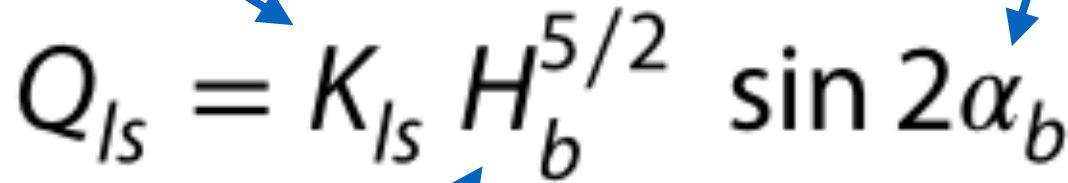


Longshore transport

CERC formula

transport coef. (0.4 sand)

breaking wave angle



The diagram shows the CERC formula $Q_{ls} = K_{ls} H_b^{5/2} \sin 2\alpha_b$. Three blue arrows point to specific parts of the formula: one from the text 'transport coef. (0.4 sand)' to K_{ls} , one from 'breaking wave height' to H_b , and one from 'breaking wave angle' to α_b .

$$Q_{ls} = K_{ls} H_b^{5/2} \sin 2\alpha_b$$

breaking wave height

other formula:

- **Kamphuis** (1991)
- Shore Protection Manual (**SPM**) (1984)

The profile is in equilibrium in the cross-shore direction.

if $Q_{in} > Q_{out}$:

accretion

shoreline advance offshore

if $Q_{in} < Q_{out}$:

