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Prehispanic and colonial landscape change and fluvial dynamics in the Chalco Region, Mexico

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ABSTRACT

The late Quaternary deposits of the lakeshore plain and western edge of Lake Chalco in the southeastern Basin of Mexico were explored in order to understand the influence of alluvial sedimentation on archeological visibility and preservation, as well as to seek out records that would permit direct comparison of erosion and sedimentation with the demographic record derived from the archeological survey. The Chalco lakeshore plain is traversed by two of the largest rivers in the region, and the pattern of human settlement recorded here by archeological survey is partly an artifact of alluvial sedimentation, where the most prominent settlements were observed in areas with little or very slow sedimentation. Detailed radiocarbon dating of the alluvial deposits indicates that prior to the establishment of a sedentary lifestyle, alluvial sedimentation was slow. Catastrophic soil erosion is inferred from a period of widespread rapid alluviation and mass movements during late Preceramic, Early and Middle Formative periods, which were periods of rapid population growth. Mass movements appear to coincide also with periods of wetter climate. No evidence of sedimentation was noted during the population collapse that occurred at the end of the Formative. The next phase of alluvial sedimentation occurred during the Early Classic to Late Toltec periods, which were also periods of population expansion during a gradually drying climate. The Postclassic period, which was the largest Pre-Columbian demographic expansion, was paradoxically accompanied by minor evidence of alluvial activity. The last and most widespread period of alluvial activity occurs in the post-Conquest period and is difficult to date with precision but appears to occur primarily during the seventeenth and eighteenth centuries.

1. Introduction

The Basin of Mexico was an area within Mesoamerica that held a large concentration of urban and rural population, mainly around its former five lakes (Fig. 1). One of those areas exists around Lake Chalco, located in the southeastern part of the basin. Although most of the areas of Lake Chalco and its neighboring Lake Xochimilco have been covered by the urban sprawl of the suburban area of Mexico City, research work associated with the Basin of Mexico Survey (Sanders et al., 1979; Parsons et al., 1982) reported numerous sites on the still open fields of the eastern shore of Lake Chalco. Interestingly, these surveys reported areas with no surface Prehispanic materials, leading some to believe that such areas may not have been settled in the past or that alternatively, geomorphic processes may have erased or cover their former existence. The work reported here aimed to test the hypothesis that in areas likely to be late Quaternary depositional centers, such as the lakeshore plain around Lake Chalco, that the spatial variation in sites identified by the survey were to some extent an artifact of geomorphic process rather than merely human settlement.

Sanders et al. (1979) described the lakeshore plain of Chalco (Fig. 2) as consisting of deep soil alluvium, but the age of these deposits at the start of this work was largely unknown, except for a few spot observations that suggested that the deposits could be quite young in places (e.g., Parsons et al., 1982; personal communication with Jeffrey Parsons, 1993). Assessing the age of the fluvial sediments was then necessary because, as known from other parts of the Basin, changes in Colonial and Independent times have modified surfaces and the Prehispanic archeological record associated with them (e.g., Cordova, 1997; Cordova and Parsons, 1997).

The approach taken as a complement to the surface archeological record was the study of the late Quaternary stratigraphy, as

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