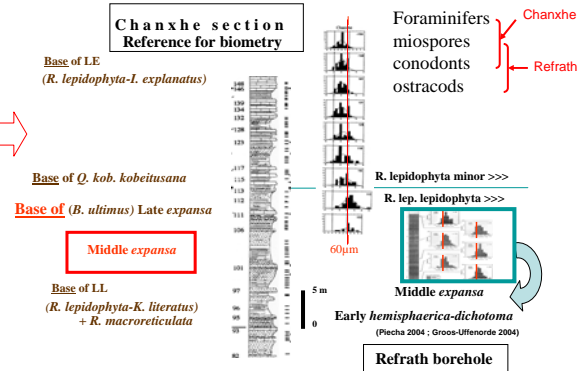
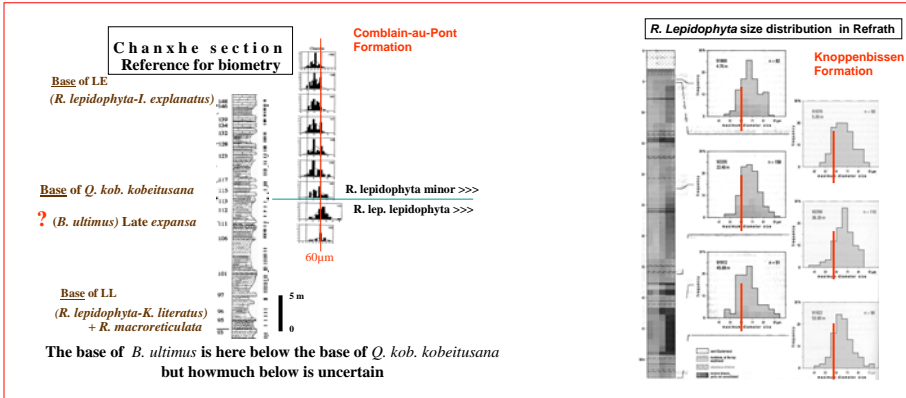
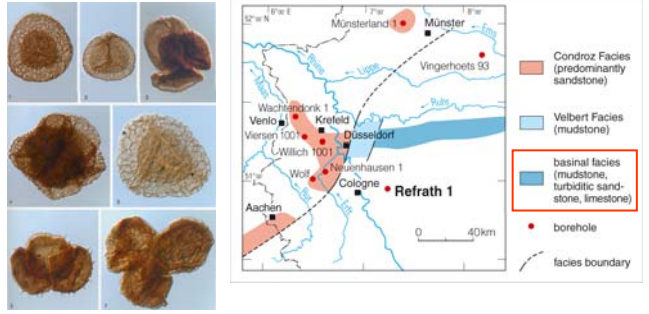
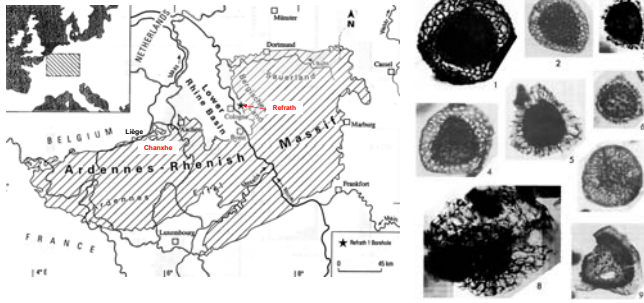


LATE FAMENNIAN CORRELATION BY MIOSPORES BETWEEN THE REFRATH 1 BOREHOLE (BERGISCH GLADBACH-PAFFRATH SYNCLINE, GERMANY) AND THE REFERENCE SECTION OF CHANXHE (DINANT SYNCLINE, BELGIUM)

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Miospores from Chanxhe (Maziane et al. 1999)

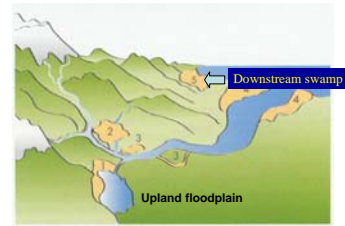
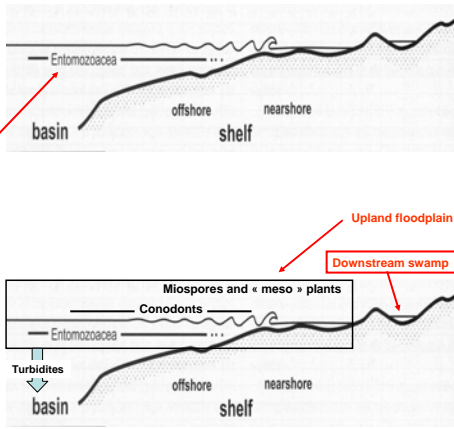
Miospores from Refrath (TAI 2-3) (Hartkopf-Fröder 2004)



