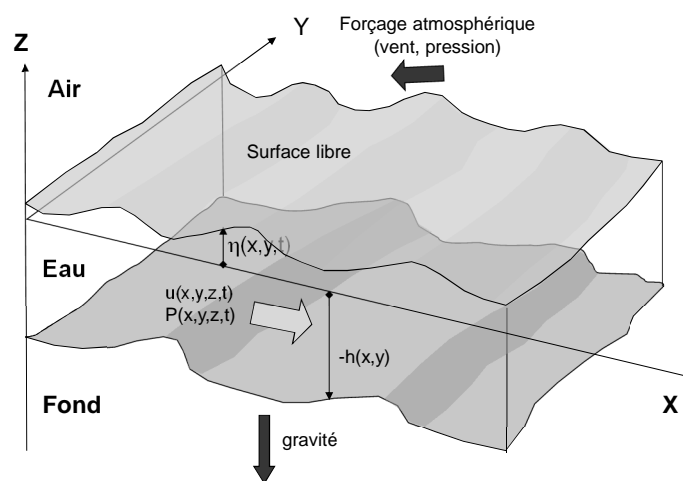


Hydrodynamique littorale et côtière

Ch. 2 : Modélisation de la transformation de la houle

Schéma



Célérité de la houle linéaire à fond plat

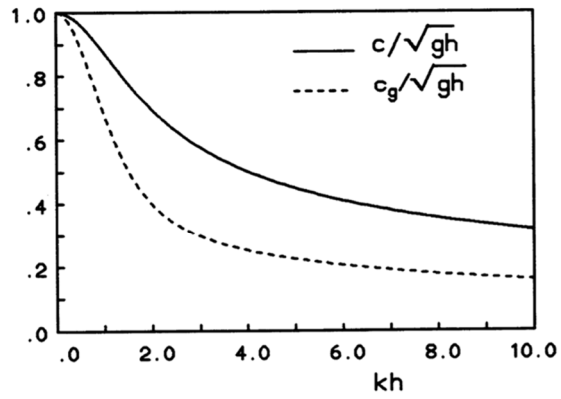
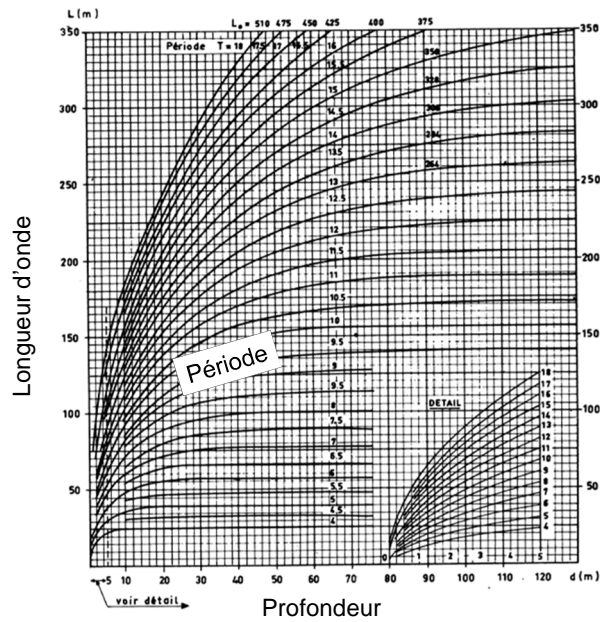


Figure 2.4: The phase and group velocity of pure gravity waves as a function of kh normalised with $(gh)^{1/2}$.

Longueur d'onde de la houle



Cinématique de la houle linéaire à fond plat

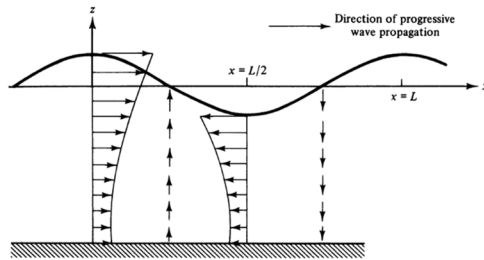


Figure 4.1 Water particle velocities in a progressive wave.