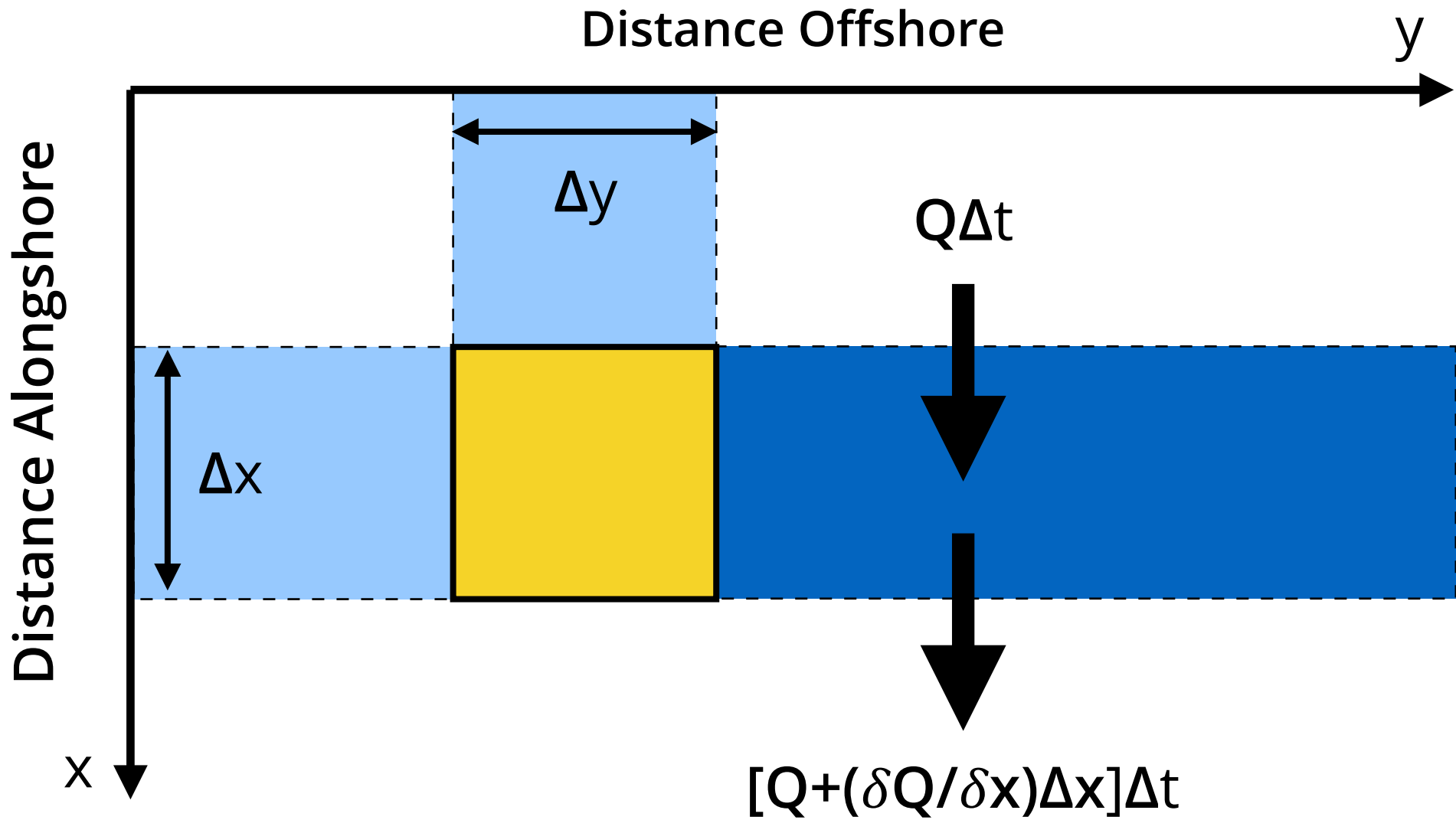
erosion

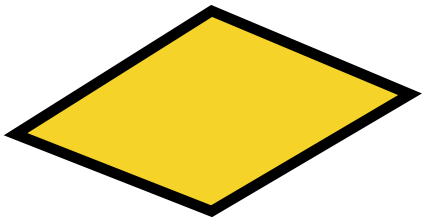
shoreline retreat

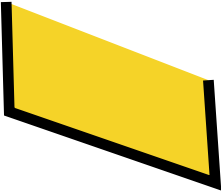
Conservation of mass implies:

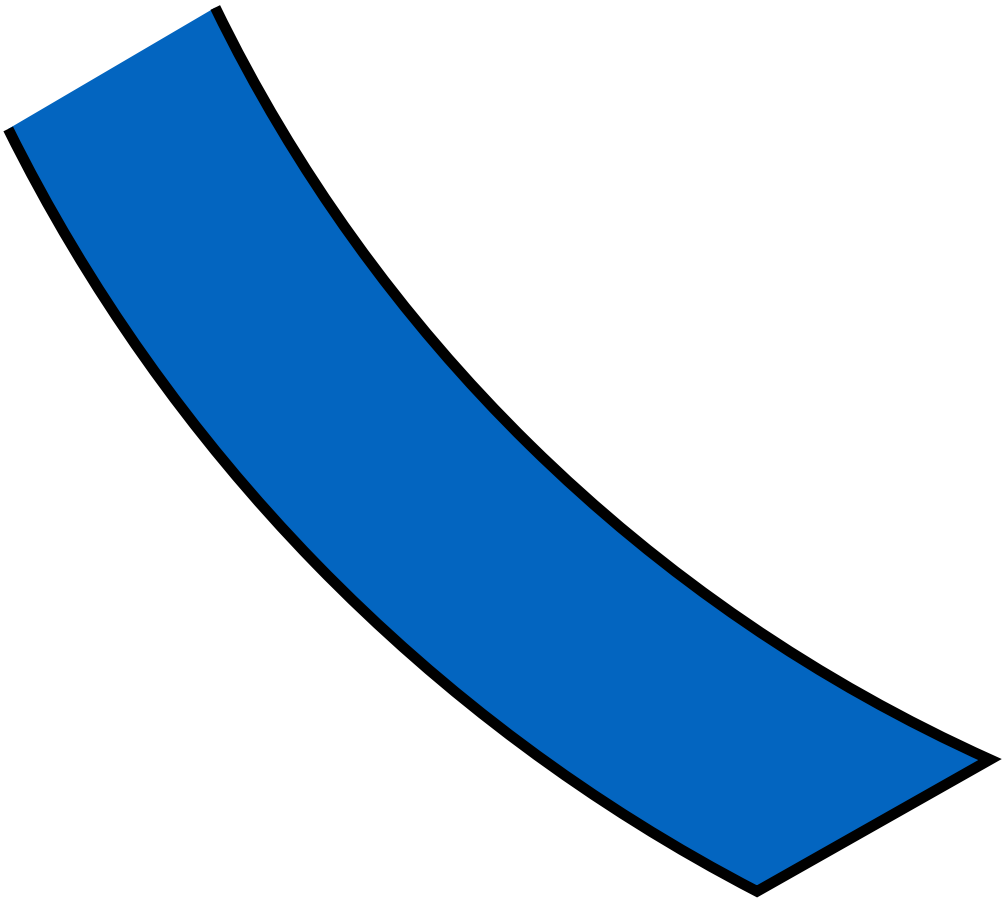
Hanson, Hans (2016)

