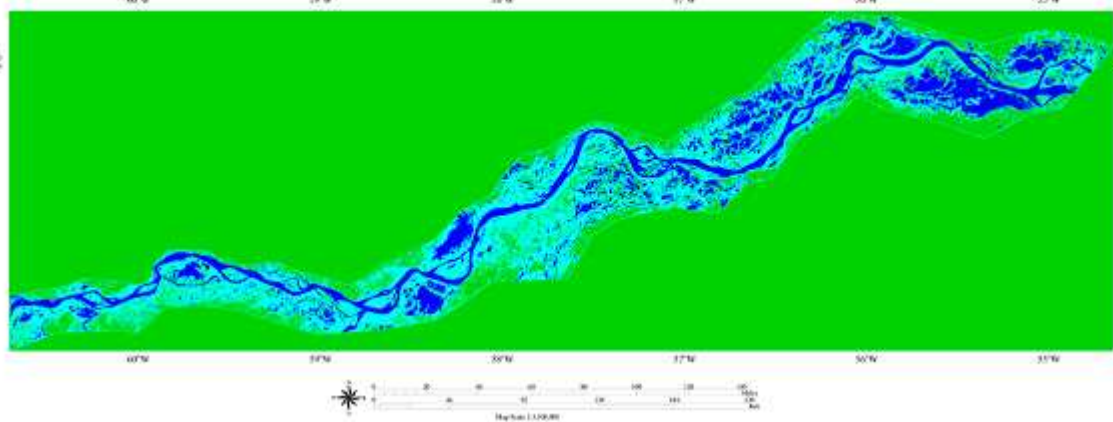
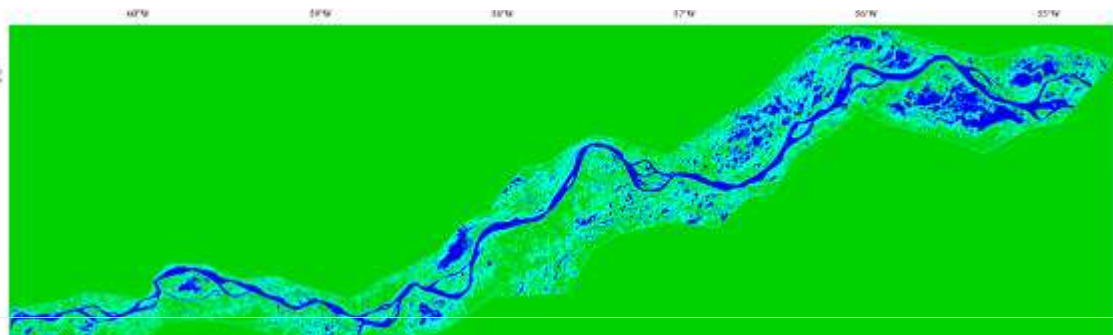
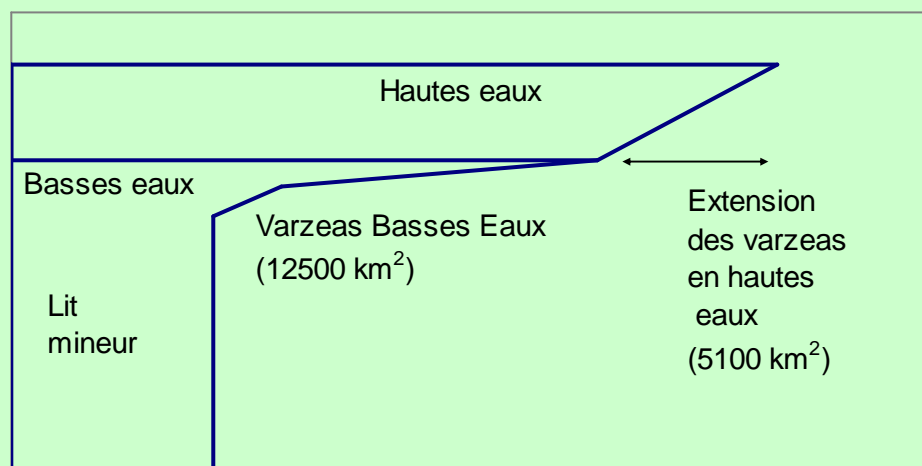
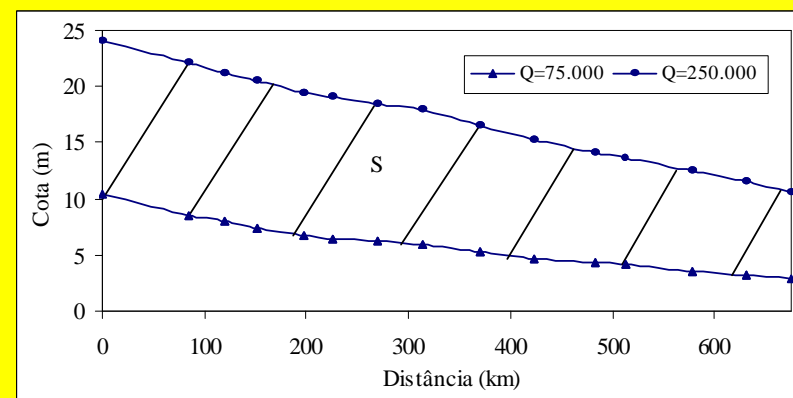