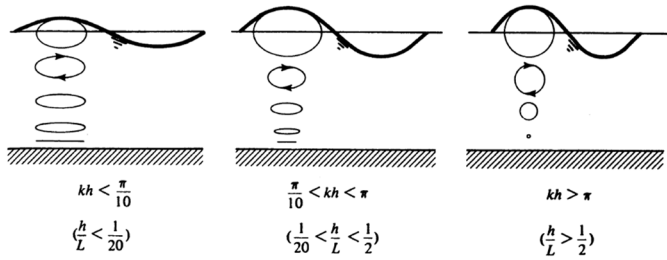


Figure 4.3 Water particle trajectories in progressive water waves of different relative depths.

Pression de la houle linéaire à fond plat

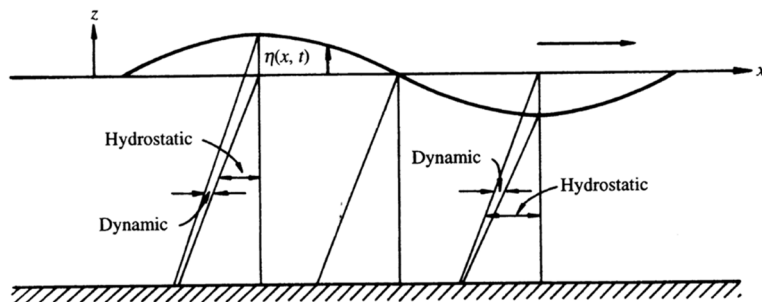
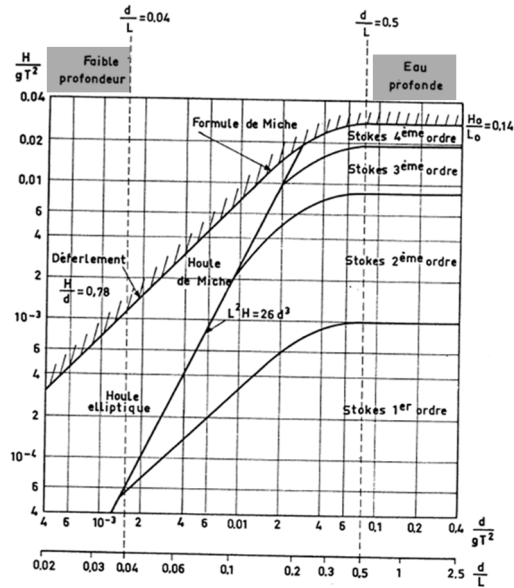
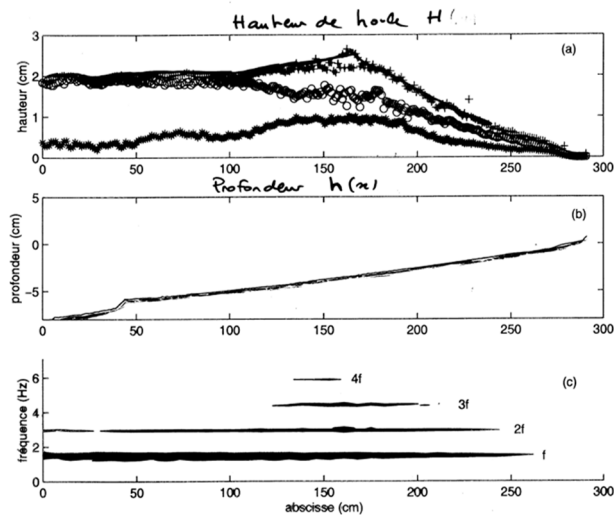


Figure 4.4 Hydrostatic and dynamic pressure components at various phase positions in a progressive water wave.

