



The Eustis loess sequence, Nebraska: paleoenvironment reconstruction of the Last Glacial Maximum from high resolution mollusc data

J. Rossignol (1), D.-D. Rousseau (1,2) and P. Antoine (3)

(1) Institut des Sciences de l'Evolution (UMR CNRS-UMII 5554), Université Montpellier II, cc 061, Place Eugène Bataillon, 34095 Montpellier Cedex 5, France ; (2) Lamont Doherty Earth Observatory of Columbia University, Palisades, N.Y. 10964, U.S.A. (rossigno@isem.univ-montp2.fr, denis@dstu.univ-montp2.fr); (3) Laboratoire de Géographie physique, UMR CNRS 8591, 1, Place Aristide Briand, 92 195 Meudon cedex, France (Pierre.Antoine@cnr-belleuve.fr)

The Upper Pleistocene loess sequence of Eustis, in Nebraska, has become a key sequence in the understanding of the deposition of loess and wind dynamics during the Last Glacial Maximum up to the Holocene.

We present here a high resolution data obtained from mollusc assemblages, along with fine stratigraphy of the Peoria Less, good chronological control from OSL dates and high resolution granulometric indices (indices presented by Rousseau (abstract ID-Nr. EGU2007-A-04223)).

The sequence has been sampled at a thickness of 10 cm. For every sample, terrestrial molluscs were retrieved, identified and counted. More than 298000 individuals were counted this way. Total abundance along the sequence was compared with the stratigraphy and granulometric indices. Each species abundance was also analysed.

The results show that the total abundance is related to numerous factors, the size of the fossil population, reflecting the general resources available in the environment but also taphonomic and pedologic processes that may have been neglected previously.

The mollusc assemblages analyses through the Peoria Loess show that the environment in i) the lower part of the sequence (18-16 Kyr B.P.), with few diversity and abundance was rather cool and dry corresponding maybe to a dry and very cool en-

vironment, ii) in the upper laminated part of the sequence (15-14.2 Kyr B.P, with high abundance and diversity is corresponding to the arctic alpine tundra life zone, iii) in the upper part of the sequence (14.2-10 Kyr B.P.) corresponds to a Hudsonian to Canadian Life zone, showing a warming of the environment.

Additionally, rapid climatic changes linked with minor levels in the stratigraphy have been spotted. They correspond to abrupt decreases in the total abundance of snails. Whether they correspond to an amelioration of the environment or not is debatable. It is believed here that some pedogenic processes linked to an increase of the moisture might have occurred and destroyed the shells, as MgO grains and oxidated material are associated to the shell-baren samples.