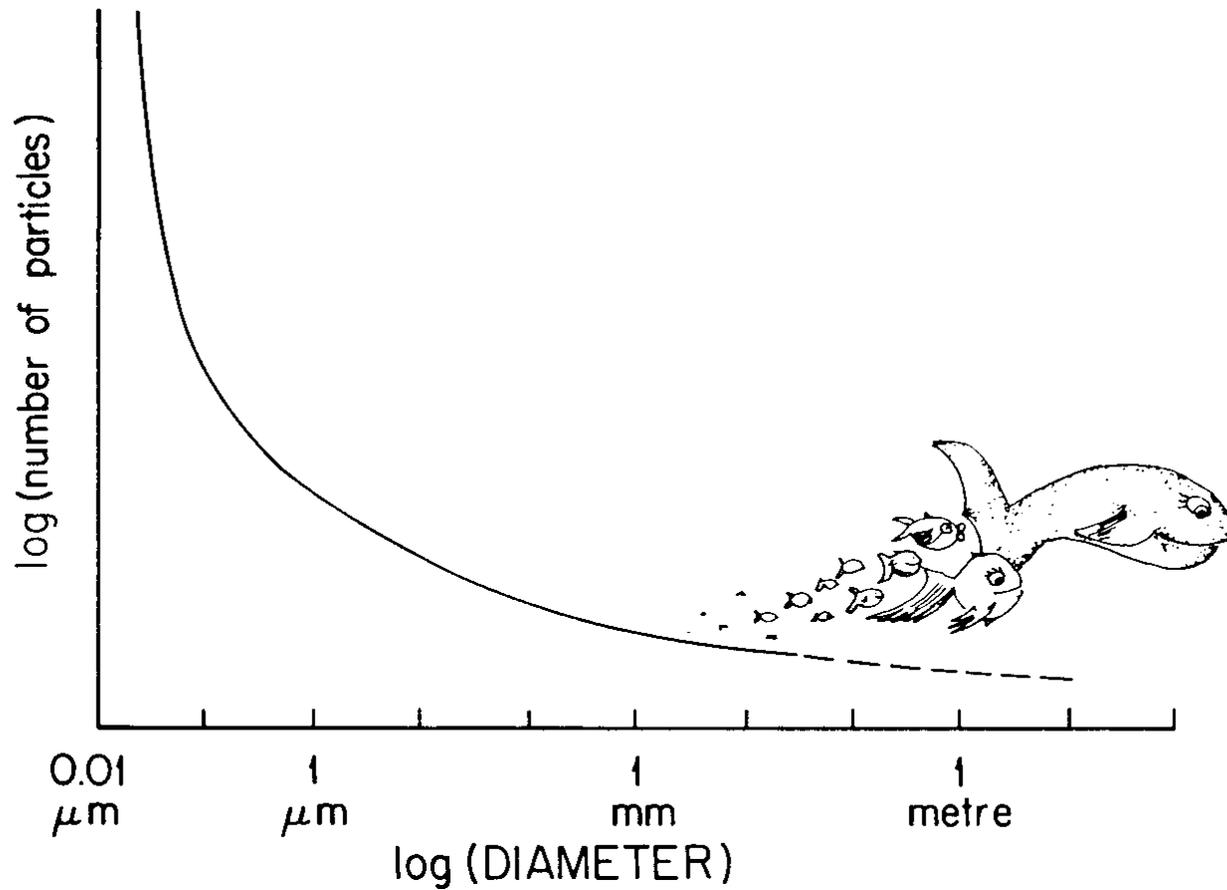


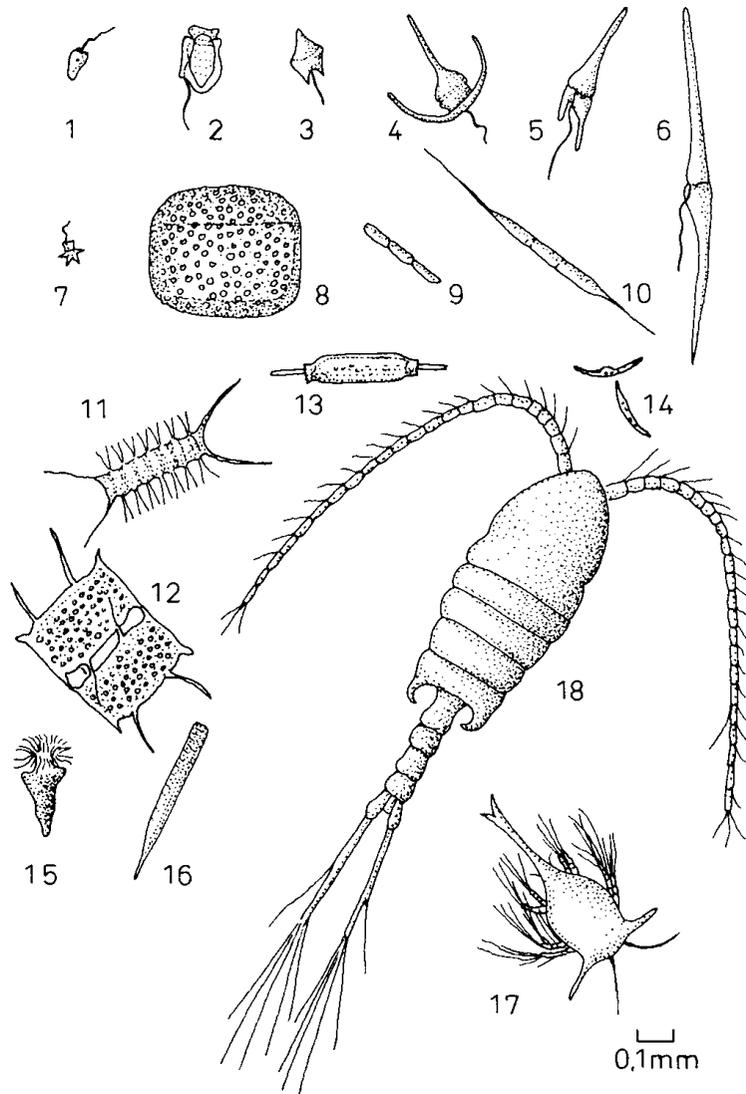
Licence Science et technologie S3  
UE « Pétrologie »

# Diagenèse de la matière organique

Armelle RIBOULLEAU

# Abondance des organismes marins





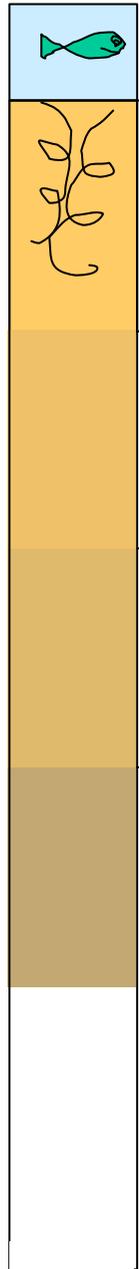
1-6 : dinoflagellés,  
7 : silicoflagellé,  
8-14 : diatomées,