Diagramme de validité des théories de houle

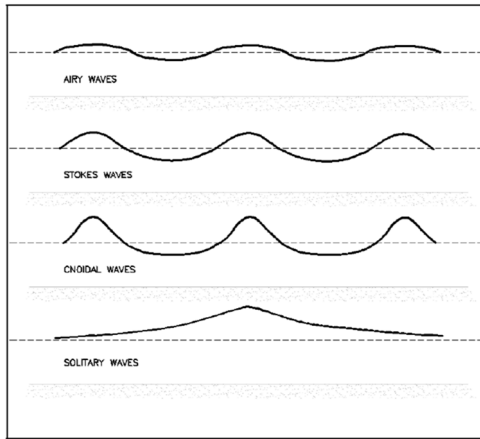


Création d'harmoniques

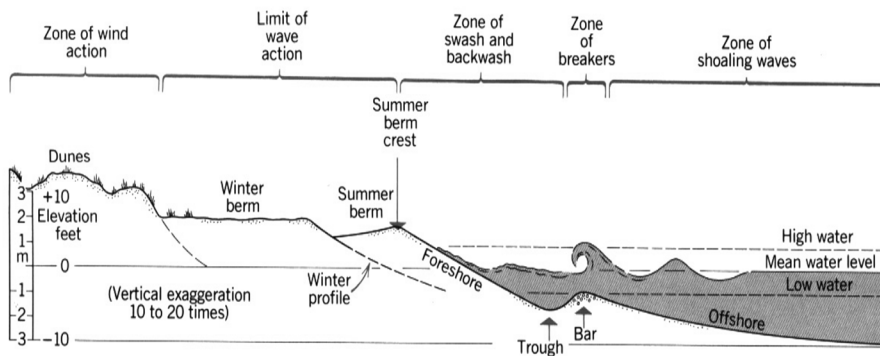


Expériences de C. Dulou (1999)

Autres théories de houle

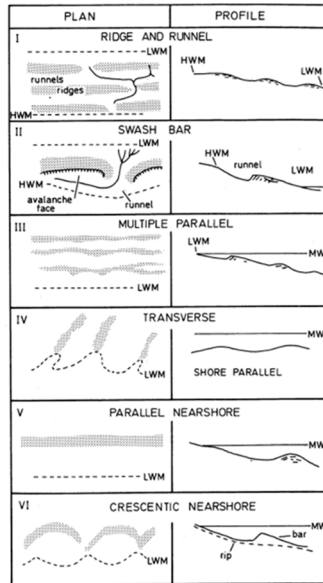


Profil de plage à barre

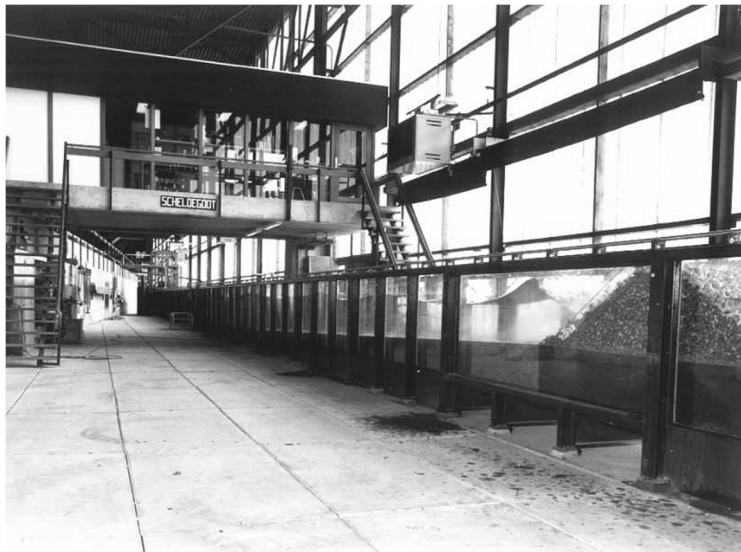


(d'après Strahler et Strahler 1992)

