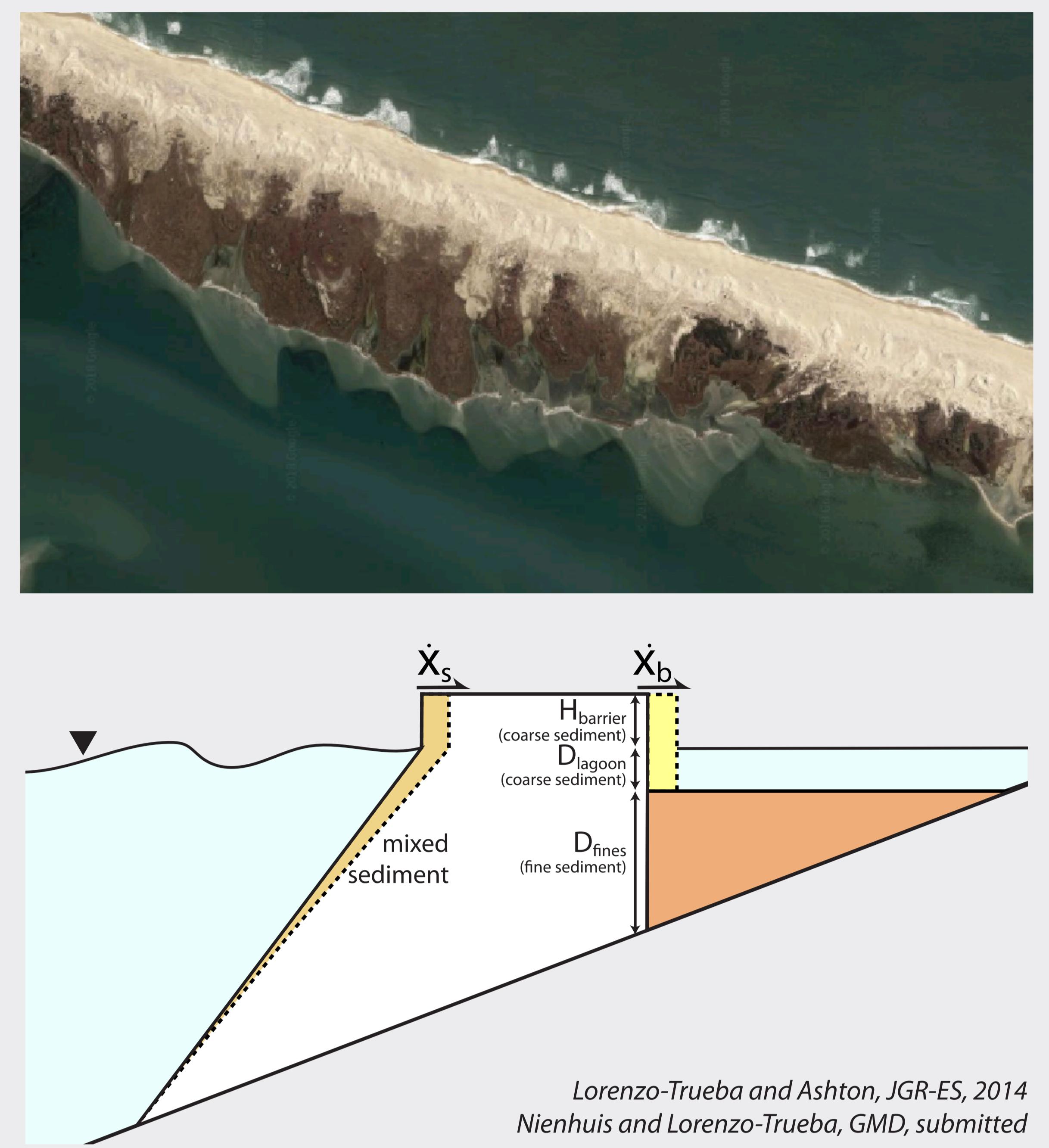
Jaap Nienhuis<sup>1,\*</sup>, Mingyang Chen<sup>2</sup>