Phytoplancton

15-17 : protozoaires,  
18 : copépode

Zooplancton

+  
Bactéries



**Zone aérobie :**

- respiration de l'oxygène

**Zone strictement anaérobie :**

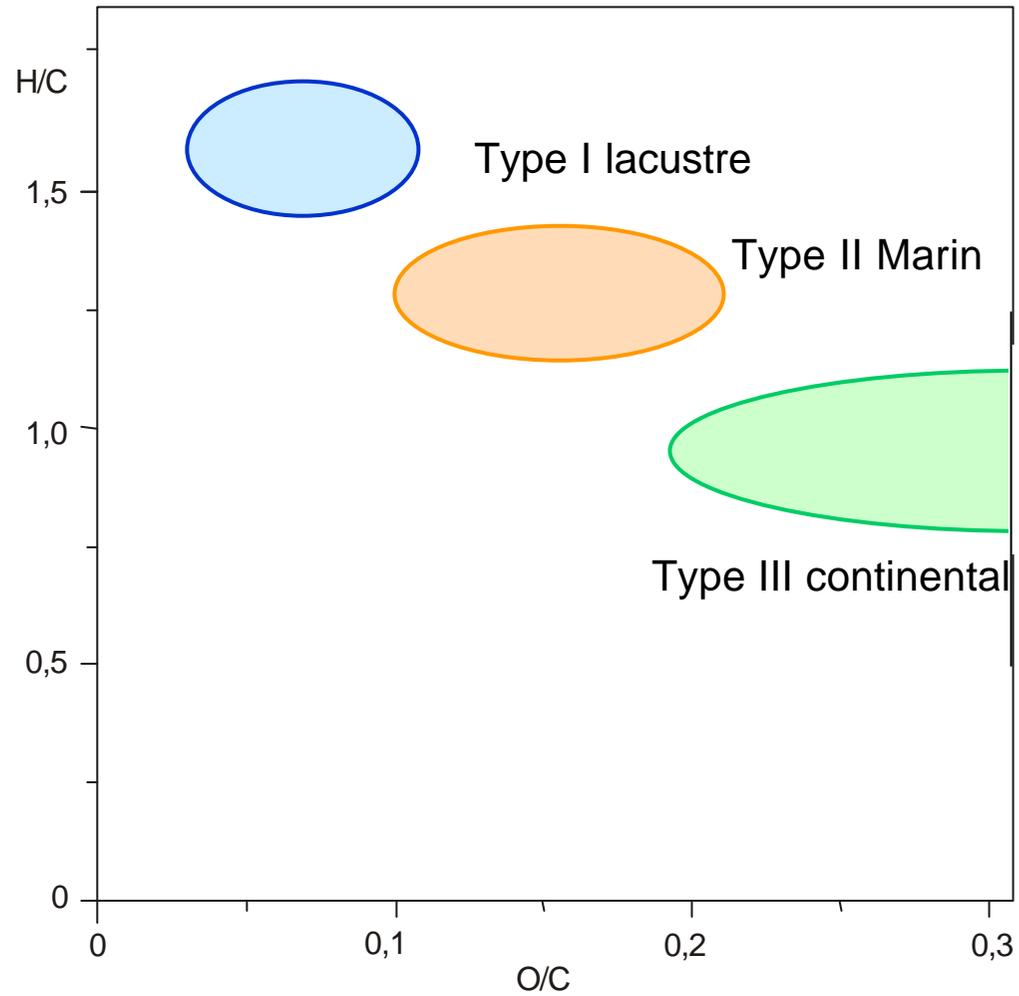
- réduction des nitrates
- réduction des sulfates
- fermentation

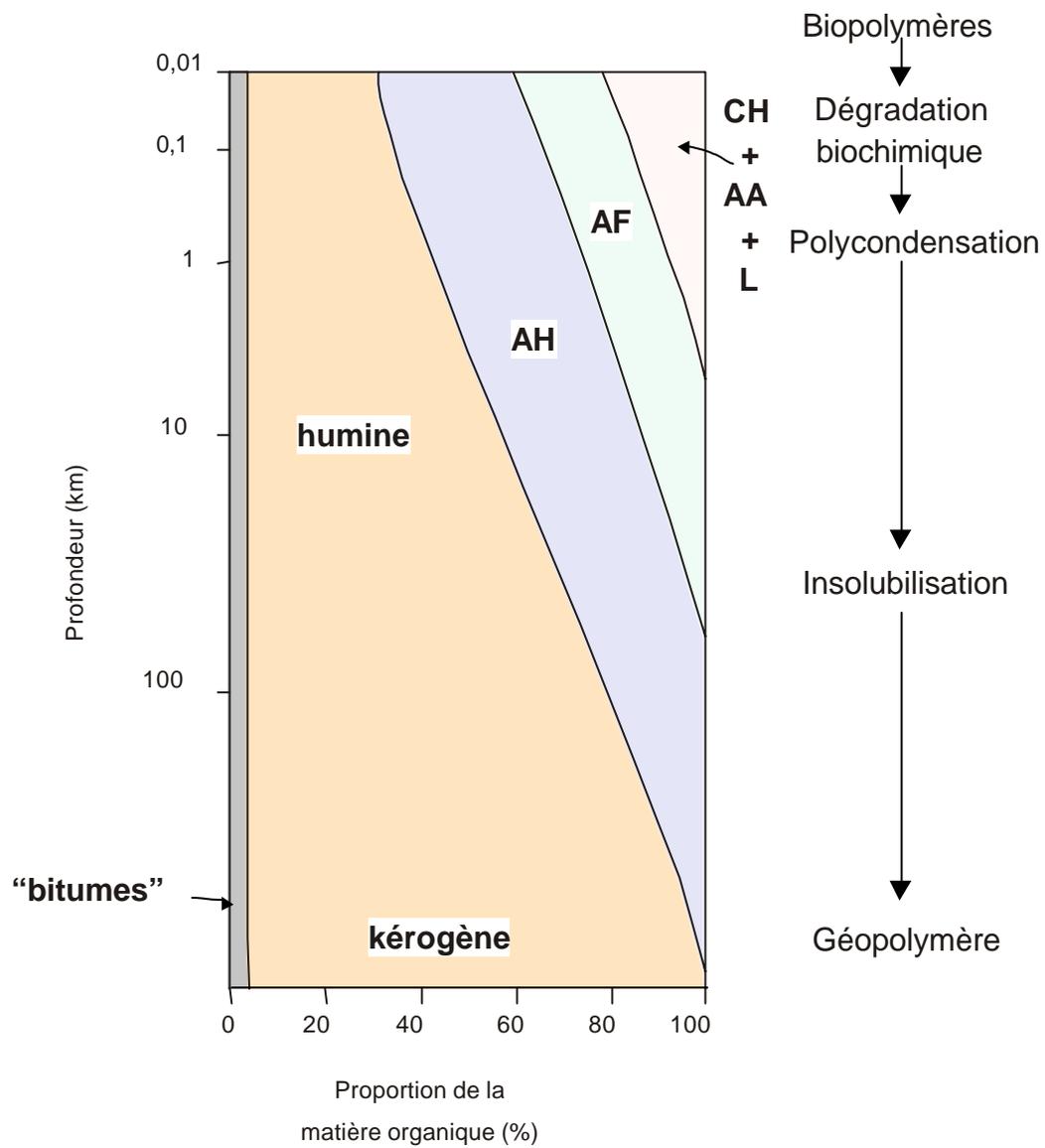
Globalement moins efficaces  
que respiration de l'oxygène