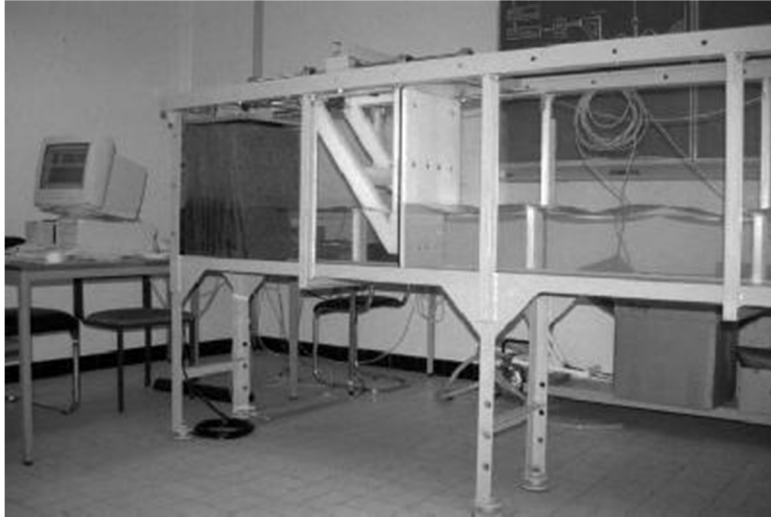
Types de plages



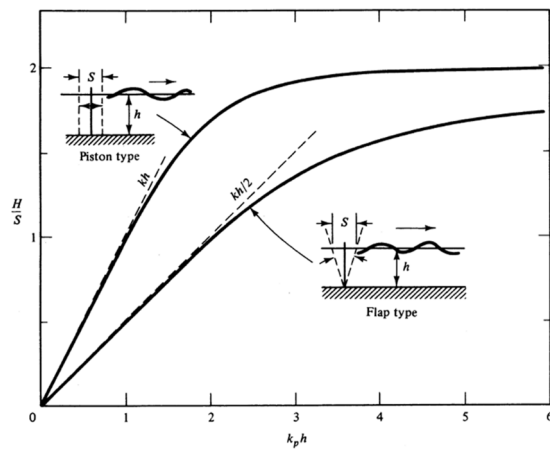
Canal à houle



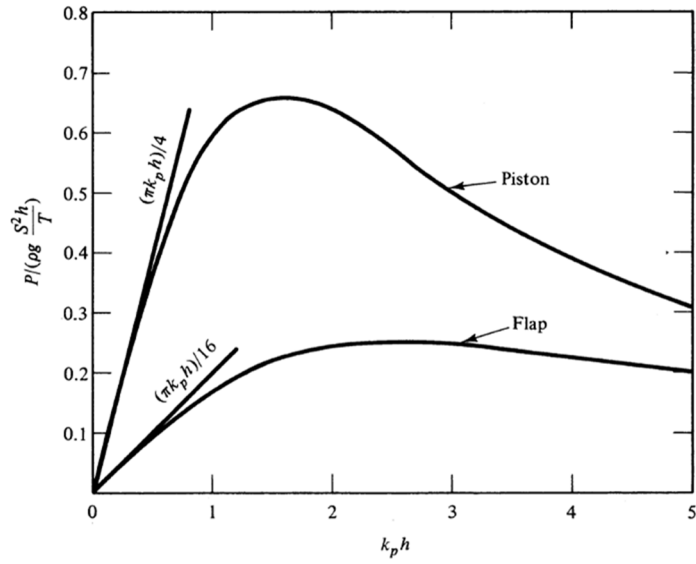
Batteur piston



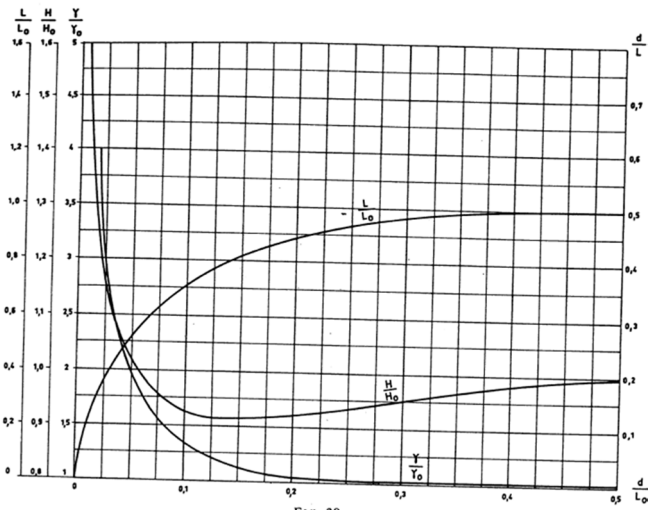
Théorie des batteurs – Hauteur de houle



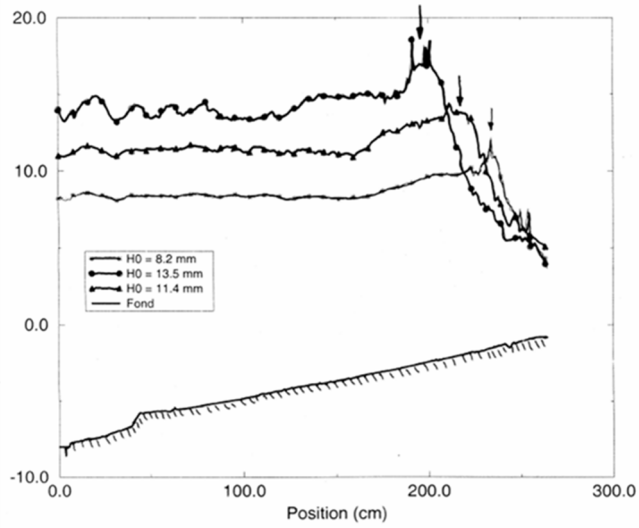
Théorie des batteurs - Puissance



Evolution des paramètres le long d'une plage plane

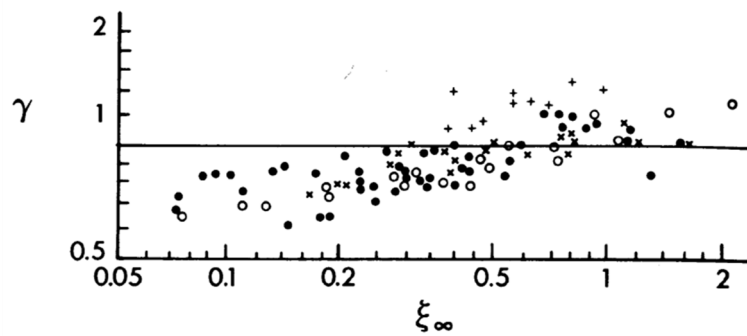


Position du point de déferlement

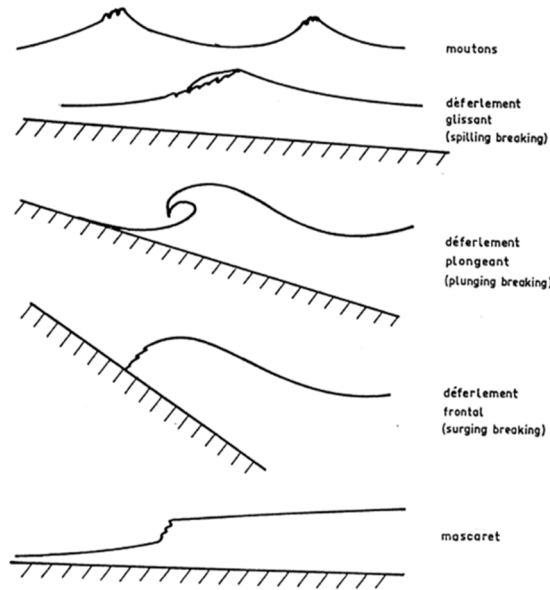


Expériences C. Dulou (1999)

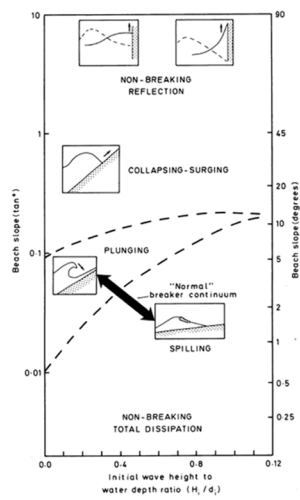
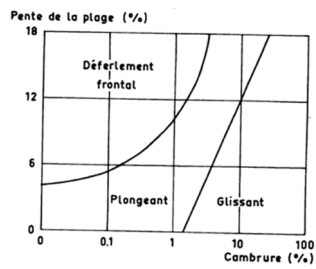
Hauteur relative de déferlement



