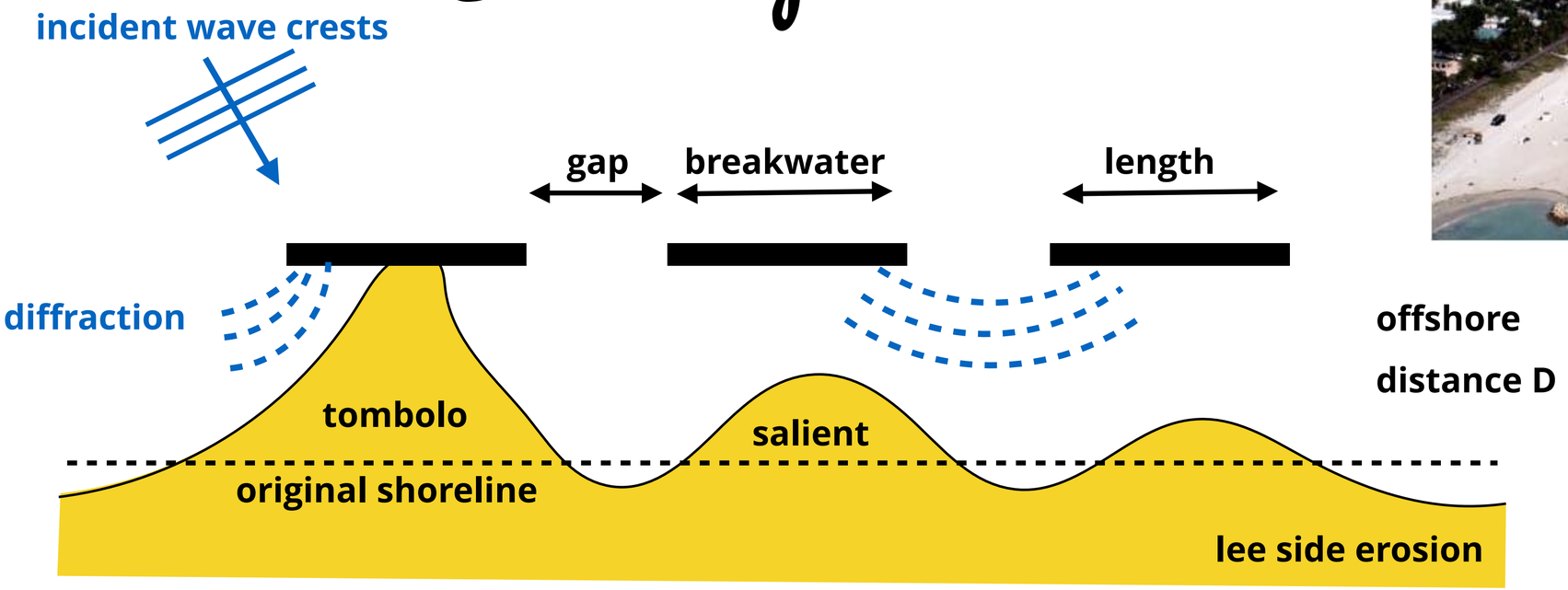
Coastal protection

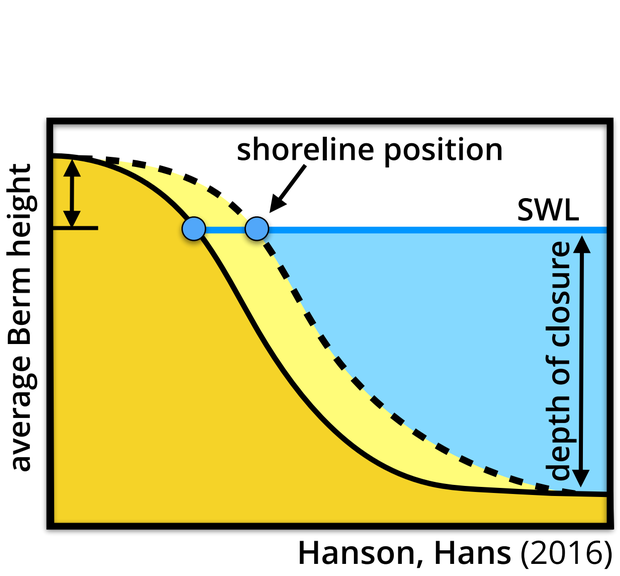


- **L/D=1 to 2 — well-developed salient to incipient tombolo**
  - salients create less lee-side erosion due to bypassing of sand
  - salient formation can be promoted by allowing sufficient wave energy in the lee area by increasing offshore distance (depending on magnitude of littoral drift) and gap length, and by increasing the permeability of the structure (wave transmission)
- **L/D=0.5 to 1 — weak to well-developed salient**
- **L/D=0.2 to 0.5 — incipient to weak salient**
- **L/D<0.2 — no effect.**