Utilização conjunta de modelagem hidrodinâmica e imagens de satélite para estimava da superfície de planícies de inundação: estudo de caso – curso médio do Rio Amazonas  
 Alfredo Ribeiro Neto; Benoit Le Guennec; Jean Michel Martinez; Jean Pierre Baume; Joecila Santos da Silva; Otto Corrêa Rotunno Filho & Pascal Kosuth



Trecho Manacapuru -Obidos	Vazante (km <sup>2</sup> )	Cheia (km <sup>2</sup> )
Água	6605	8838
Várzea	12534	15405



Volume avec Images JERS et lignes d'eau observées:

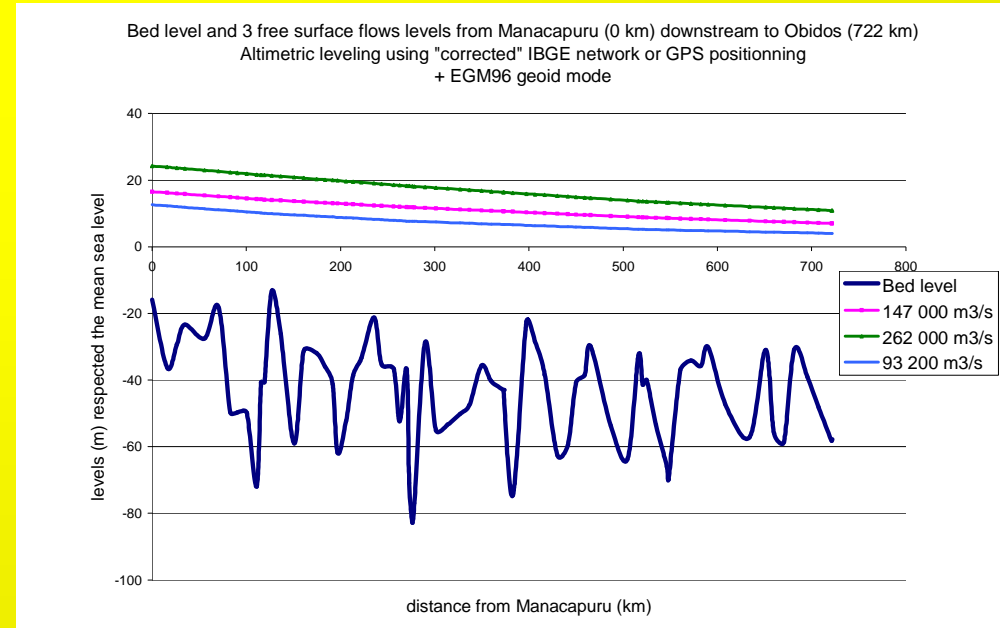
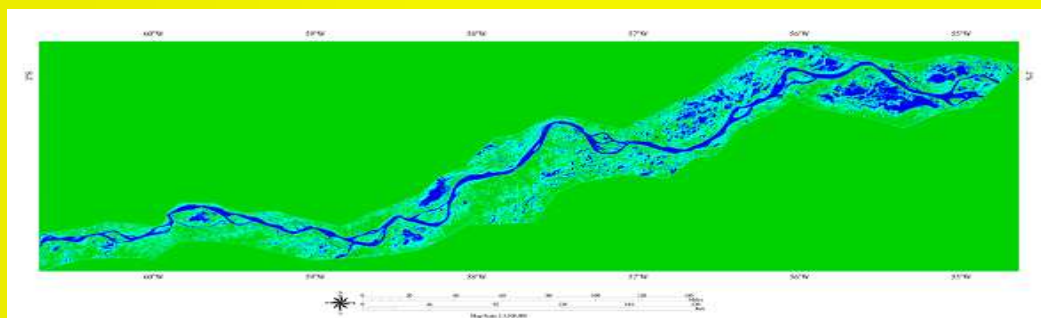
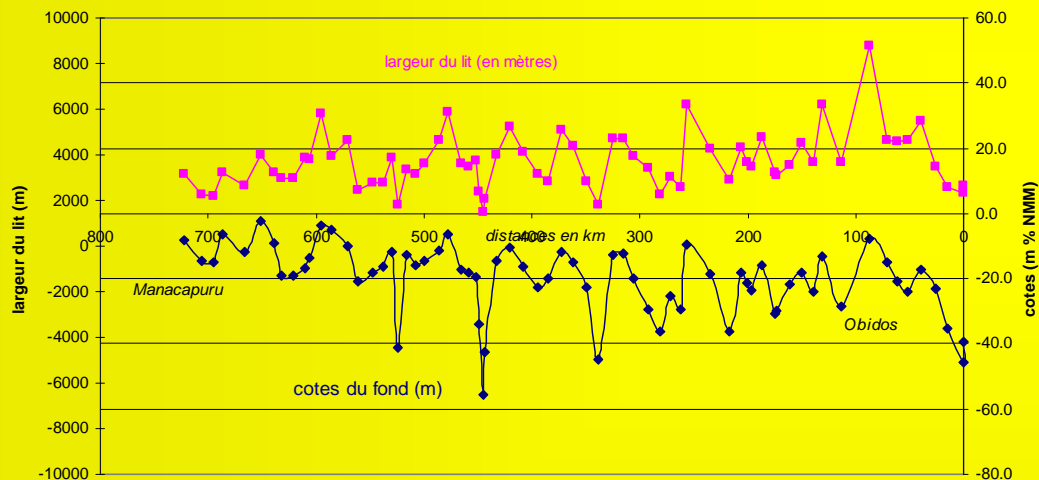
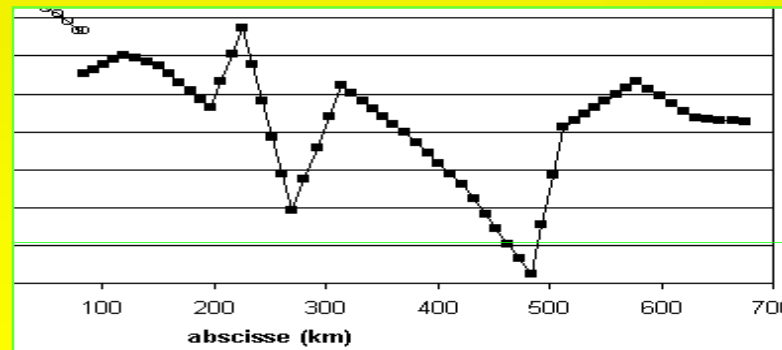
143 000 hm<sup>3</sup>