Types de déferlement

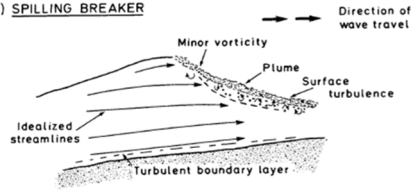


Type de déferlement en fonction de la pente et de la cambrure

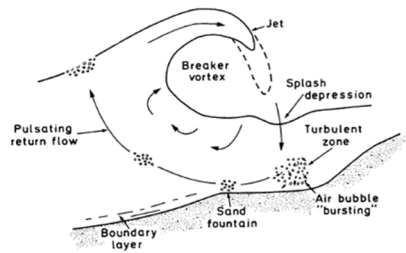


Déferlements « plongeant » et « glissant »

(A) SPILLING BREAKER



(B) PLUNGING BREAKER



Mesure de la vorticité dans un déferlement glissant

Exp Fluids

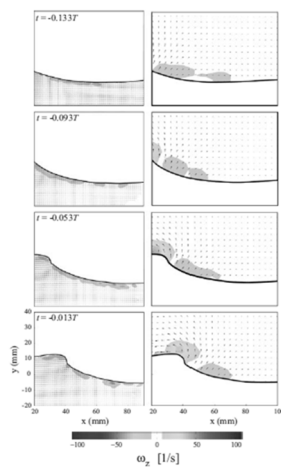


Fig. 8 Velocity vectors and vorticity contours on the water (*left*) and air (*right*) side of the spilling breaker imaged with the dual camera PIV setup at times $t = -0.133, -0.093, -0.053,$ and $-0.013 T$. The magnitude of the vorticity is scaled on the same color bar for both air and water