The correlation between Chanxhe and Refrath provides detailed palynological / micropaleontological criteria for subdividing the late part of the Famennian

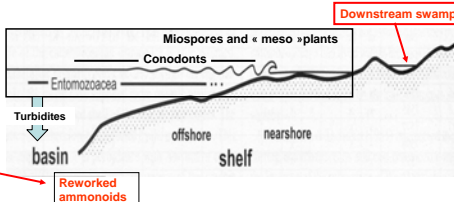
Correlation conodonts-ostracodes after Groos-Uffenorde 2004

Regional stages / Stufen	Conodont Zones		Ostracode Zonation	
	standard	old	Europe pelagic facies	Canada (LITHES 1981)
do VI Wockium	praesulcata	Lower Protog.	M. hem. R. later Interregium	OST2 OST1
do V Daiberg	expansa	Upper M. costatus	M. hemisphaerica - M. dichotoma	DSO 8 DFA 4
do IV Hemberg	postera	Lower L. stylus	R. intercostata	DFA 3
do III Neliden	marginifera	Upper L. U. quadrant - marg.	R. serratostrata - N. nelidensis	DSO 7 DFA 2
do II Neliden	rhomboides	Lower L. rhomb.	Early Zone	DSO 6 DFA 1

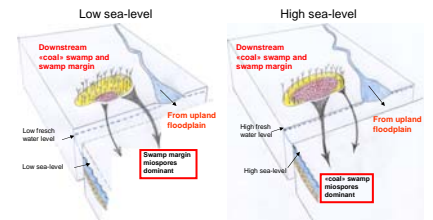


Correlation conodonts-ammonoids after Becker & House, 2000

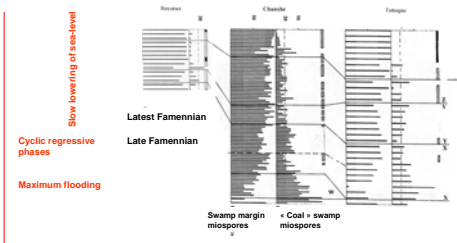
Stage	Conodont Zone	Ammonoid Zone
WOCKIUMIAN	praesulcata	Lower
DASBERGIAN	expansa	Middle
	postera	Lower
HEMBERGIAN	marginifera	Upper
	rhomboides	Lower
NELIDIAN	marginifera	Upper
	rhomboides	Lower



Regressive / transgressive sea-level as deduced from miospore quantitative analysis, from Maziane et al. 2002



Regressive / transgressive sea-level as deduced from miospore quantitative analysis of Comblain-au-Pont Fm, from Maziane et al. 2002



The turbidites of Refrath were deposited during the Middle expansa cyclic transgressive/regressive phases of the « Epinette transgression » and result in the mixing of faunas and floras belonging to different depositional paleoenvironments

Becker, R.T., House, M. 2000 Devonian ammonoid zones and their correlation with established series and stage boundaries. Cour. Forsch.-inst. Senckenberg 220: 113-151.
 Fairon-Demaree, M., Hartkopf-Fröder, C. 2004 Late Famennian mesofossils from the Refrath 1 Borehole (Bergisch Gladbach-Paffrath Syncline, Ardennes-Rhenish Massif, Germany). Cour. Forsch.-Inst. Senckenberg 251: 186-235.
 Hartkopf-Fröder, C. 2004 Palynostratigraphy of upper Famennian sediments from the Refrath 1 Borehole (Bergisch Gladbach-Paffrath Syncline, Ardennes-Rhenish Massif, Germany). Cour. Forsch.-Inst. Senckenberg 251: 77-87.
 Korn, D. 2004 Late Famennian cephalopods from the Refrath 1 Borehole (Bergisch Gladbach-Paffrath Syncline, Ardennes-Rhenish Massif, Germany). Cour. Forsch.-Inst. Senckenberg 251: 175-183.
 Maziane, N., Higgs, K.T., Strel, M. 2002 Biometry and paleoenvironment of *Retispora lepidophyta* (Kedo) Playford 1976 and associated miospores in the latest Famennian nearshore marine facies, eastern Ardennes (Belgium). Rev. Palaeobot. Palynol. 118: 211-226.
 Piecha, M. 2004 Late Famennian conodonts from the Refrath 1 Borehole (Bergisch Gladbach-Paffrath Syncline, Ardennes-Rhenish Massif, Germany). Cour. Forsch.-Inst. Senckenberg 251: 253-265.