Volume stocké (modèle 1D, 1ère version):

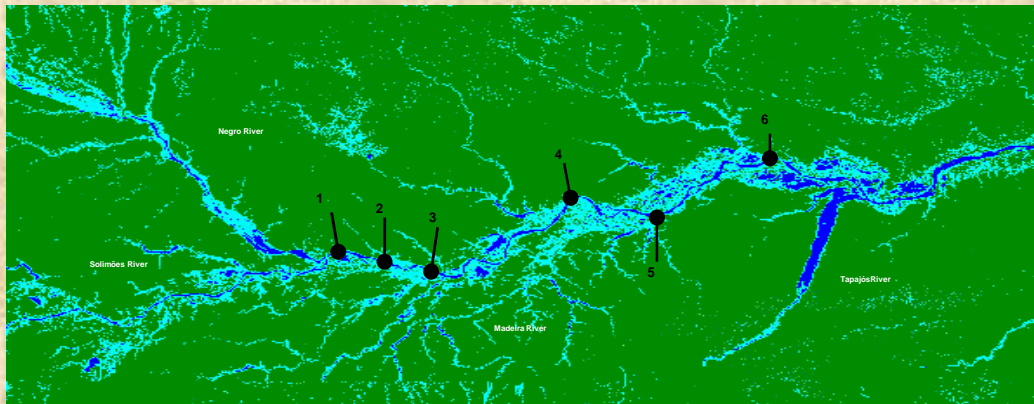
175 000 hm<sup>3</sup>

Coefficients de Manning, modèle 1ère version, Delta x = 60 km

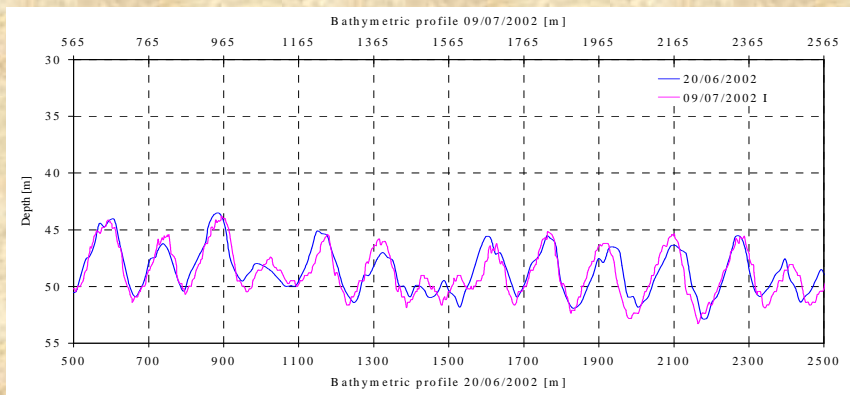
Trecho/rio	$n_0$	$n_1$
Mau-CSN/Amazonas	0,031	0,034
CSN-Ita/Amazonas	0,035	0,038
Ita-Par/Amazonas	0,039	0,045
Par-Obi/Amazonas	0,028	0,032



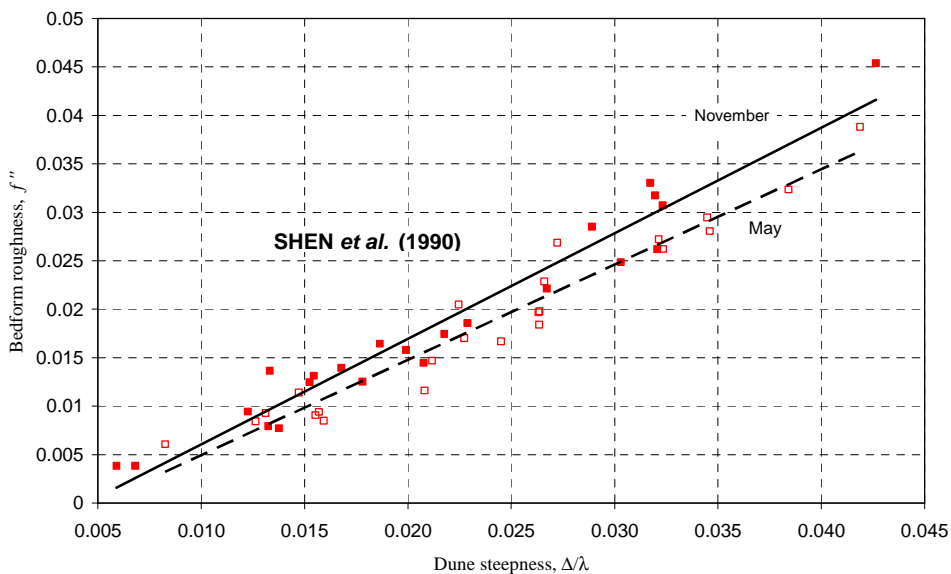
Nouvelle géométrie: Manacapuru-Obidos, Delta x = 10 km  
**n moyen: 0.027**



Location of the analyzed longitudinal profiles.



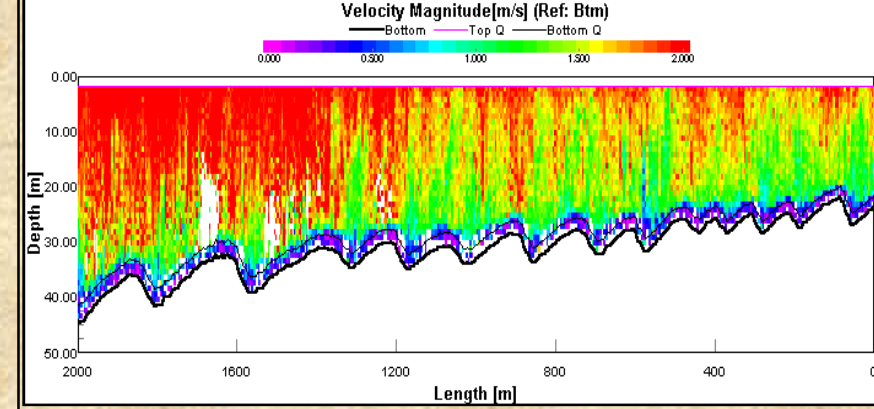
Displacement of dunes in Ilha da Grande Eva.