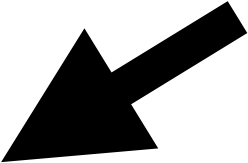
1-line model

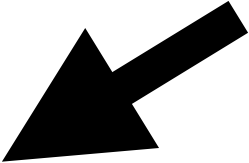


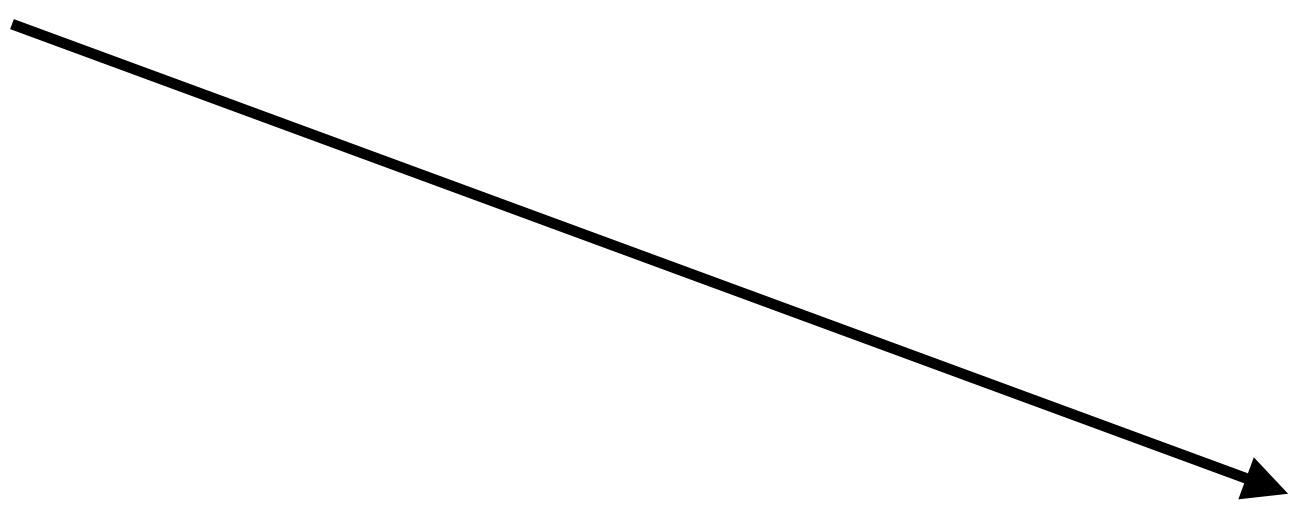


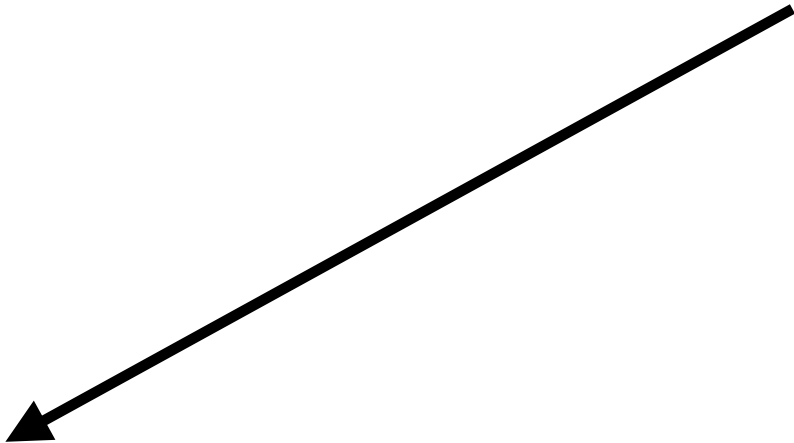