Pas de biodégradation

# Chimie de la MO sédimentaire

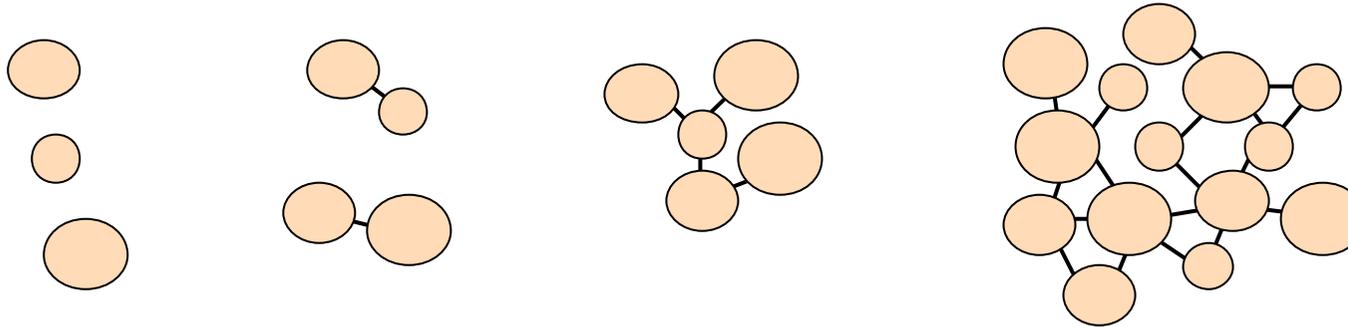
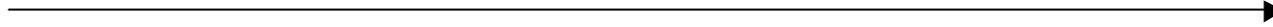
Diagramme  
de  
van Krevelen





CH + AA + L : carbohydrates + acides aminés + lipides ;  
 AF : acides fulviques ; AH : acides humiques

Nb de molécules liées



Solubilité

++++

++

+

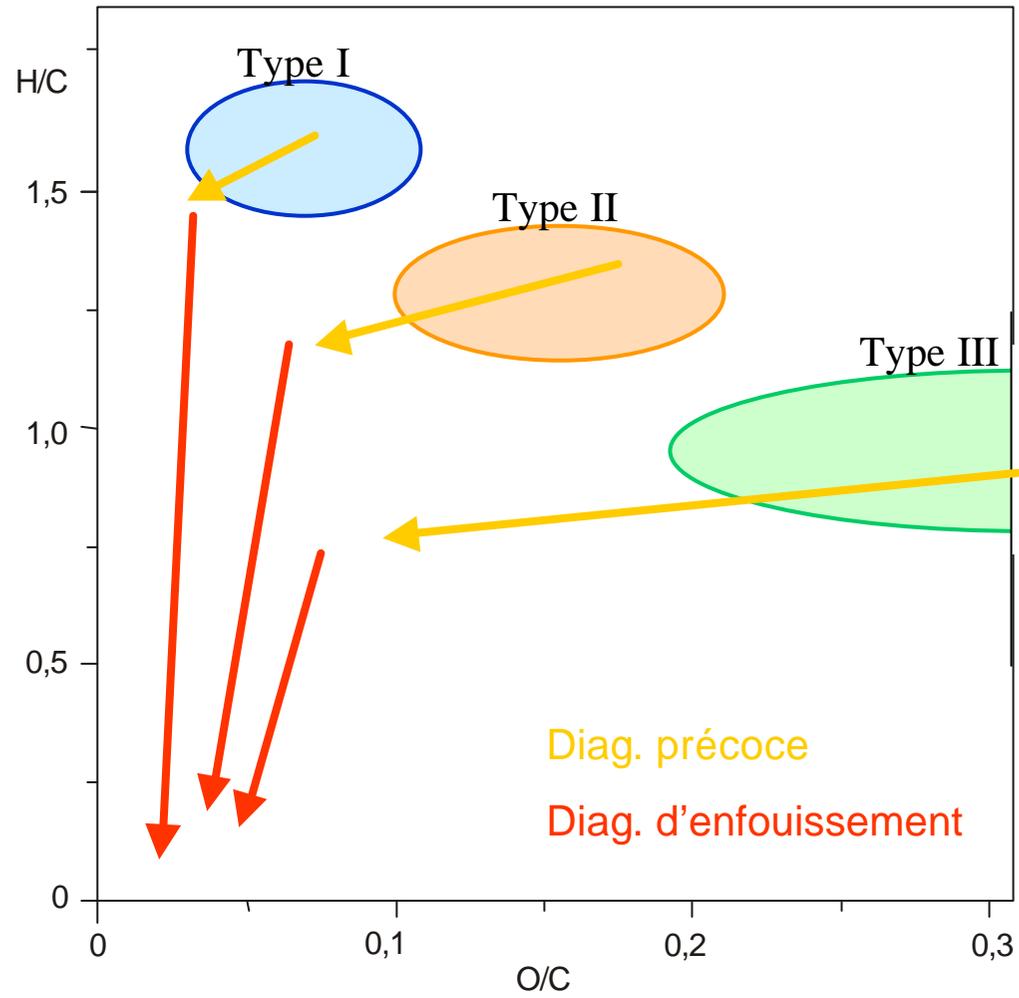
Insoluble

« bitumes »