<sup>1</sup> Utrecht University, Utrecht, NL, <sup>2</sup> Florida State University, Tallahassee, FL

\* j.h.nienhuis@uu.nl

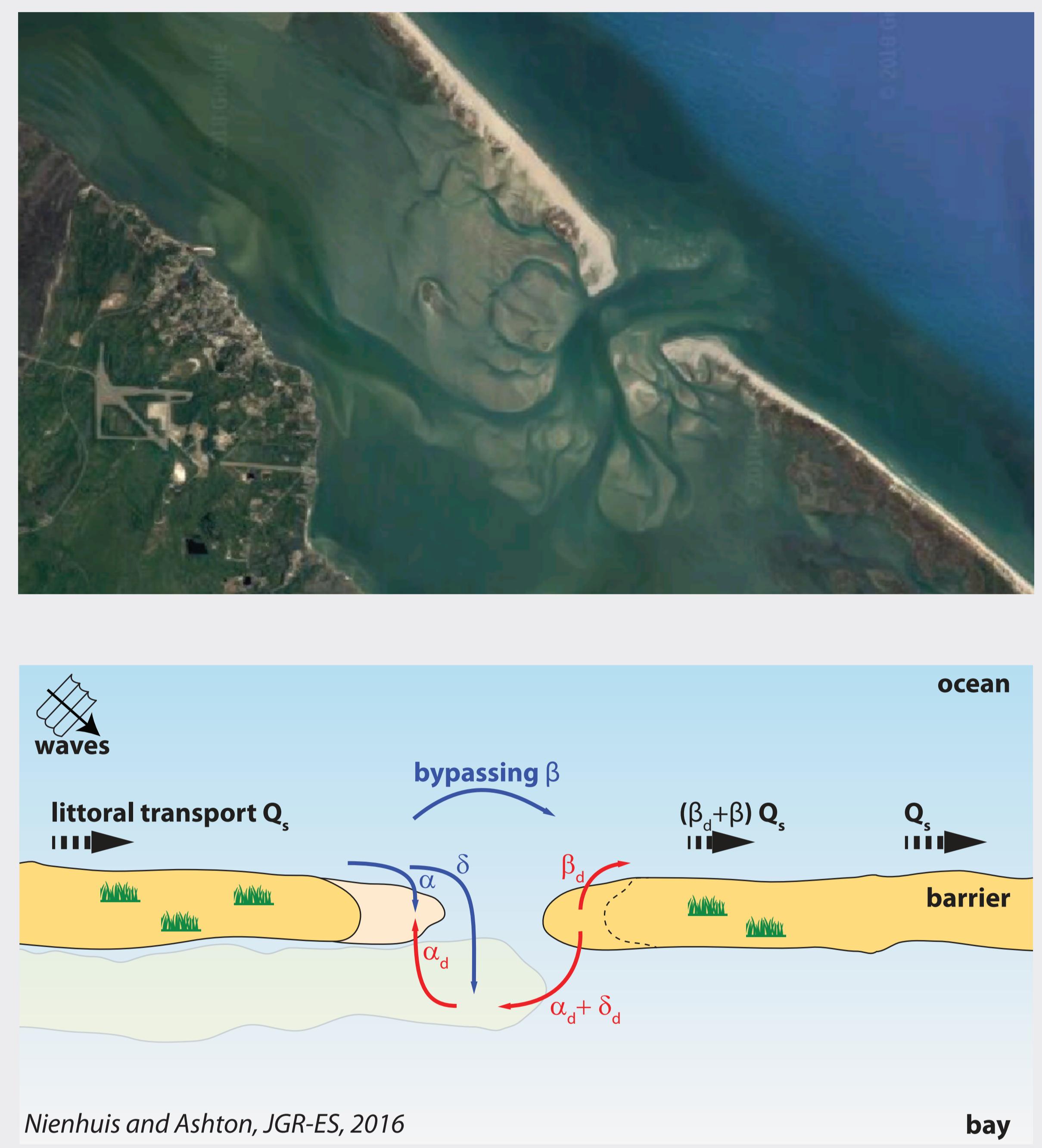