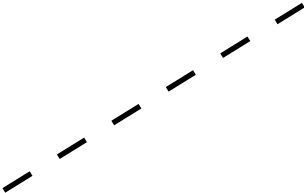


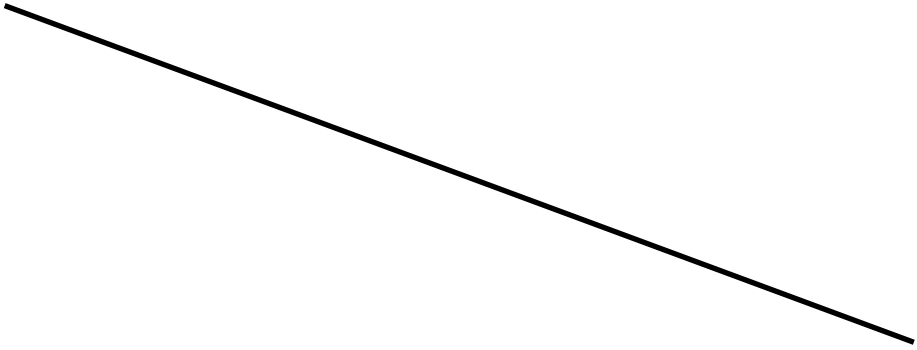


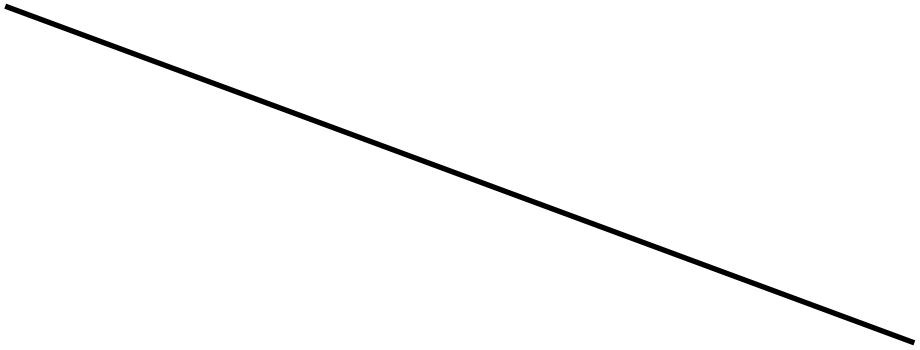




