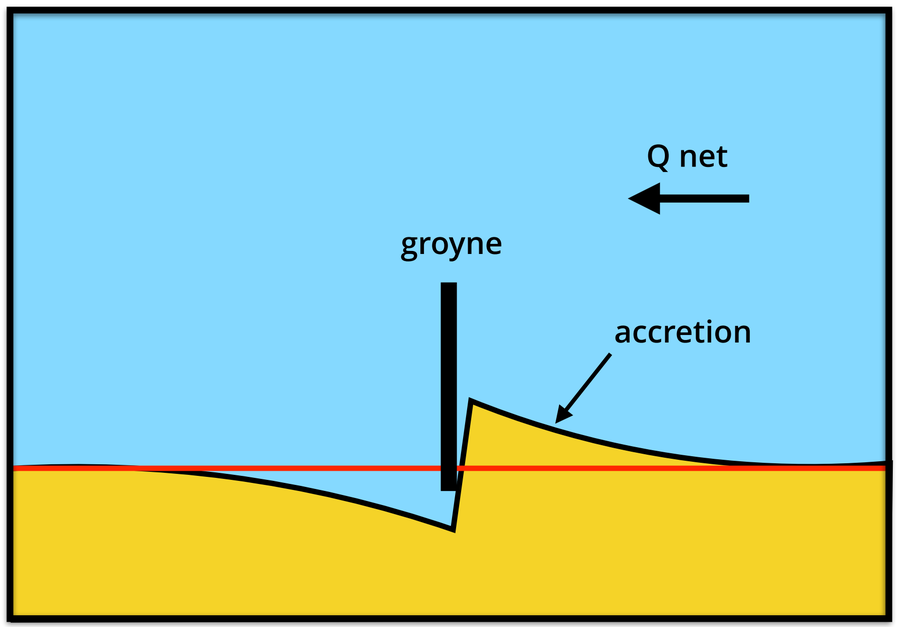
1-line model

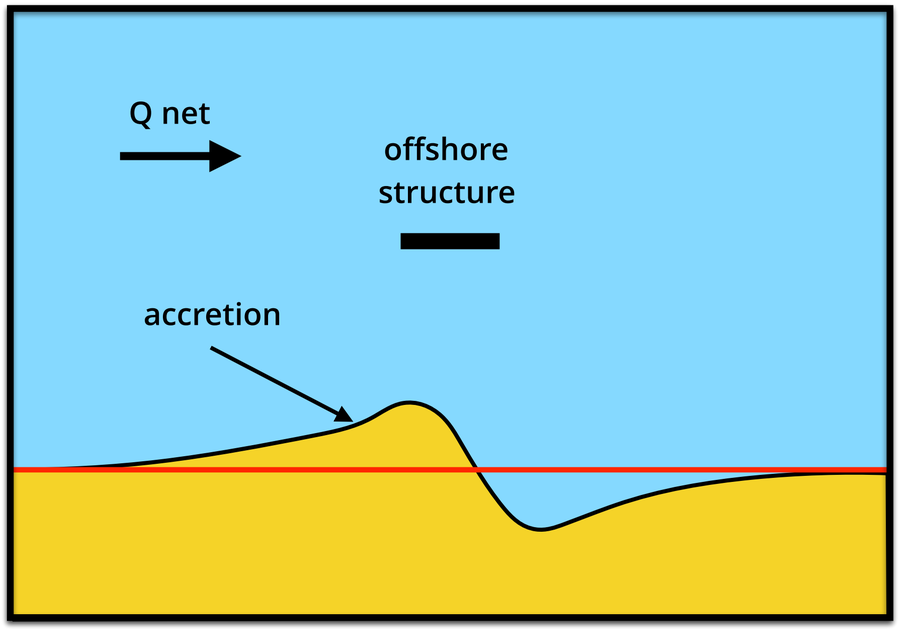
- The 1-line concept rests on a common observation that the beach profile maintains an average shape that is characteristic of the particular coast, apart from times of extreme change (i.e. storms).

- Assumption: **long term shoreline changes** is induced by **longshore sediment transport** caused by **waves breaking at an angle** to the shore and **wave induced nearshore current** circulation.



Hanson, Hans (2016)





- First 1-line model was presented by Pelnard-Considère (1956) who examined the behaviour of groynes on a beach.