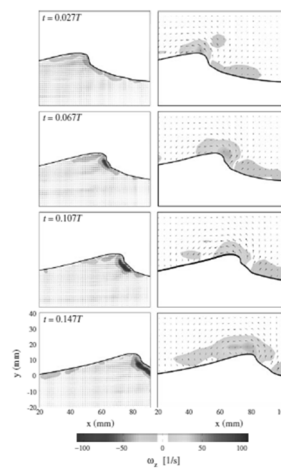


Fig. 9 Velocity and vorticity on the water (*left*) and air (*right*) side of the spilling breaker imaged with the dual camera PIV setup at times $t = 0.027, 0.067, 0.107,$ and $0.147 T$. The magnitude of the vorticity, for both air and water, is indicated by the color bar

Modélisation Navier-Stokes d'un déferlement plongeant

PHYSICS OF FLUIDS 22, 091111 (2010)

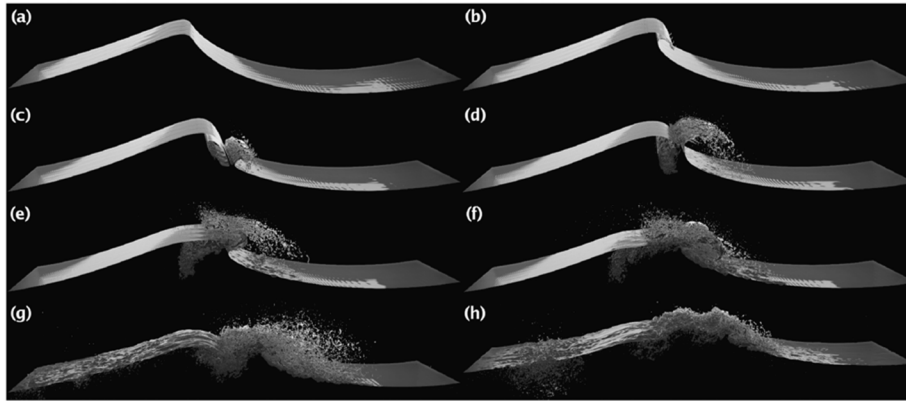


FIG. 1. (Color) Three-dimensional renderings of the 50% isocontour of the volume fraction, highlighting different stages of the deep-water breaking cycle (enhanced online) [URL: <http://dx.doi.org/10.1063/1.3487758.1>].

Estimation de la dissipation par modélisation numérique N-S

P. Lubin et al. / Coastal Engineering 53 (2006) 631–655

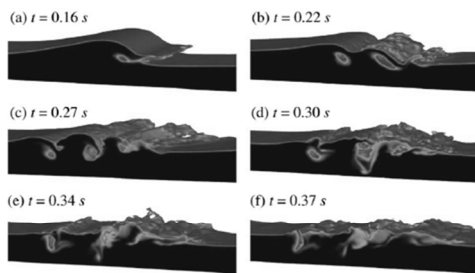


Fig. 19. Snap shots of a three-dimensional large eddy simulation of a plunging breaker; $H/L=0.13$, $d/L=0.13$, $C\geq 0.5$.

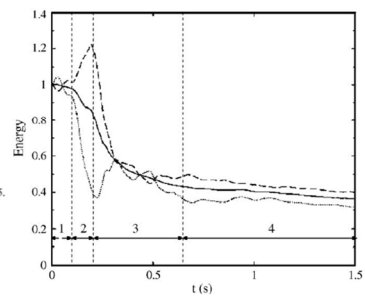


Fig. 23. Time evolution of the non-dimensional energies. Solid line: total energy; dashed line: kinetic energy; dotted line: potential energy. $H/L=0.10$, $d/L=0.10$. Zone 1: steepening of the wave; zone 2: jet ejection; zone 3: jet impact and splash-ups generation; zone 4: residual flow.