Distance Alongshore

Distance Offshore





$[Q + (SQ)/SX]AX$ At

Q

A

t

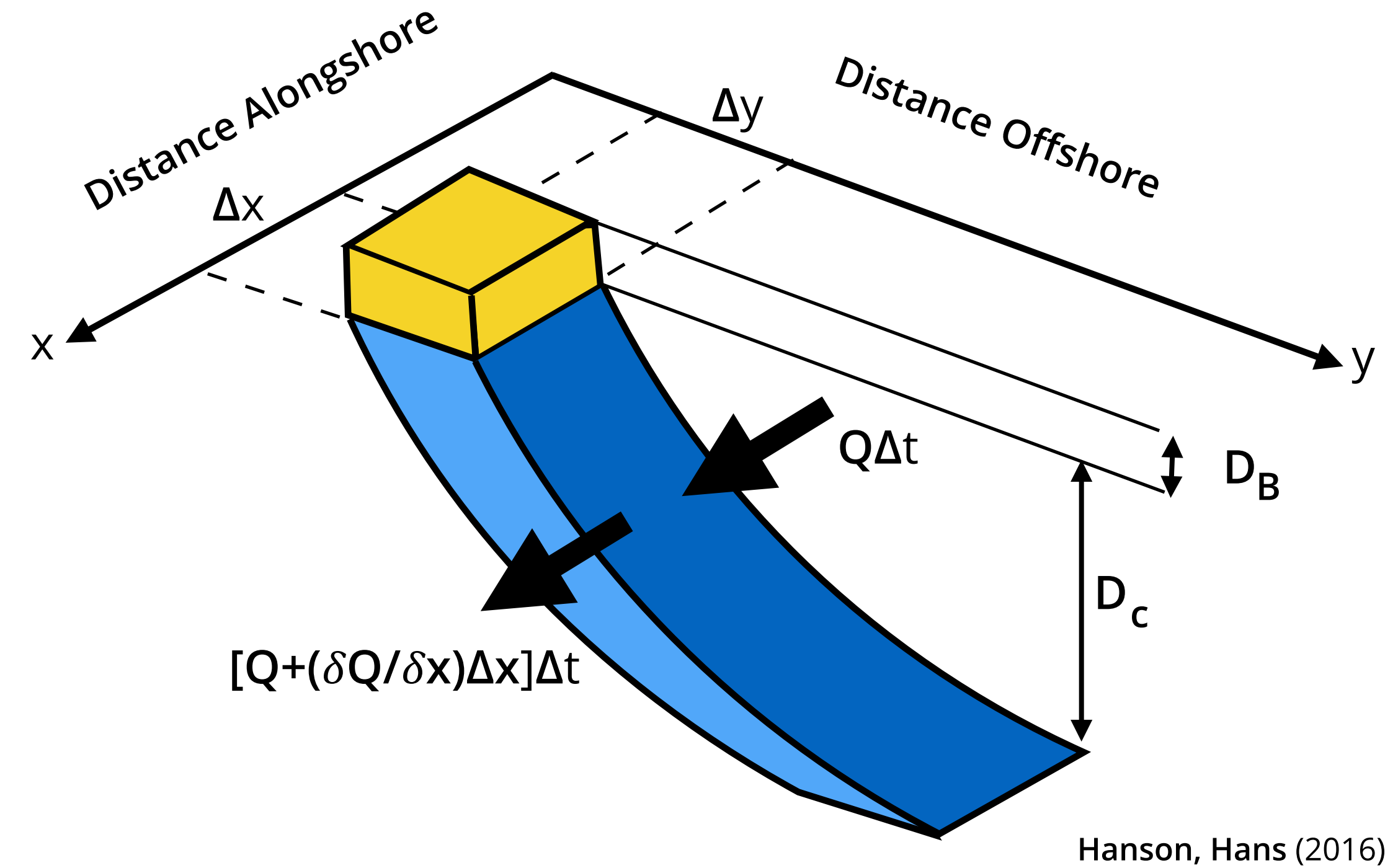
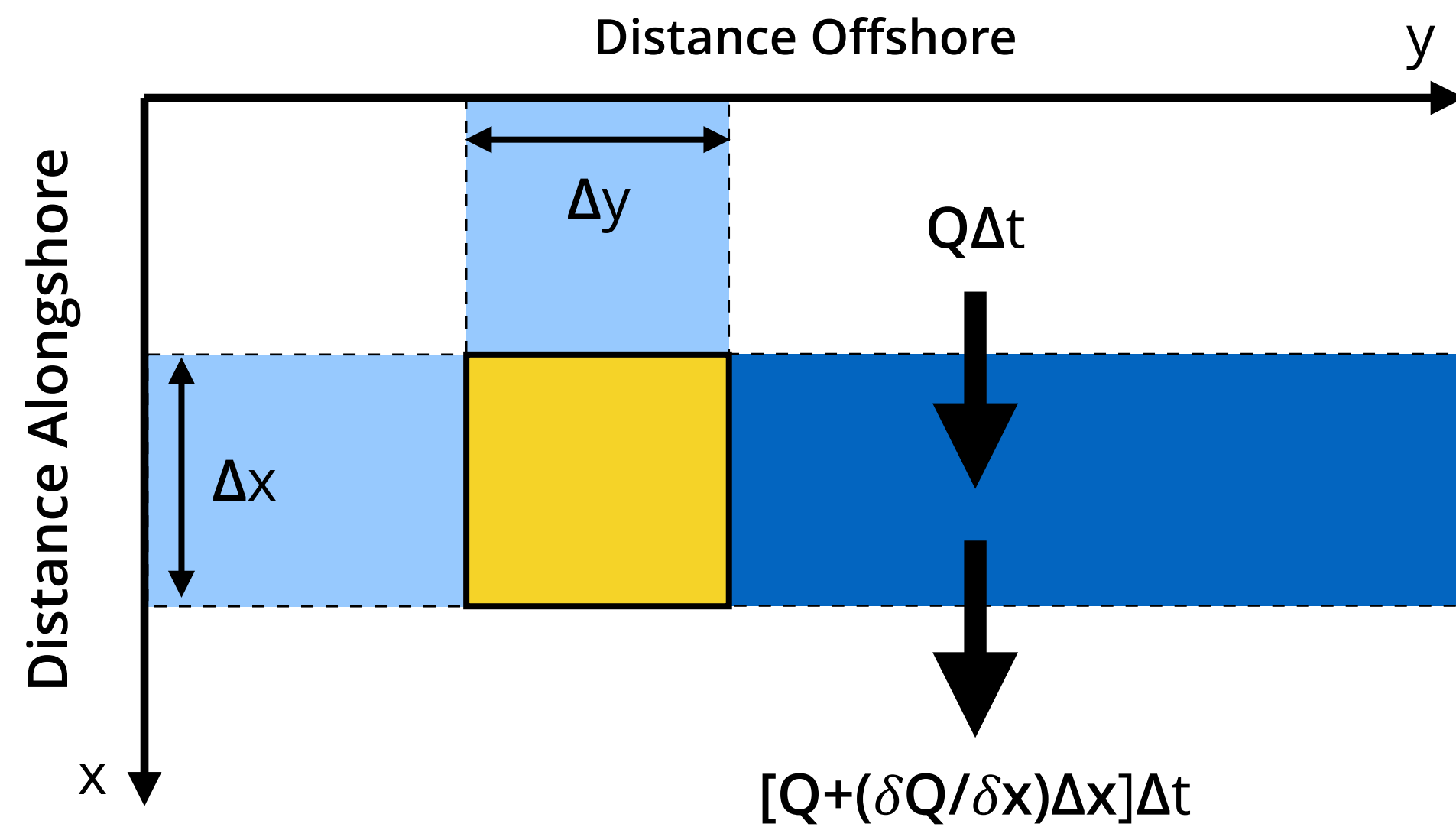
DB