ac. humiques et fulviques

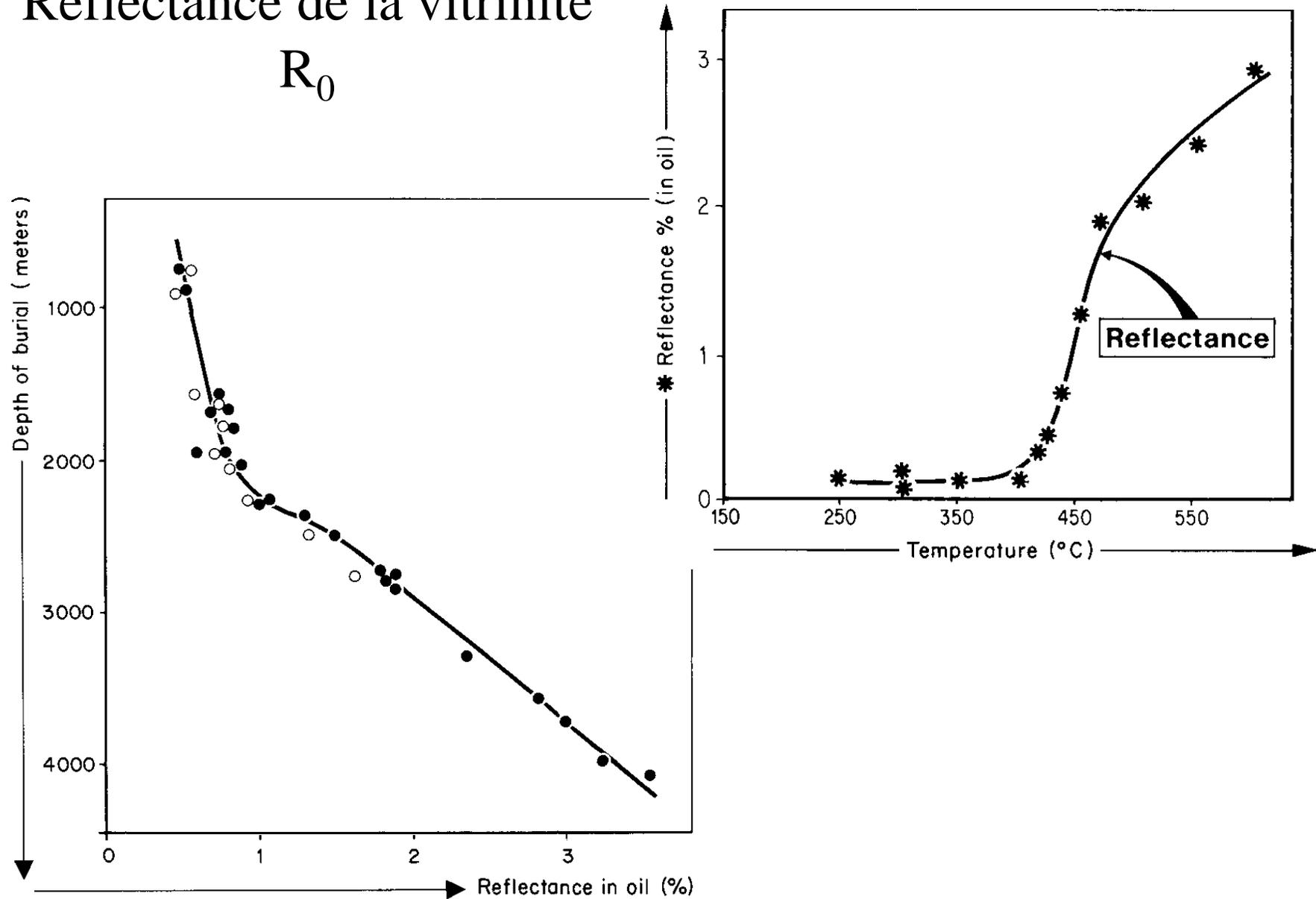
humine & kérogène

# Diagenèse de la MO



# Réflectance de la vitrinite

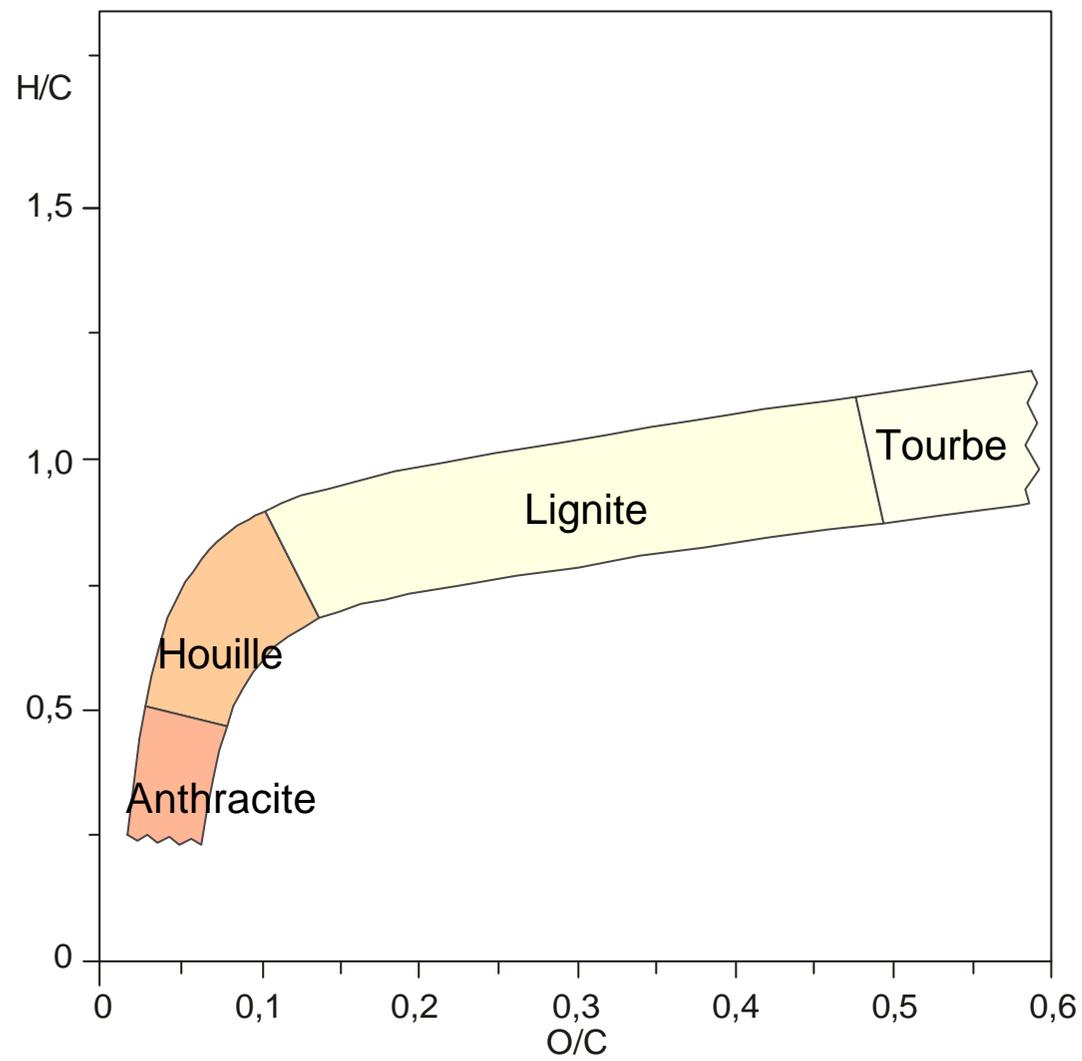
$R_0$

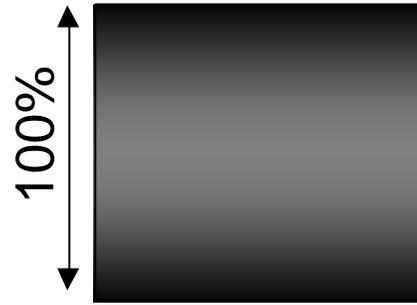


## Les charbons



Rang	C (%)	Matières volatiles (%)	Eau (%)	Pouvoir calorifique (kcal/kg)	R <sub>0</sub> (%)
Tourbe	60		75		0,25
Lignite		53	35	4000	0,30
Houille	77	42	10	7000	0,50
Anthracite	91	8		8650	2,50
Graphite	100	0	0		11,00





