

Recent palynological data in the Hautes-Fagnes, Belgium

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Major palynological syntheses in the Hautes-Fagnes (Dricot 1960, Damblon 1969) or high Ardennes area (Damblon 1978) have been published since the first significant contribution of Persch (1950): Many, more recent, studies have used these syntheses applying them to improve specific problems of the Hautes-Fagnes. We intend to review and summarize here some of these specific problems.

1-The oldest peat is known from the Late Glacial period in the north-east part of the Hautes-Fagnes (Konnerzvenn). The pollen analysis (Bastin 1985) has been used in the densely documented synthesis made by Pissart on the origin and development of lithalsas (see synthesis in english in Pissart 2003). We emphasize here a new pollen analysis of the Younger Dryas peat accumulation immediately before the emergence of a lithalsa (Fig. 1) and its bearing on the duration requested for the lithalsa growth and decay. A comparison (Fig. 2) is made with data issued from the coastal North Sea in Norway (Rochon et al. 1998) where Dinocysts allow to quantify salinity, surface sea-water temperature and seasonality of sea-ice cover.

2-Holocene peat started inside the collapsed lithalsas (Fig. 3) but the large raised and sloping bogs of the Hautes-Fagnes start later (around 8 ka in the early Atlantic Period), more or less coinciding with a rather sharp climatic change. The cold 8.2 ka event is not yet identified so far in the Hautes-Fagnes but a quantitative pollen analysis (Deroche et al. 2006) suggests that it might correspond in the peat to a sudden change in the rate of peat accumulation (Fig.4) and to the end of the abundance of hazels (*Corylus*) (Fig. 5).

3-The Atlantic Period was dominated by oak forests (*Quercetum mixtum*) with a significant presence of limes (*Tilia*) (Fig. 5) which probably corresponded to the presence of Ca carbonates in the Quaternary deposits of loess which were preserved from soil erosion on the hills. Washing of these soils during the rainy Atlantic period contributes probably to the emergence of the beech (*Fagus*) forests during the Subboreal period culminating (Fig. 6) in the Subatlantic period where its and Hornbeam (*Carpinus*) quantitative variations reflect climatic oscillations (Luthers 2007).

4-These quantitative variations have served (Fig. 7) to date the building of a cobble road ("Pavé" de Charlemagne or? Via Mansuerisca), crossing the peatbogs and recovered by peat since the 13th century.(Dalemans & Streef 1986). Pollen analysis (Streef *et al* 2005, Luthers 2007) and geochemical data (Renson *et al.* 2005) on a new core and new peat sections in the vicinity of a recent excavation made by Corbiau (2005) suggest an age ranging from the late Roman to the early (Merovingian) Middle Age. Detailed correlated data are given in fig. 8 and 9.

5-Correlation (Luthers 2007) of the classical pollen analysis of Persch (1950) with Hindrycks (2000) detailed data in the late Subatlantic part of the Misten ombrogenic peatbog reveals how variable can be the rate of peat deposition, particularly where subject to human activity (peat cutting and water collect) (Fig. 10).

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6- Very recent pollen registration sequences have been compared to other microfossils quantitative distribution like diatoms and thecamoebians providing significant data on the transformation of the landscape by *Picea* introduction and development (Dommes 2007). Registration of pollen in high grass hummocks is also emphasized (Damblon 1992).

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