Coefficient de réflexion

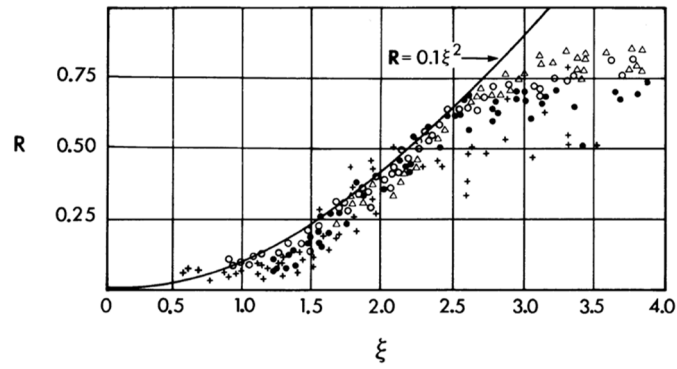
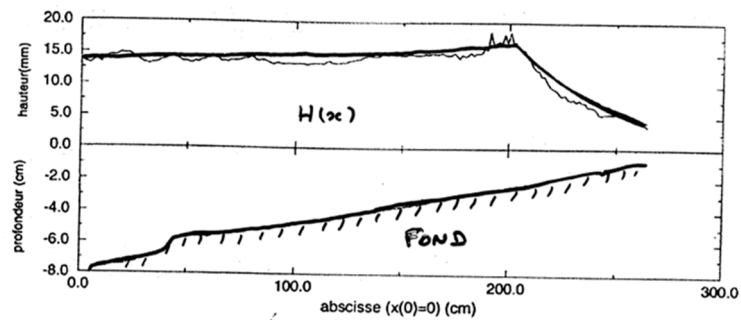
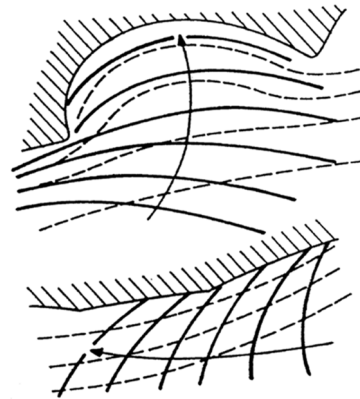
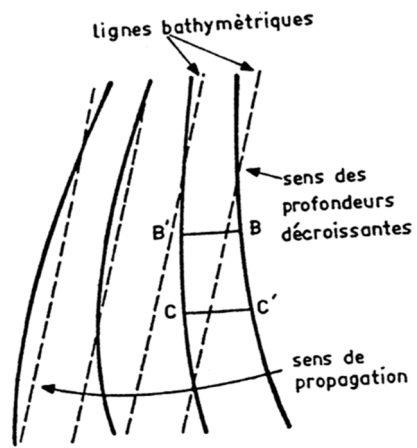


Figure 4.1 Reflection coefficient of a beach as a function of surf parameter $\xi = s(k_{\infty}A/\pi)^{-1/2}$ where A is the local amplitude. +: $s = 0.1$; ●: $s = 0.15$; ○: $s = 0.20$; and △: $s = 0.30$ (from Battjes, 1974a, based on Moraes' data).

Modélisation de la transformation



Alignement des crêtes



Convergence et divergence des rayons



FIG. 59

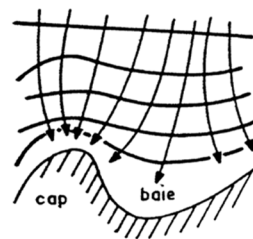
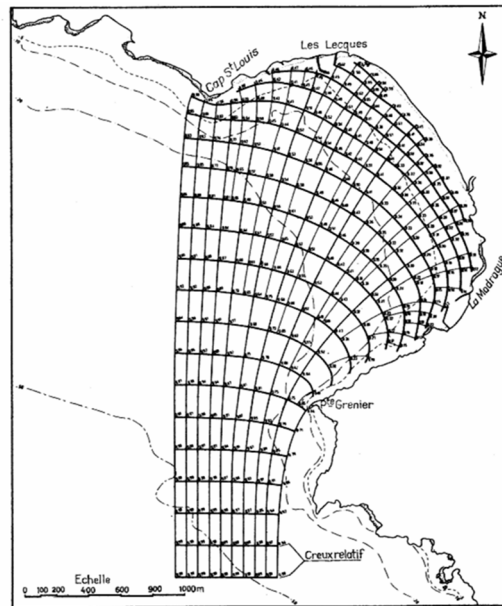
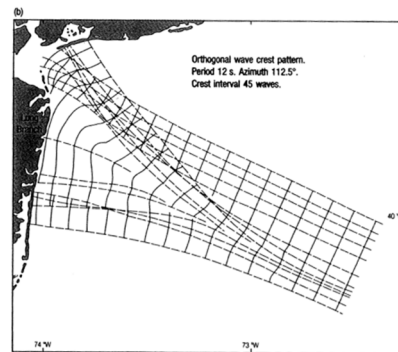
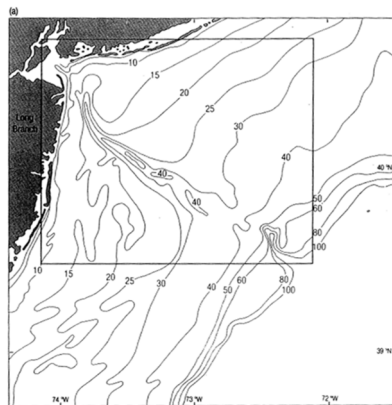