Tourbe



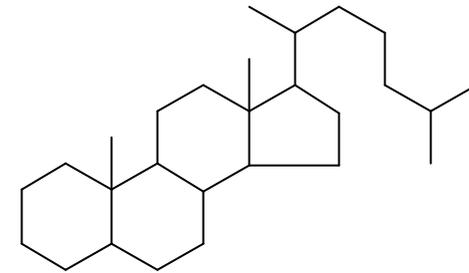
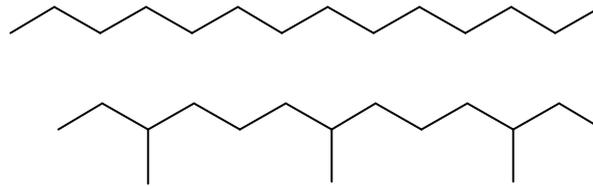
Lignite



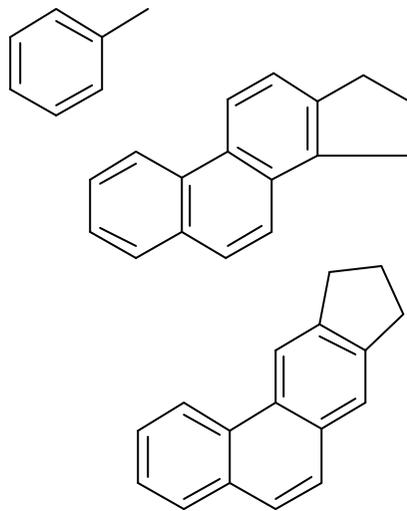
Houille

# Composition du pétrole

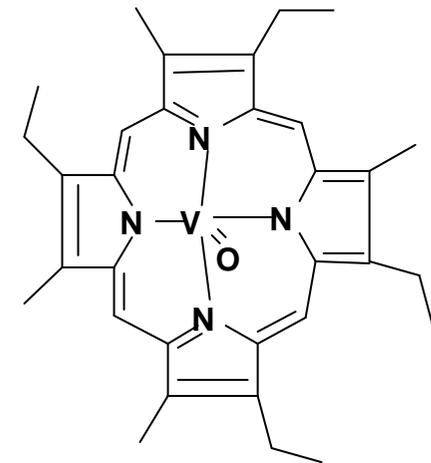
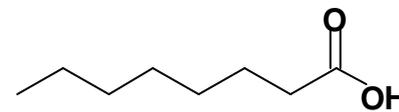
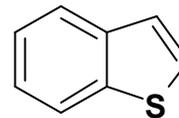
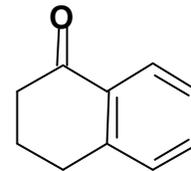
Composés saturés



