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Geoarchaeology of the Moselle valley : palaeoenvironments and human occupation since the Middle Pleistocene

S. Cordier (1), M. Frechen (2) and H.G. Naton

(1) Dept. de Géographie, Fac. Lettres et Sciences Humaines, Université Paris XII-Val de-Marne, Créteil, France, (2) Leibniz Inst. for Applied Geosciences , section Geochronology and Isotope Hydrology, Hannover, Germany

The River Moselle and its main tributary the River Meurthe present a succession of alluvial basins in the Paris basin and the Rhenish Massif (France, Luxembourg and Germany). Several years of multidisciplinary research in both valleys enabled a new definition of the middle and lower terrace system (up to 100m above the bedrock of present floodplain M0). These terraces (from M8 the oldest to M1 the youngest) have been correlated from the Vosges Massif to the Rhenish Massif based on morphological and sedimentological evidences. OSL-IRSL datings on sands from below the youngest terraces confirmed these correlations and evidenced that each terrace formation occured in a glacial-interglacial cycle. The main aggradational periods can be allocated to cold stages in the Meurthe and upper Moselle valley, due to influence of the vosgian glaciers. The datings however evidenced interglacial (OIS 5e) or interstadial (OIS 5a or 5c) aggradation. These results show that each terrace formation results in a complex combination between the Moselle River and its tributaries. In spite of siliceous sedimentation preventing from a good preservation of environmental evidences (fauna, artefacts, pollens), the luxembourgian valley enables a reconstruction of the valley evolution since 30 ka to be proposed. It evidences first a succession of climate-driven fluvial, terrestrial and aeolian aggradation periods and then an increasing influence of the human society during the Palaeolithic, the Neolithic and Roman periods, generating landscape change as a result of farming and forest exploitation.