Groynes

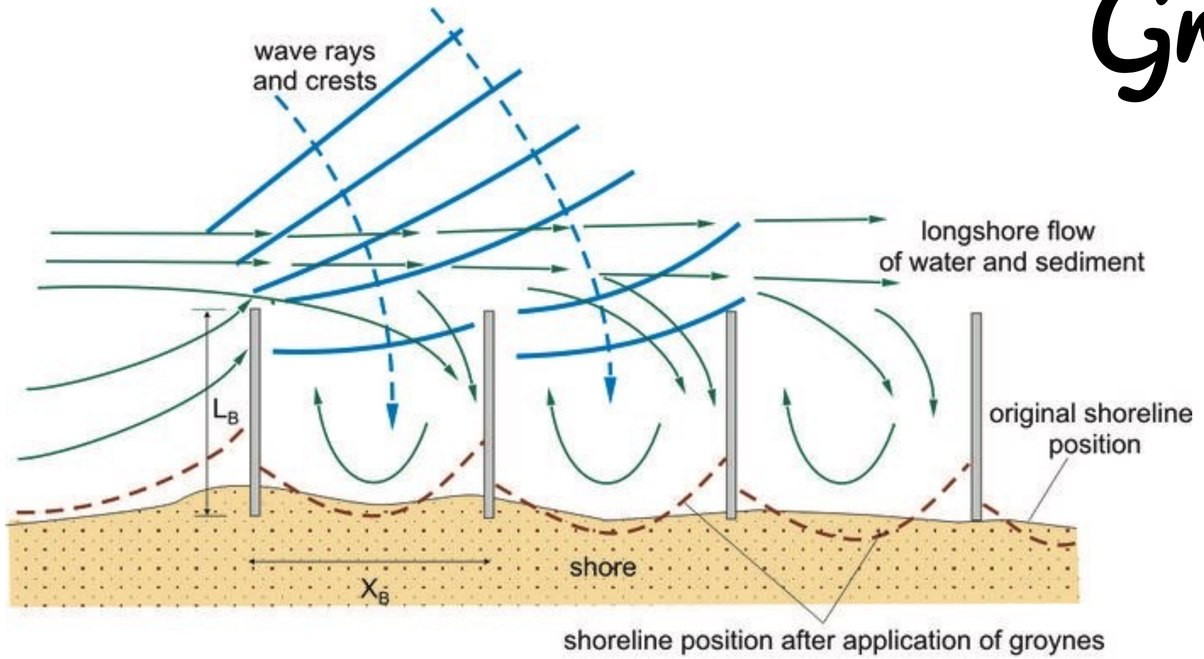
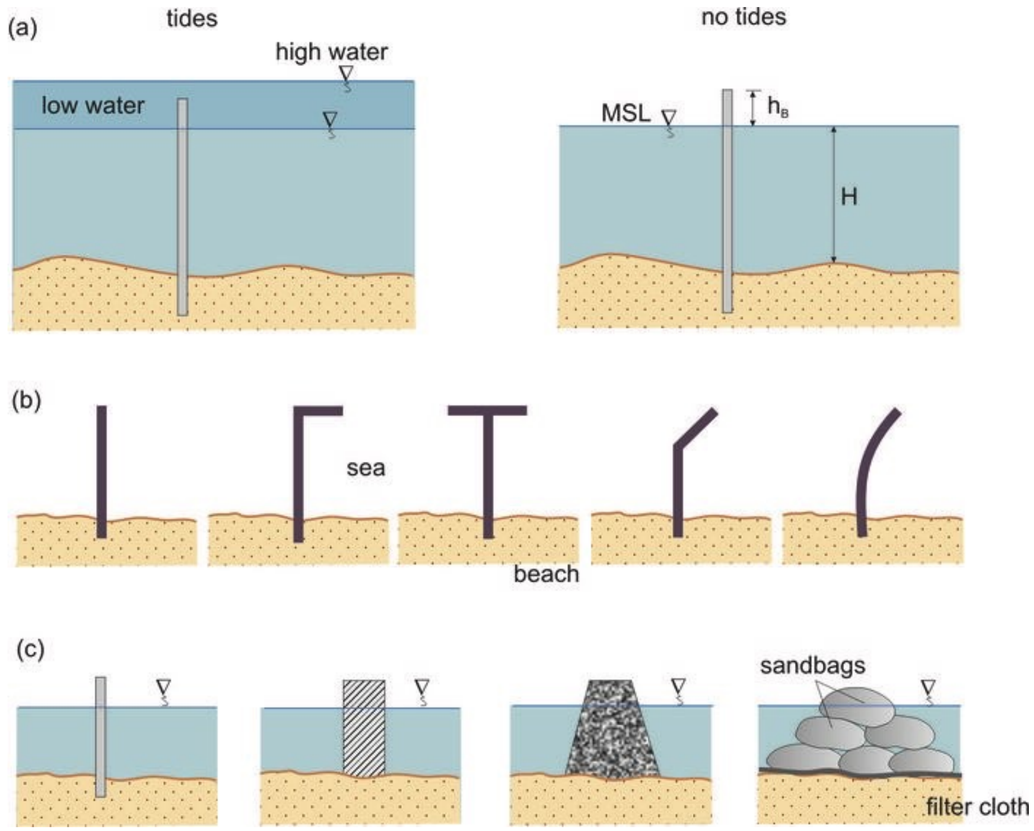