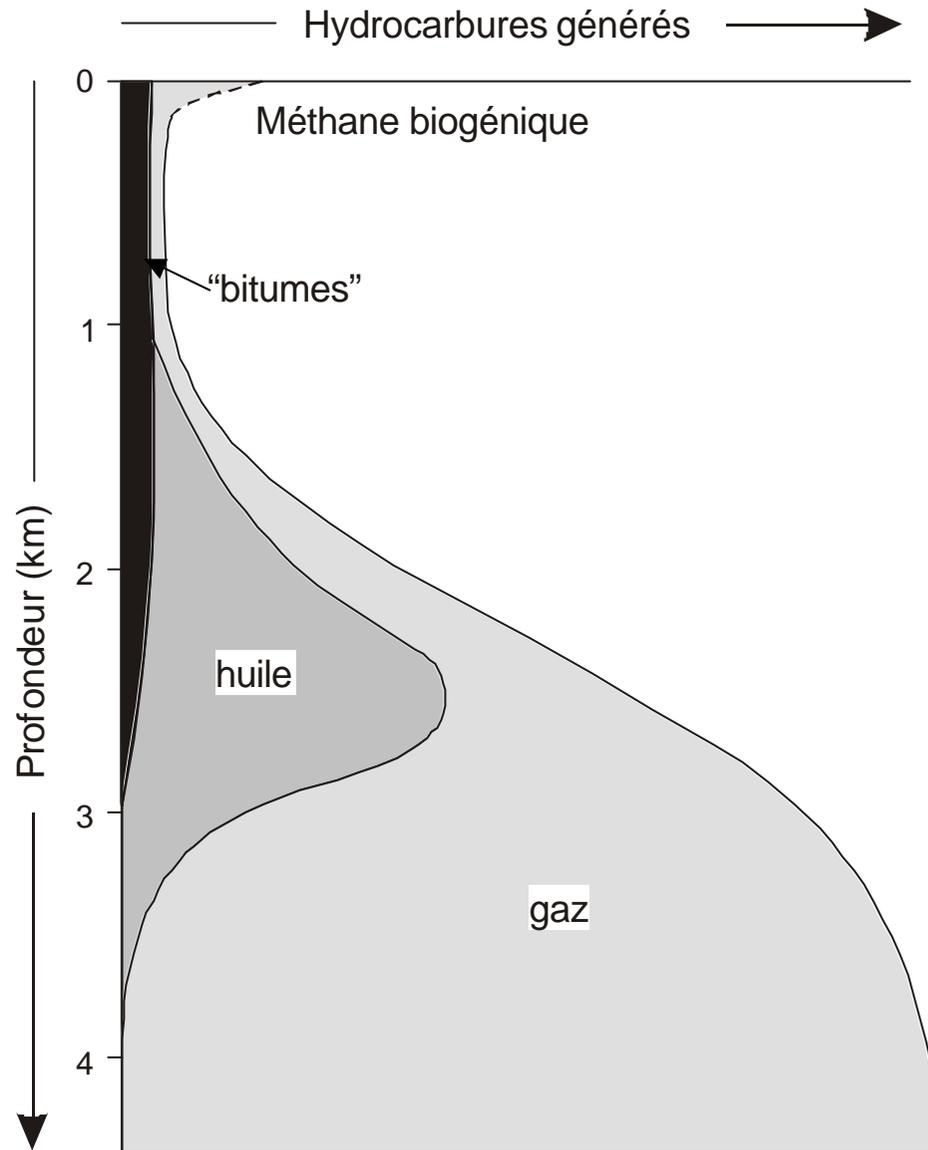
Composés aromatiques



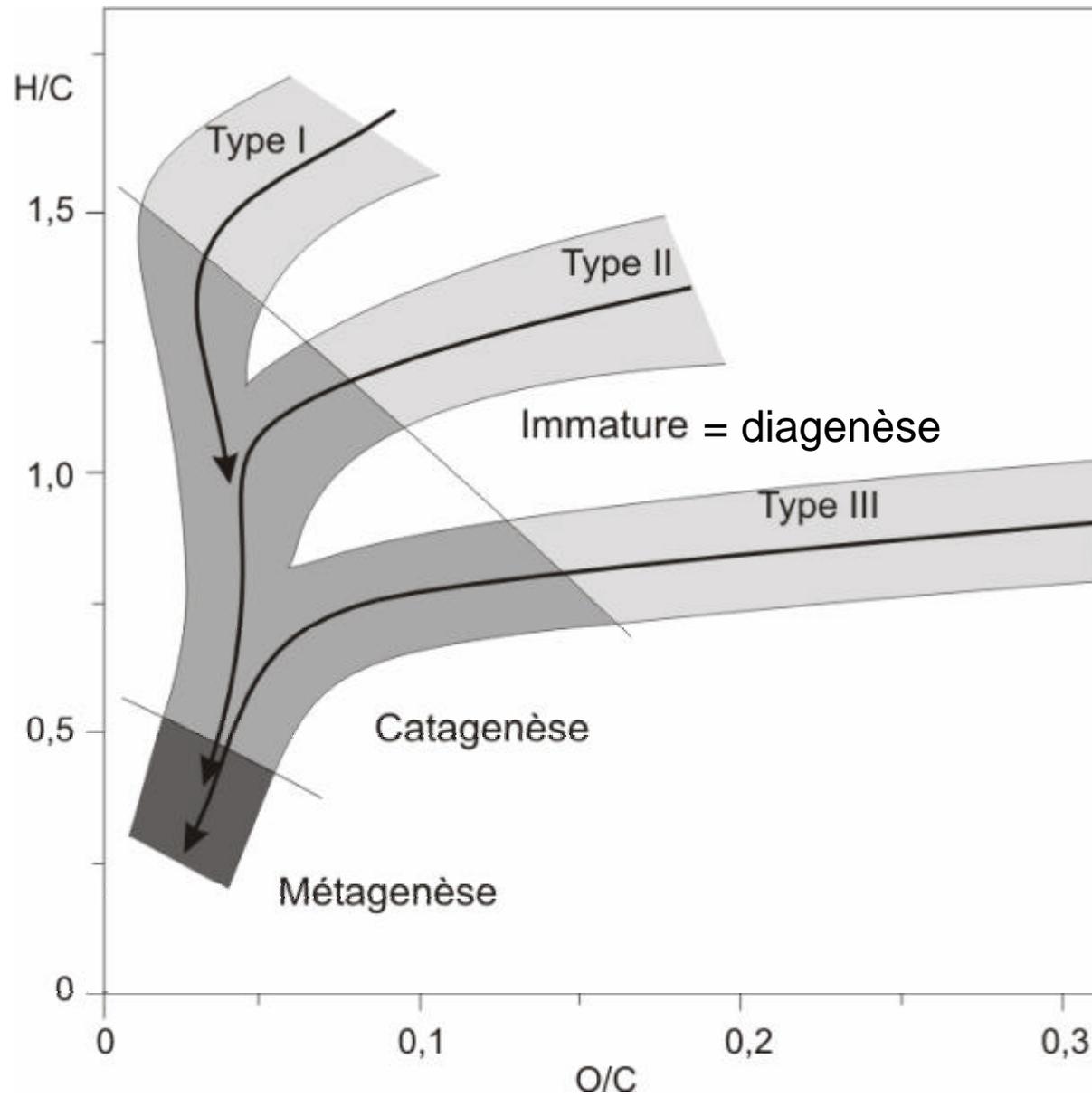
Composés Hétéroatomiques (NSO)

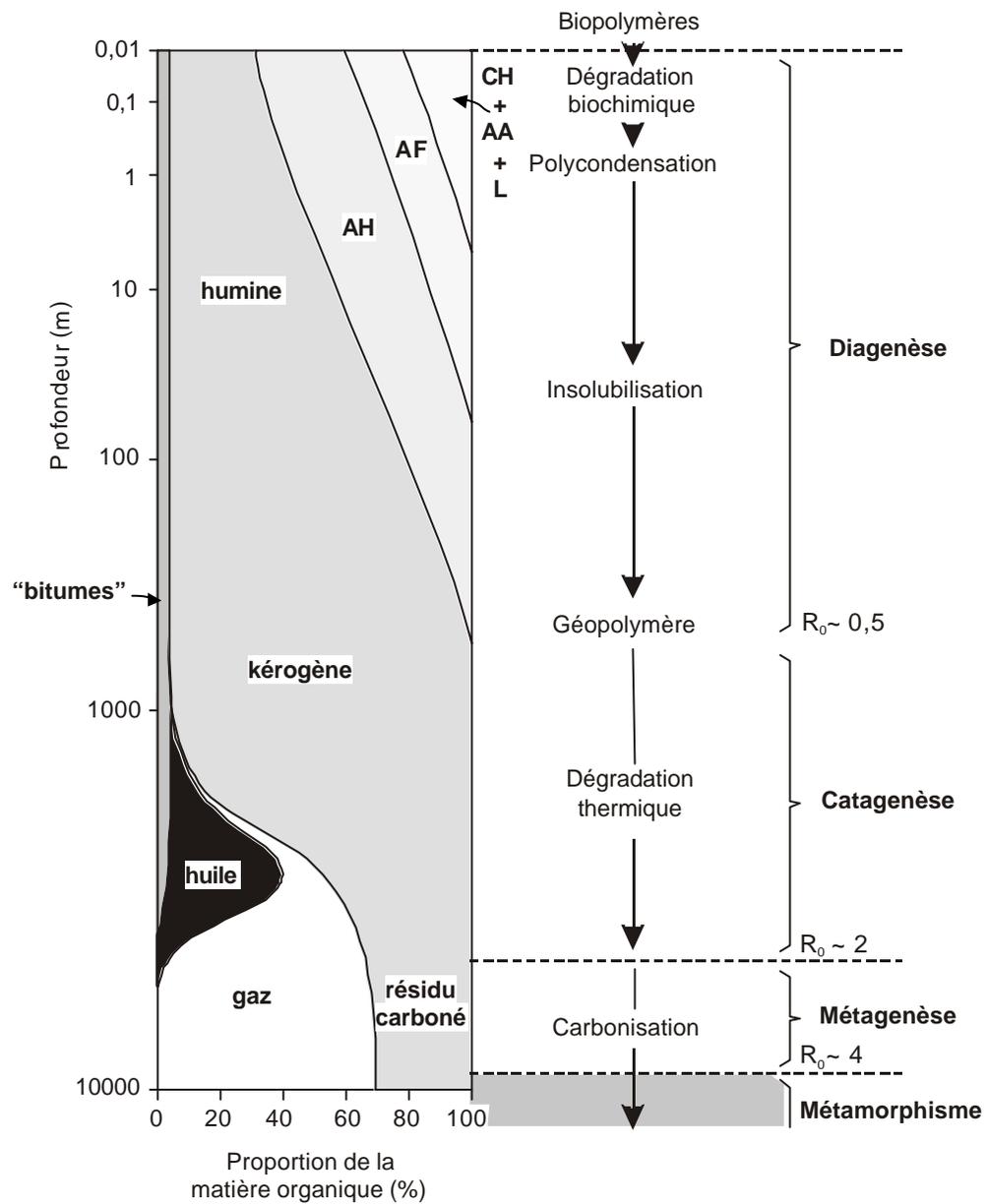


<b>Métag.</b>	Fen. à gaz sec	<b>Catagenèse</b>	<b>Diagenèse</b>
	Fen. à gaz humide		
		Fenêtre à huile	