## Storm overwash



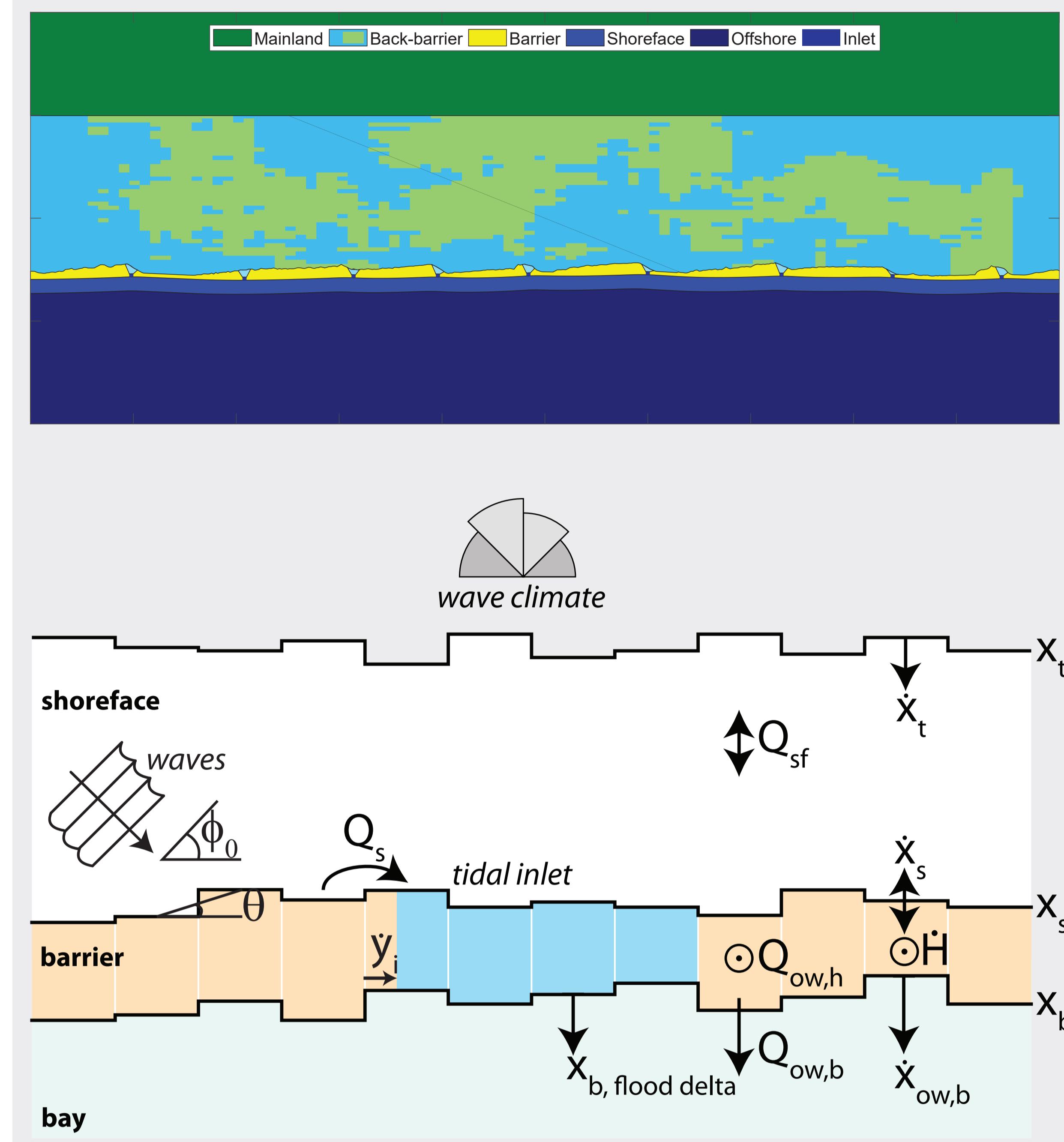
Storm-driven overwash fans deposited in the back-barrier lagoon transgress barrier islands and can make them keep pace with sea level (McGee, 1890).