Bedform roughness coefficient ( $f''$ ) as a function of dune steepness for two hydrologic situations: high water (May) and low water (November).

Shen et al. (1990)

$$f'' = \frac{16}{9} \left( \frac{\Delta}{h} \right)^{\frac{3}{8}} \frac{\Delta}{\lambda}$$



ADCP register of subaqueous dunes in Solimões-Amazons River.

Table 1 – Mean dune height and celerity for the analyzed bathymetric profiles.

Station	Dune height [m]	Dune celerity [m/day]
<b>Falling stage in Amazon river</b>		
1- Jatuarana (13/08/2001 - 24/08/2001)	3.00	3.18
3- Iracema (14/08/2001 - 24/08/2001)	5.17	2.10
4- Ilha das Onças (17/08/2001 - 23/08/2001)	2.45	5.10
6- Óbidos centro (18/08/2001 - 22/08/2001)	4.00	6.07
<b>Average water stage (high-fall) in Amazon river</b>		
1- Jatuarana (13/08/2001 - 29/11/2001)	3.00	1.48
2- Ilha Grande Eva (14/08/2001 - 29/11/2001)	3.40	1.12
3- Iracema (14/08/2001 - 29/11/2001)	5.50	0.79
5- Parintins (17/08/2001 - 09/12/2001)	7.44	1.18
6- Óbidos centro (18/08/2001 - 05/12/2001)	4.55	1.39
6- Óbidos ME (19/08/2001 - 05/12/2001)	4.00	1.87
<b>High water stage in Amazon river</b>		
1- Jatuarana (20/06/2002 - 09/07/2002)	3.25	2.63
2- Ilha Grande Eva (20/06/2002 - 09/07/2002)	3.52	3.42
3- Iracema (20/06/2002 - 09/07/2002)	5.09	2.63
6- Óbidos ME (25/06/2002 - 06/07/2002)	4.19	2.73

## Dunas e transporte de sedimentos

Method of characteristics applied to estimate the bed load transport. Application to the Amazon river  
 Le Guennec B., Strasser M., Vinzon S.

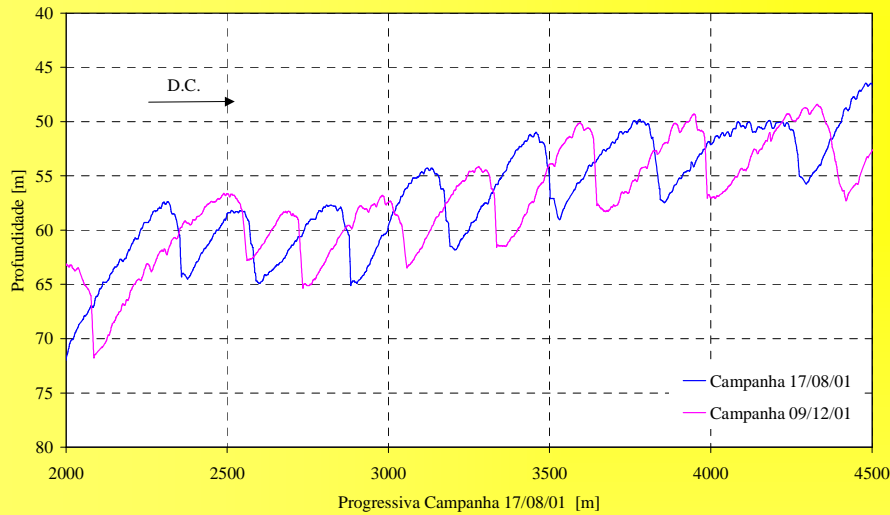
$$A \frac{\partial \vec{R}}{\partial t} + B \frac{\partial \vec{R}}{\partial x} = \vec{C}$$