# Diagramme de van Krevelen

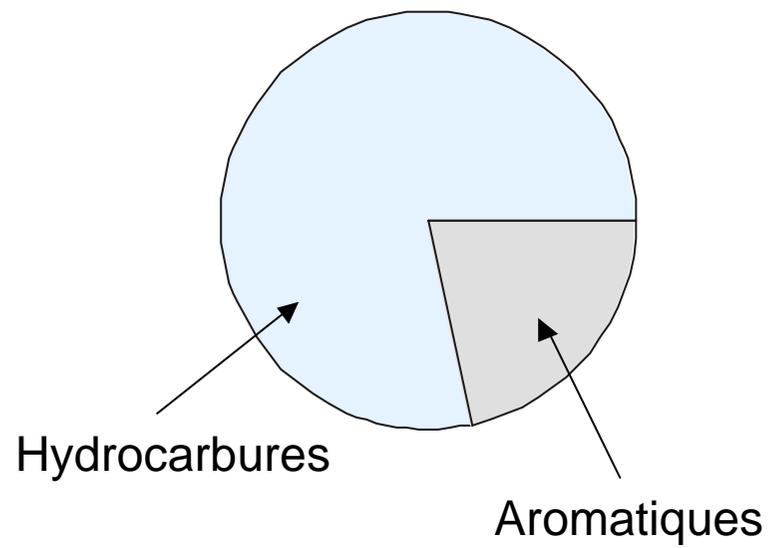




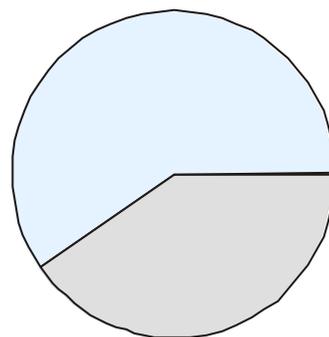
CH + AA + L : carbohydrates + acides aminés + lipides ; AF : acides fulviques ; AH : acides humiques