## Tidal inlet morphodynamics



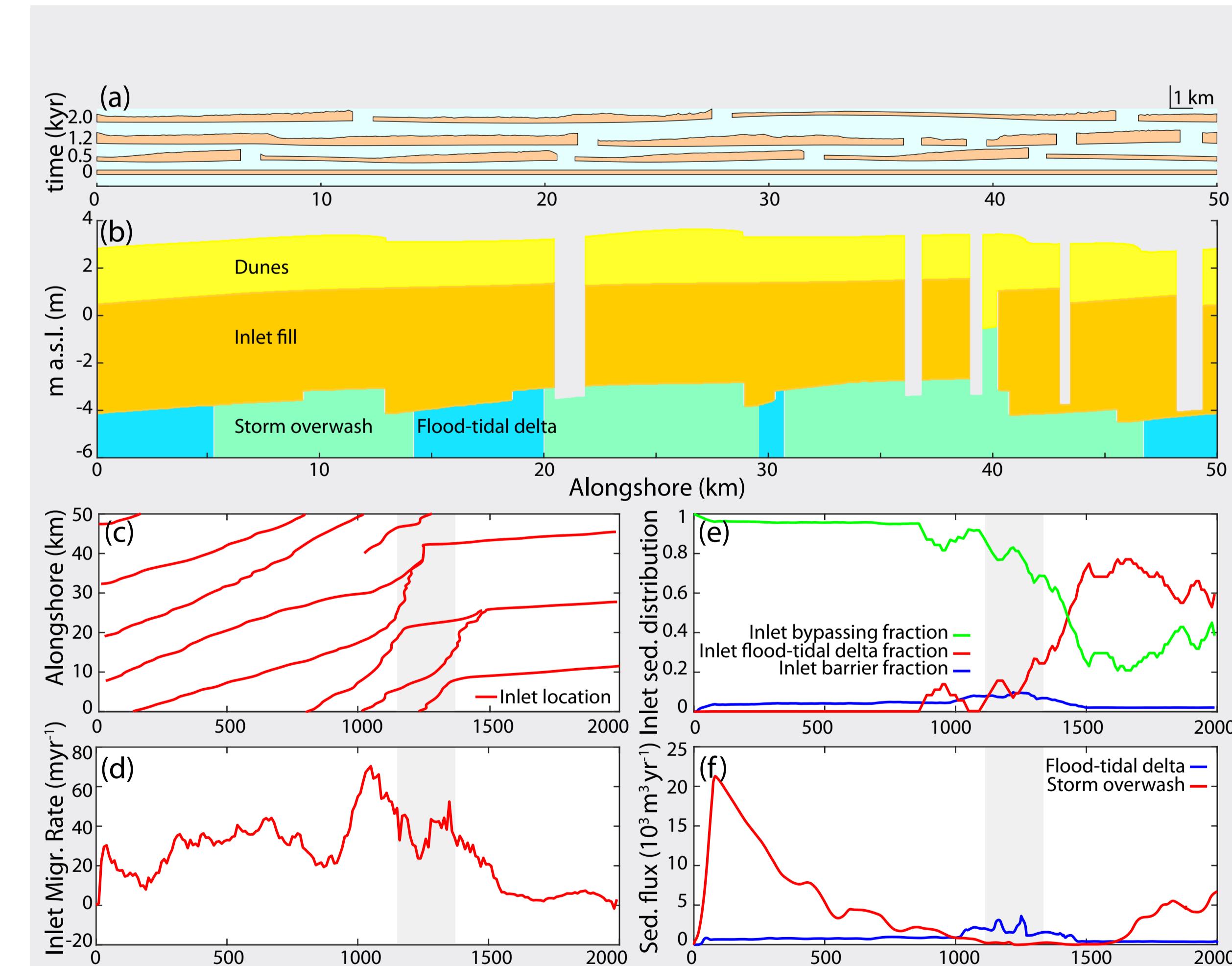
Flood-tidal delta deposits are a sink of littoral sediment brought through tidal inlets, and can also transgress barrier islands (Pierce, 1969).

