SOIL SCIENCE AND ARCHAEOLOGY

THREE TEST CASES FROM MINOAN CRETE

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INTRODUCTION

Between 1987 and 1992, the Department of Plant and Soil Science at the University of Tennessee-Knoxville conducted investigations in pedology and geomorphology in cooperation with the Kavousi Project under the auspices of the American School of Classical Studies at Athens, Greece. Project members included representatives of the Classics and Anthropology Departments from the University of Tennessee-Knoxville (UTK), Wabash College, and the University of Minnesota. The Late Minoan IIIC and Subminoan sites of Vronda and Kastro, near the village of Kavousi in eastern Crete, were the focal points of these investigations.

These archaeological sites are known as "refuge" sites because of their location in the higher elevations of the Siteia Mountain Range. They occupy relatively high positions on the landscape in comparison to the previous coastal settlements of the Minoan Palace periods. These sites represent a unique period in Greek history for which there is no written history to verify the archaeological assemblages examined.

A team of scientists including zooarchaeologists, paleobotanists, and human paleontologists was assembled to work in a manner modeled after a North American anthropological approach to prehistory (McMillan and Klippel, 1981). The UTK Department of Plant and Soil Science cooperated with the excavation in order to determine the soil resource base of the mountain settlements and to evaluate the potential attraction of these people to these locations on the basis of soil resources. The primary goals of these pedological investigations were to 1) understand the geomorphic mechanisms of landscape development through time, 2) examine pedogenic development of these landscapes, 3) establish the chronologies of landscape stability and change, and 4) interpret the paleoenvironmental conditions governing the development of these landscapes, including the influence of human impact.

The research presented here involves the examination of sediment catchment basins at three locations: near the Late Minoan IIIC to Subminoan period refuge sites of Vronda and Kastro in eastern Crete; near the Late Minoan IIIC to Subminoan period refuge site of Karphi in the Lasithi Province of east-central Crete; and near the Final Neolithic to Late Minoan site of Chrysokamino in eastern Crete. It has been demonstrated through archaeological studies that humans have had a considerable impact on the landscape in relation to soil development (Griffith, 1980; Eidt, 1977). For example, land-clearance practices for agricultural purposes generally lead to increased erosion as deduced by the increase of sediment yield in catchment basins. Changes such as these can be detected through various means such as analysis of buried soil horizons or detection of change in sediment flux from colluvial or alluvial settings. Soils and landscapes are particularly sensitive to environmental changes, and environmental dynamics can be detected through pedological and geomorphological analyses.

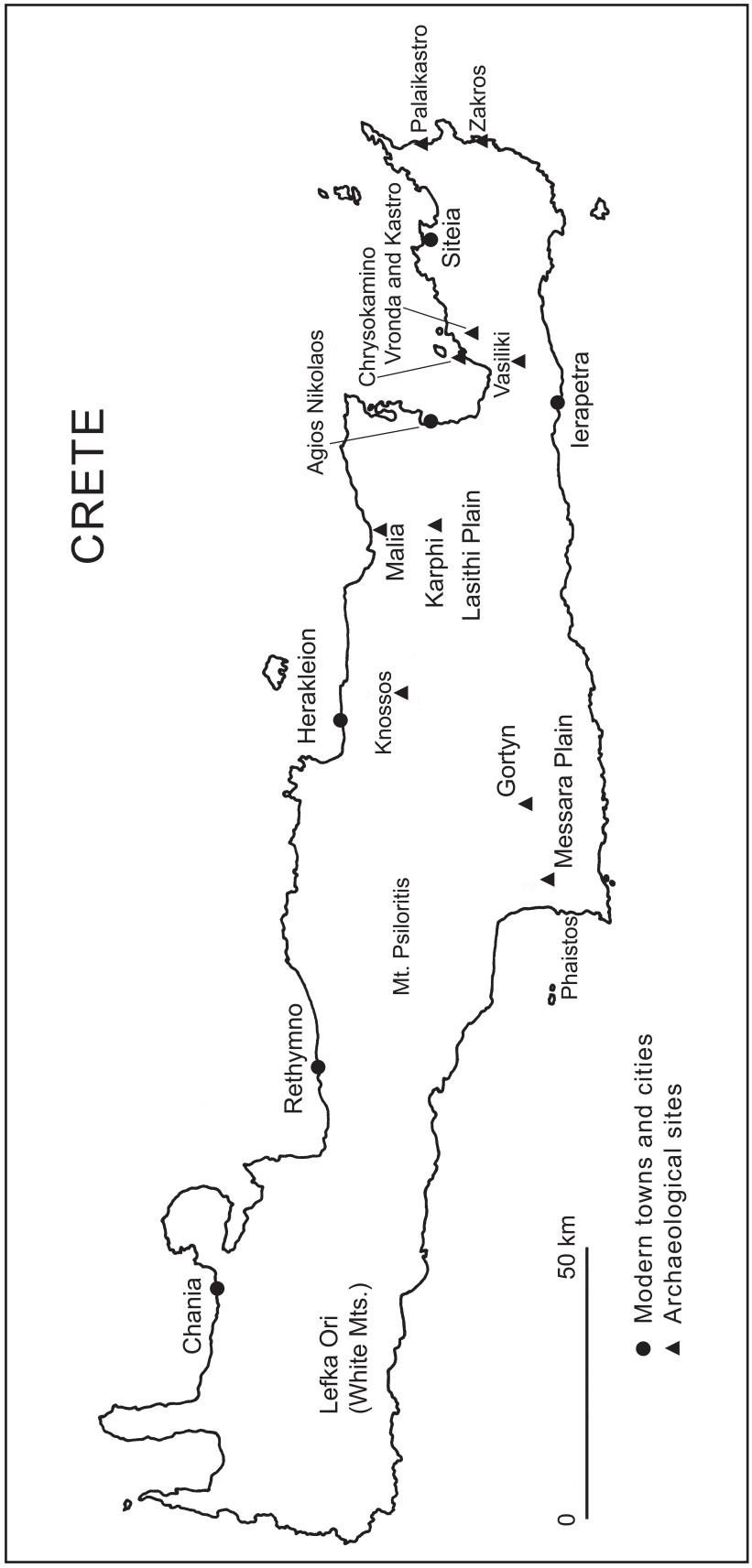

Fig. 1 Map of Crete showing physiographic areas, major cities and archaeological sites.