*D'après Tissot & Welte (1984)*

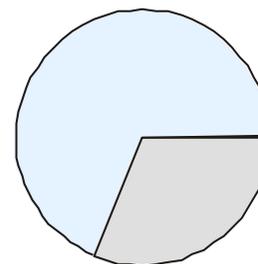
Type I

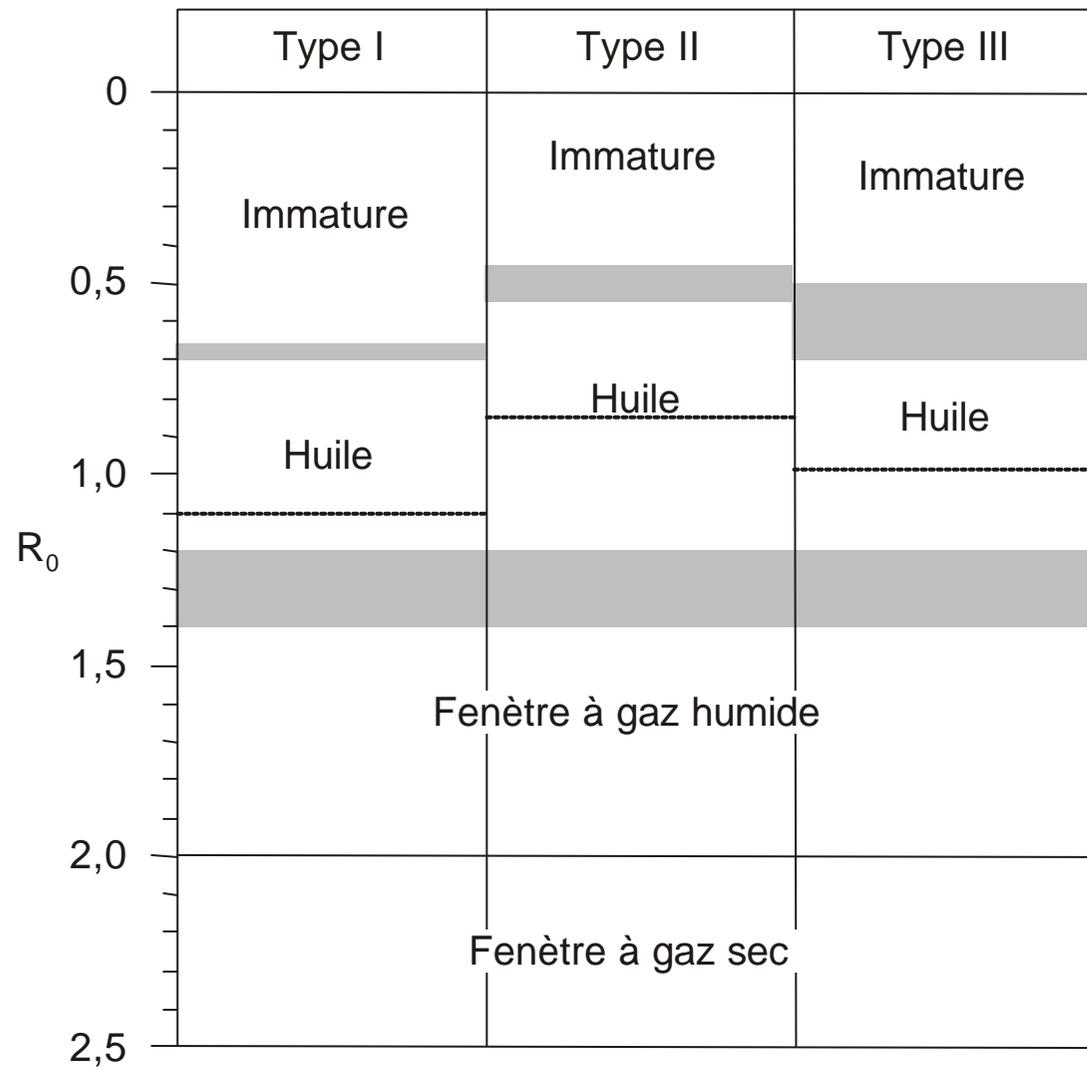


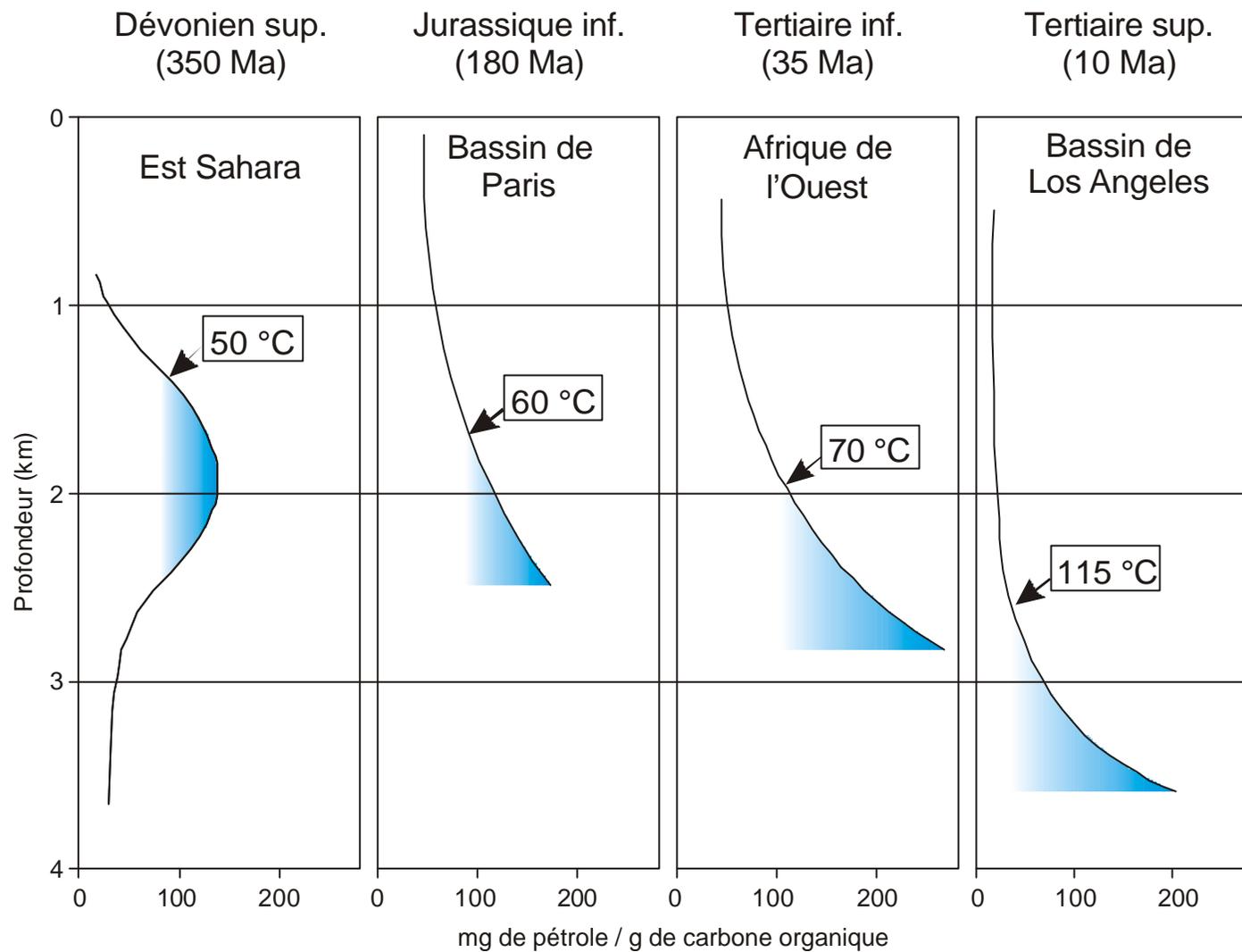
Type II



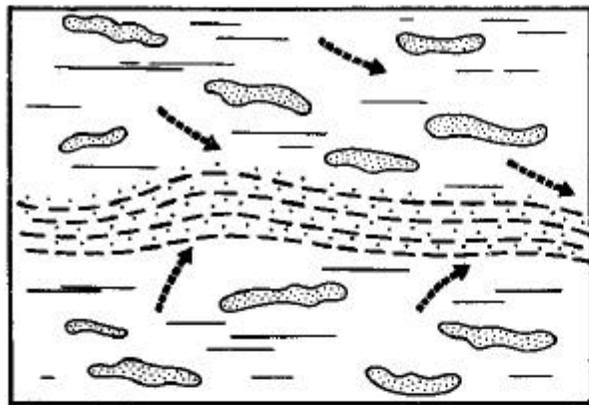
Type III







*D'après Tissot & Welte (1984)*



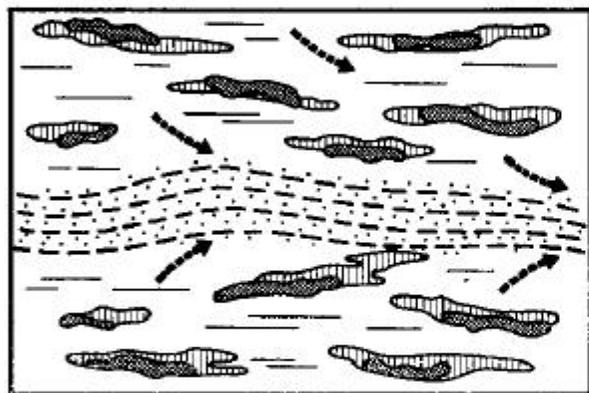
0 1mm

**ZONE IMMATURE (Diagenèse)**

$\emptyset = 15\%$

$S_h = 0$

*EXPULSION DE L'EAU  
(COMPACTION)*



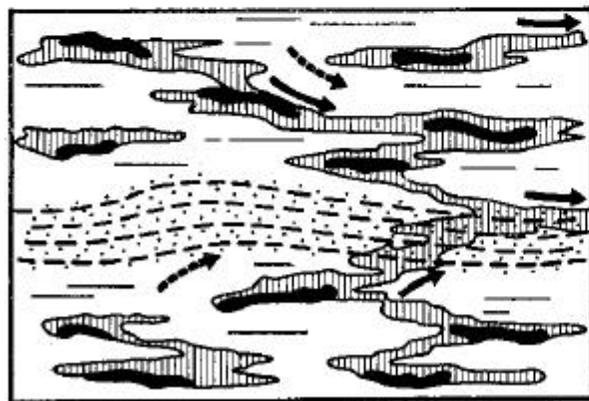
**DÉBUT DE FORM. DE L'HUILE**

LES HYDROCARBURES FORMÉS  
ENVAHISSENT LA POROSITÉ

$\emptyset = 10\%$

$S_h = 5\%$

*PAS D'EXPULSION DE L'HUILE*



**MILIEU OU FIN DE LA FOR-  
MATION DE L'HUILE**

$\emptyset = 8\%$

$S_h = 20\%$

*LA MIGRATION PRIMAIRE  
EST POSSIBLE*