$$\vec{R} = \begin{pmatrix} h \\ q \\ z_b \end{pmatrix}$$

$$\vec{C} = \begin{pmatrix} 0 \\ -ghS_f \\ 0 \end{pmatrix}$$

$$q_s = f(q, h)$$

$$q_s = \frac{2}{11} (1-p)(1-F^2) h \frac{dx}{dt}$$



**Obidos (dunes de 4.5 m) :**

Seules considérations géométriques (M. Strasser): 12 160 t/jour

Méthode des Caractéristiques: 64 084 t/jour

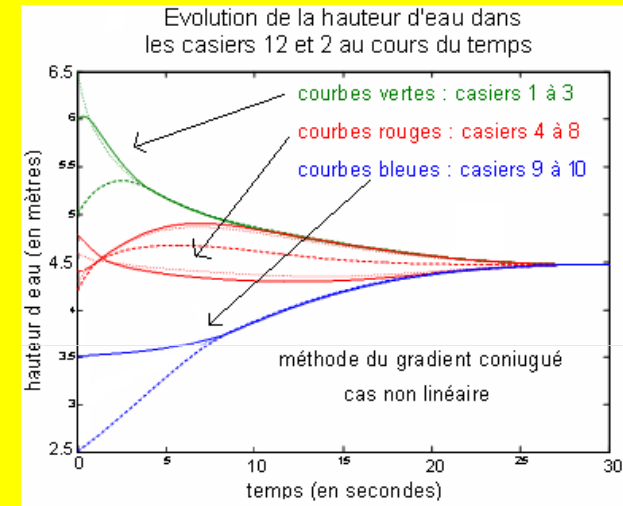
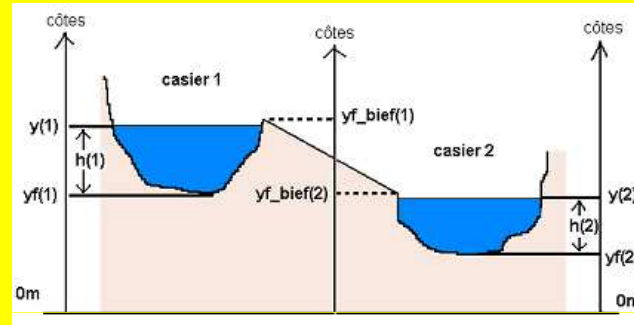
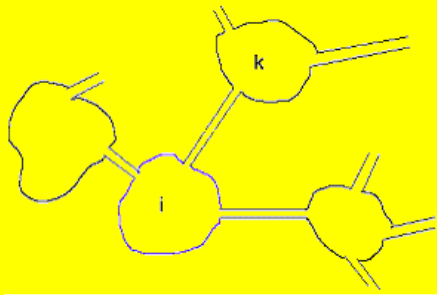
**Parintins (dunes de 7.5 m):**

Seules considérations géométriques (M. Strasser): 22 800 t/jour

Méthodes des Caractéristiques: 40 495 t/jour



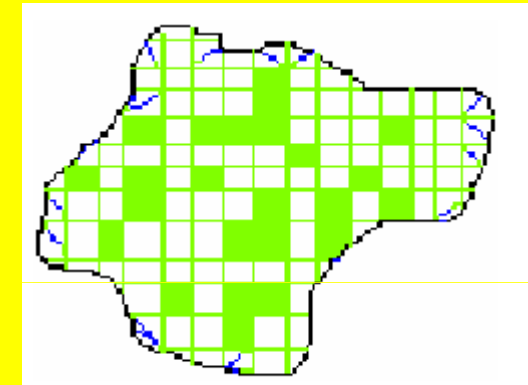
Implémentation de casiers dans le modèle 1D  
 M. Meheust, J.P. Baume, G. Belaud



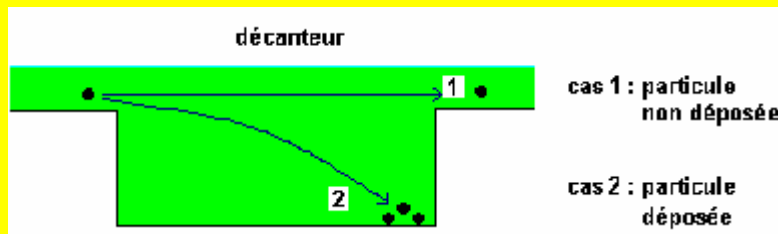
Casiers interconnectés à leurs voisins les plus proches par des biefs

Maillage d'une plaine d'inondation par des casiers

$$\Delta y_i \frac{A_i}{\Delta t} = \theta \left( \sum_k \frac{\partial Q_{i,k}^n}{\partial y_i} \Delta y_i + \sum_k \frac{\partial Q_{i,k}^n}{\partial y_k} \Delta y_k \right) + \sum_k Q_{i,k}^n + P_i$$



Transport de Sédiments



$$C' = C \left( 1 - k T_s \frac{w}{h} \right)$$

Modèle de Hazen, A coefficient d'abattement tel que

$$A = k T_s \frac{w}{h}$$