## Model setup



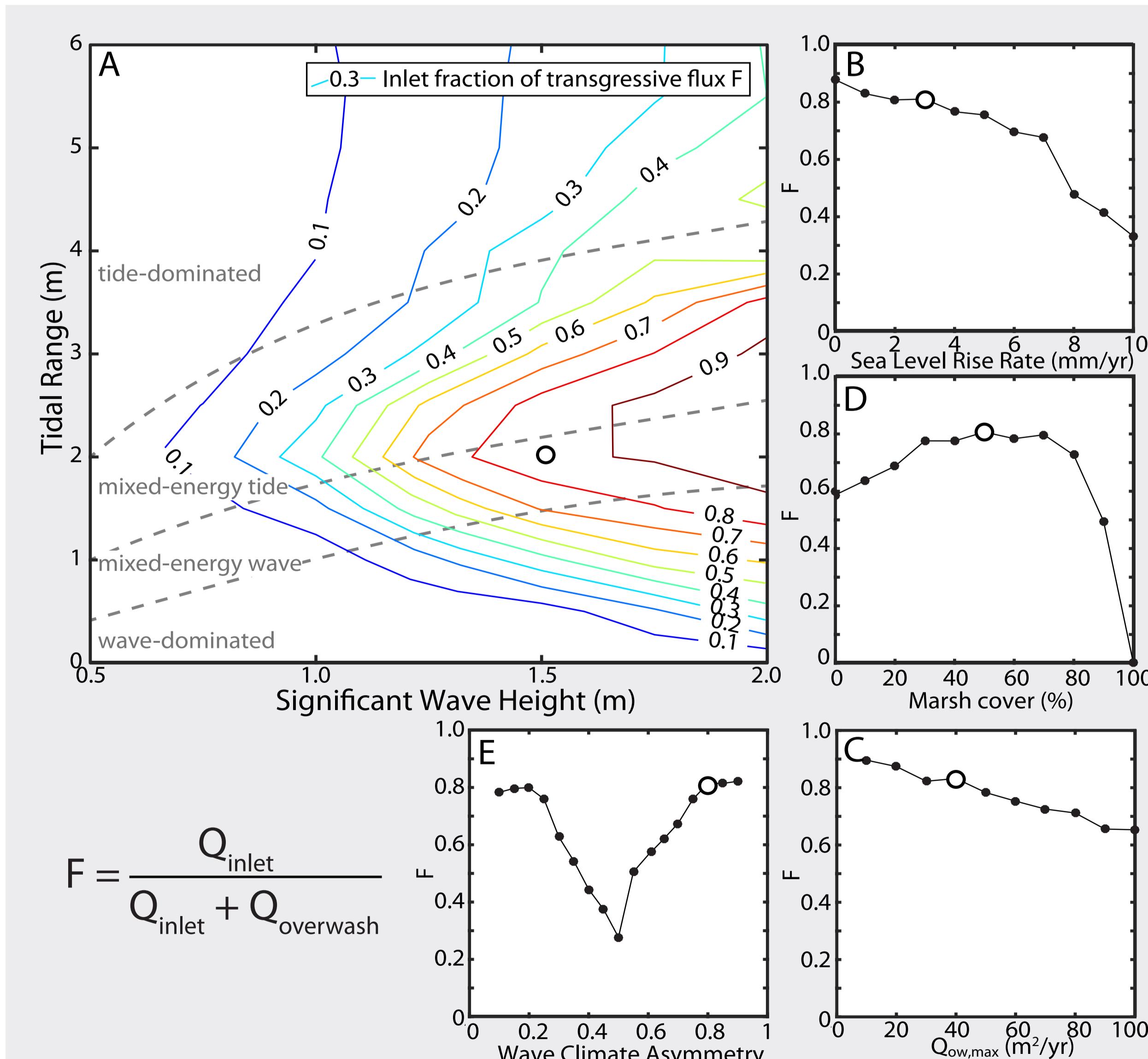
We developed a numerical model (BRIE) to assess the combined effects of overwash and tidal inlets on barrier response to sea-level rise.

