

THE ORIGIN AND SPATIAL DISTRIBUTION OF EARLY WISCONSINAN
SEDIMENTS IN WEST-CENTRAL ILLINOIS AND EASTERN IOWA

An Abstract of a Thesis
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ABSTRACT

Early Wisconsinan sediments in west-central Illinois and eastern Iowa were examined to answer the questions: (1) are early Wisconsinan sediments in eastern Iowa and west-central Illinois correlative; (2) what are the time-stratigraphic relationships between the thick Roxana sections along the Illinois River Valley, and the thin Roxana deposits in west-central Illinois?

Fieldwork during the spring and summer of 1975 included sampling sections in the literature, and describing and sampling profiles original with this study. In all, fourteen profiles were sampled. Analyses performed on the 230 samples collected were as follows: (1) grain size analyses; (2) carbonate mineral analyses; (3) x-ray diffraction of clay minerals.

Results of this study indicate that although early Wisconsinan sediments in eastern Iowa and west-central Illinois differ in clay mineralogy, they are similar in morphology and relationships with underlying and overlying sediments. It was suggested that the Roxana Silt, as defined in Illinois, is probably not present in eastern Iowa. Those units identified by clay mineral analysis as Roxana Silt in eastern Iowa are very thin horizons sandwiched between the Late Sangamon paleosol and the Peoria Loess, and hence, are probably no more than mixing zones of these two deposits.

The Roxana Silt in west-central Illinois has little in common temporally with the thick sections of the literature. Evidence suggests that the Roxana Silt was not deposited in the region until very late in the Altonian, and may have continued into the early Farmdalian. It was hypothesized that a late Sangamon surface existed throughout much of the Altonian in west-central Illinois. Therefore, there is some question as to the validity of including an Altonian Substage in the Wisconsin chronology for this area.

Other results of the study included the following: (1) Roxana clay mineralogy in thin deposits is dependent on topographic position; (2) a re-examination of the Pleasant Grove Soil is in order as its depth of leaching is shallower than an 850 year old soil; and (3) loess deposition along the Illinois River during Altonian may have been relatively uniform.