FIG. 60

Lancer de rayons



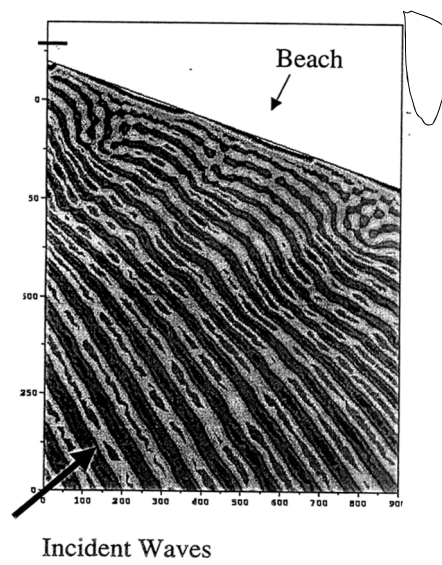
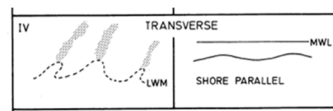
Limitations du lancer de rayons



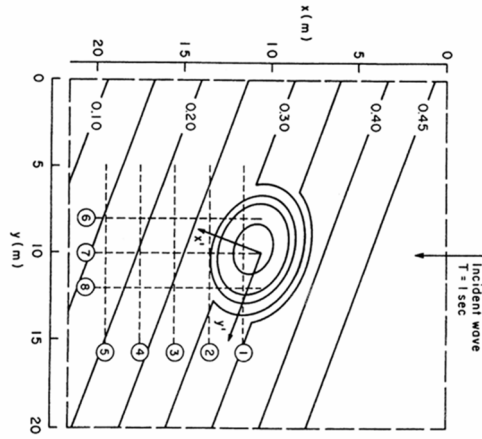
Diffraction



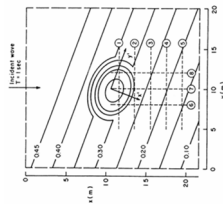
Réfraction-diffraction sur une plage à barres transversales (Artemis)



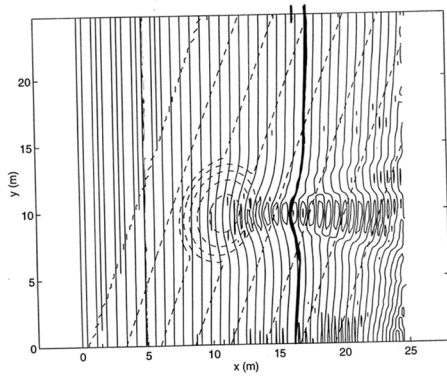
Réfraction- diffraction sur un haut fond (Ref-Dif 1)



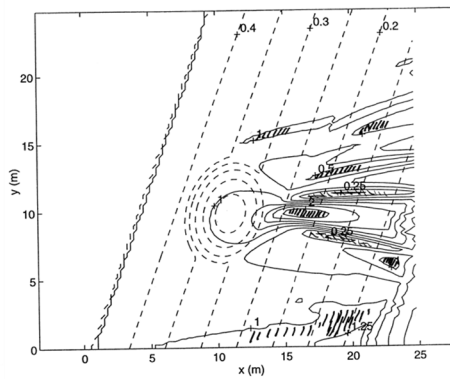
Réfraction- diffraction sur un haut fond



Position de la surface libre



Hauteur de houle



Réfraction- diffraction sur un haut fond