## Example model run



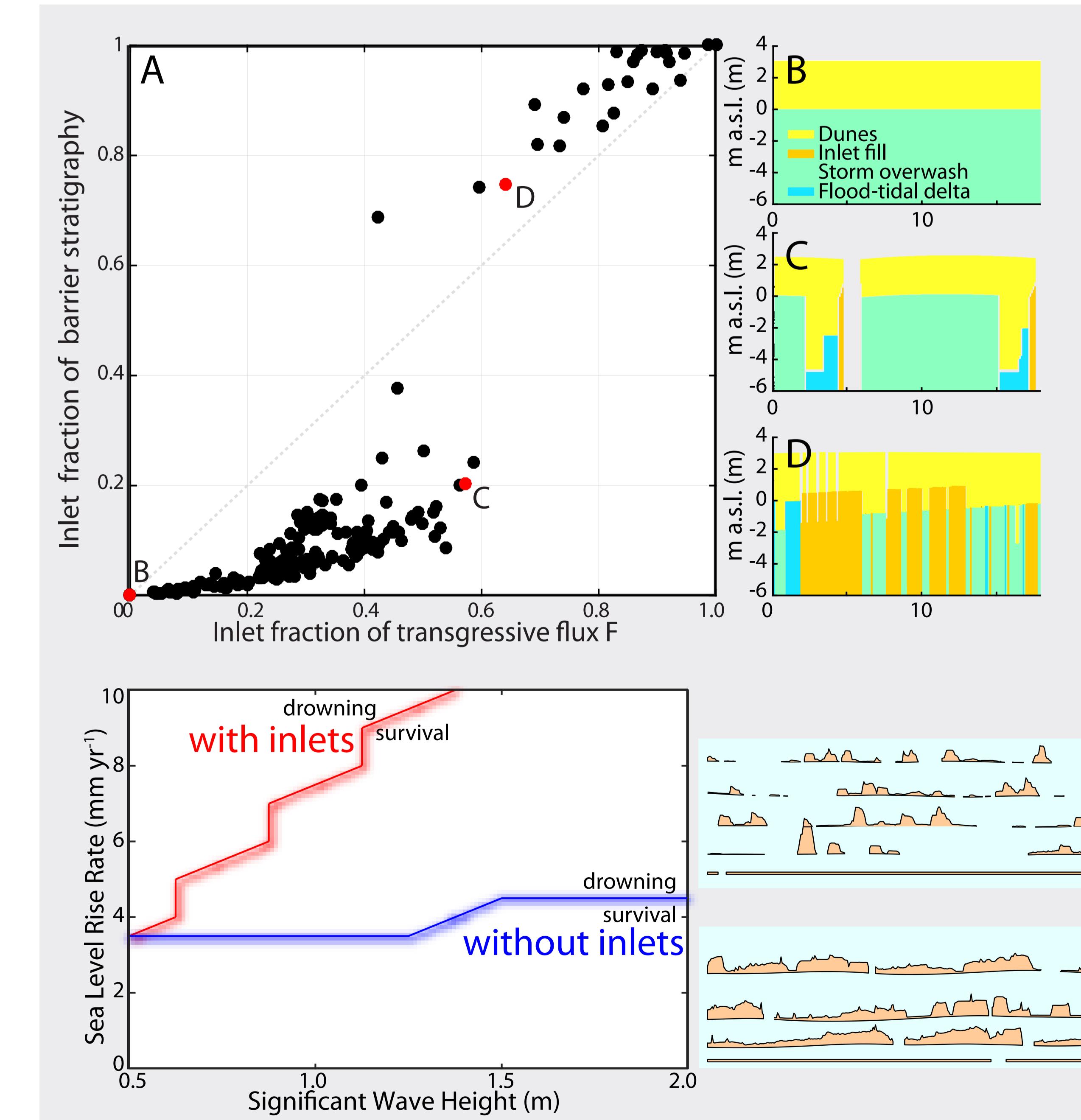
The model is dynamic under steady boundary conditions, with periods of large storm-overwash deposition interrupted by periods of rapid inlet migration and flood-tidal delta deposition.

## Importance of tidal inlets



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.

## Paleo inlets as a potential constraint?



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.