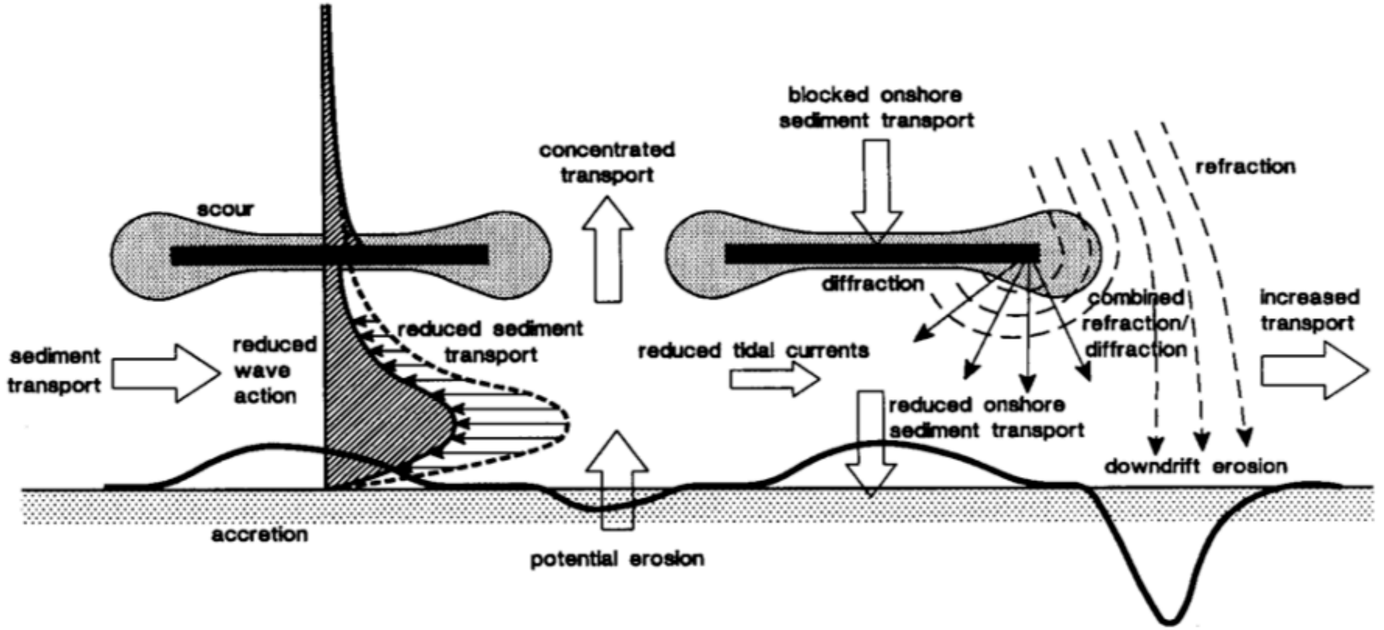
Fig. 1. Scheme of interaction of groynes, waves, currents and shore



Practical values for L and X

- The effectiveness of groynes is strongly related to the degree of blocking of the littoral drift and this depends on
  - the groyne length in relation to the width of the surf zone (about -6 m to MSL)
  - the spacing and overall geometry
  - the crest height, the mean sea level and the tidal range
  - the beach material (sand, shingle or mixture)

Breakwaters



- **wave energy at the shoreline is reduced** (breaking and reflection at breakwater); some of the incoming wave energy will arrive in the lee zone by:

  — diffraction around tips & through gaps — transmission through breakwater — overtopping of submerged breakwater
- diffracted and transmitted waves will continue to propagate to the shoreline in the lee zone but the **longshore transport capacity in the lee zone will be substantially reduced**
- sand moving along the shore is trapped behind the structure resulting in local deposition of littoral sands within the protected lee of the breakwater; **seaward outbuilding of the beach**
- **recirculation cells** may be generated by gradients in wave set-up along the shore carrying sand toward the lee zone