D_c



$$\frac{\Delta y}{\Delta t} + \frac{1}{D_B + D_C} \frac{\Delta Q}{\Delta x} = 0$$

1-line model



The profile is in equilibrium in the cross-shore direction.

if $Q_{in} > Q_{out}$:

accretion → shoreline advance offshore

if $Q_{in} < Q_{out}$:

erosion → shoreline retreat

Conservation of mass implies:

$$\frac{\Delta y}{\Delta t} + \frac{1}{D_B + D_c} \frac{\Delta Q}{\Delta x} = 0$$

Longshore transport

CERC formula

transport coef. (0.4 sand)

breaking wave angle

$$Q_{ls} = K_{ls} H_b^{5/2} \sin 2\alpha_b$$

breaking wave height

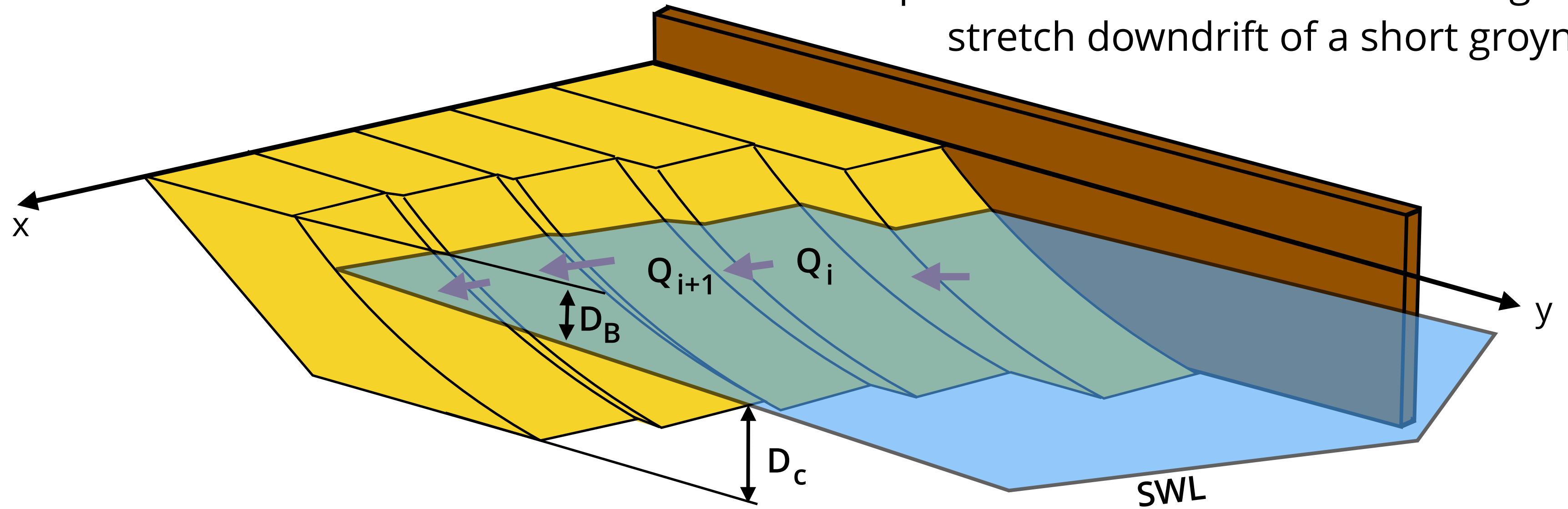
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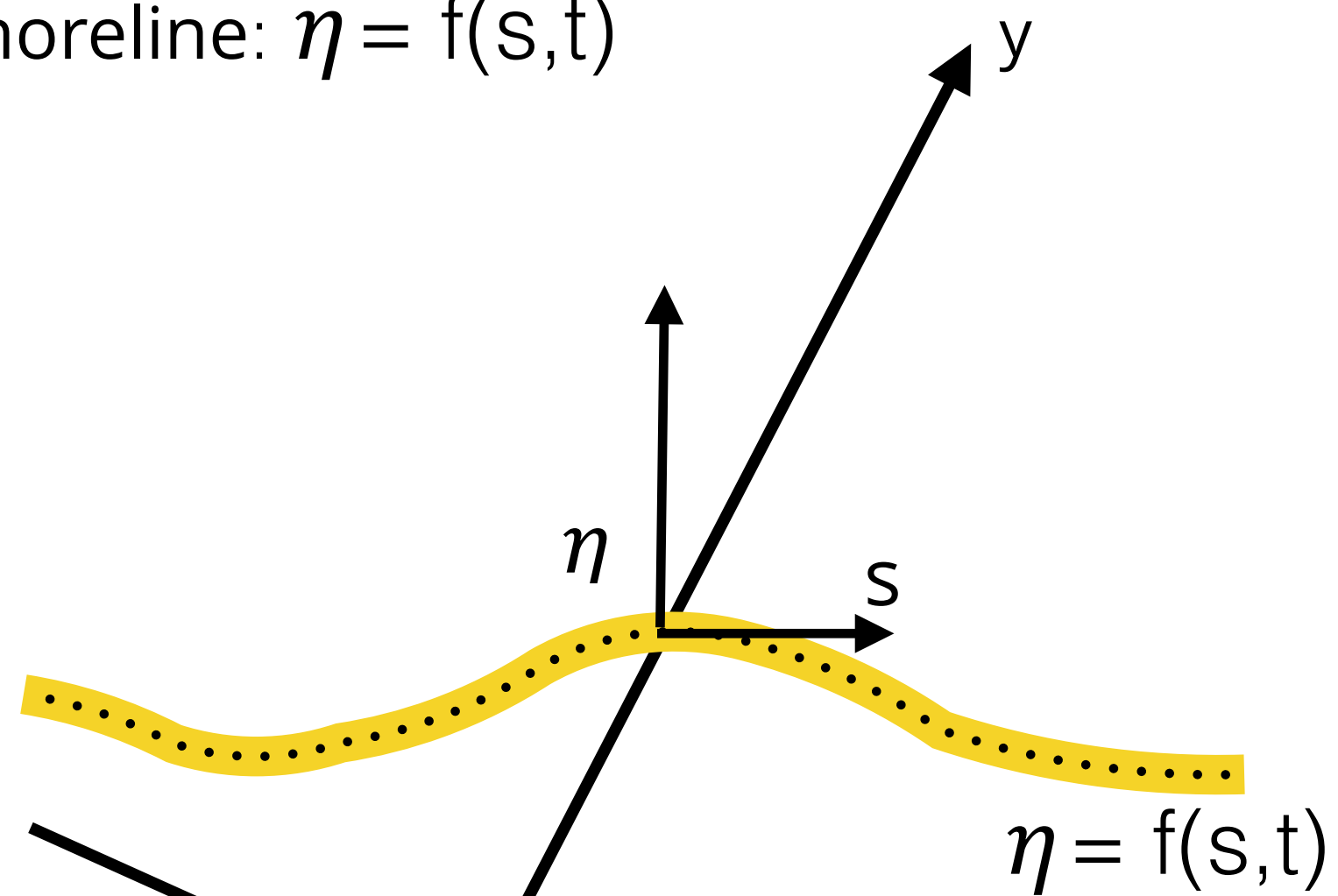
1-line model

Representation of several cells along a coastal stretch downdrift of a short groyne.



Hanson, Hans (2016)

shoreline: $\eta = f(s, t)$



$$\frac{d\eta}{dt} = f\left(\frac{dQ}{ds}\right)$$

