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Original paper

Evidence of pre-Columbian settlements in the forest of the Tuxtla Volcanic Field, Veracruz, Mexico

Araceli Zamora-Camacho, Juan Manuel Espíndola*, Peter Schaaf, Angel Ramírez, María de Lourdes Godínez Calderón

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Resumen

El campo volcánico de los Tuxtlas se localiza en el margen occidental del Golfo de México, en el estado de Veracruz, México. El campo está compuesto por cuatro grandes estructuras volcánicas y cientos de conos volcánicos, domos de lava y maares. En el pasado, el área estuvo cubierta por una densa selva en cuyos márgenes florecieron varias de las antiguas ciudades del Veracruz central y meridional. En el interior del bosque no se han encontrado ruinas arqueológicas, aunque los actuales habitantes del área encuentran frecuentemente fragmentos de cerámica que atestiguan la presencia de lo que pudieron ser pequeños asentamientos con un régimen seminómada. Desafortunadamente los objetos hallados son removidos de su sitio y son difíciles de fechar. Sin embargo, en el curso del estudio de los depósitos volcánicos del área se reconocieron cuatro unidades litoestratigráficas distintas relacionadas con eventos de flujos de lodo en cuyo interior se encontraron objetos y fragmentos de cerámica y en algunos de ellos carbón. Secciones de los depósitos fueron observados en detalle y muestreados para su análisis granulométrico y datación. Las muestras de carbón fueron datadas por medio de métodos estándar de radiocarbono (C-14) y las muestras de cerámica por la técnica de termoluminiscencia (TL). Las muestras arrojaron edades de 1176±100 (TL) años antes de ahora (BP, por sus siglas en inglés), 1385±70 años BP, 1157±105 (TL) años BP, y 2050+245-235 (C-14) años BP. Dado que dentro de la selva no existen materiales adecuados para la producción de cerámica, su procedencia es incierta; las ciudades prehispánicas mas grandes y cercanas se localizan hacia el occidente del campo volcánico (Tres Zapotes y Matacapan).

Palabras clave: Campo volcánico de los Tuxtlas, fechamiento de cerámica por Termoluminiscencia, Mesoamérica Precolombina.

A. Zamora-Camacho
Centro de Sismología y Volcanología de Occidente
Centro Universitario de la Costa
Universidad de Guadalajara
Av. Universidad 203
Delegación Ixtapa, 48280
Puerto Vallarta
Jalisco, México

J. M. Espíndola*
P. Schaaf
A. Ramírez
Instituto de Geofísica
Universidad Nacional Autónoma de México
Ciudad Universitaria,
Delegación Coyoacán, 04510
México D.F., México
*Corresponding autor: jmec@unam.mx

M. L. Godinez[3]
Universidad Nacional Autónoma de México
Instituto de Geografía
Universidad Nacional Autónoma de México
Ciudad Universitaria,
Delegación Coyoacán, 04510
México D.F., México

Abstract

The basaltic Los Tuxtlas Volcanic Field (LTVF) is located at the western margin of the Gulf of Mexico in the State of Veracruz, Mexico. The field is a massif composed of four large volcanic structures and hundreds of scoria cones, lava domes and maars. This area was in the past covered by a dense forest in whose margins flourished several of the ancient cities of importance in central and southern Veracruz. Within the forest no enduring archeological ruins have been found; but the present inhabitants of the area frequently find fragments of ceramics and stone that attest to the presence of what could have been small settlements with a seminomadic regime. Unfortunately the objects found have been removed from their emplacement and are difficult to date. However in the course of our study of the volcanic deposits in the area we found four mudflow deposits containing pre- Columbian pottery objects and shards, as well as charcoal in some of them. Sections of the deposits were observed in detail and sampled for granulometric analysis. The charcoal samples were dated using standard radiocarbon methods (C-14); where charcoal was absent the pottery shards were dated with thermoluminescence (TL) techniques. The samples from these sites yielded ages of 1176±100 years BP (TL), 1385±70 BP years (C-14), 1157±105 years BP (TL), and 2050+245-235 years BP (C-14). Since in the area there is no clayey and silty material suitable for production of pottery; the closest and largest prehispanic cities, *Tres Zapotes* or *Matacapa*, are located to the west of the LTVF..

Key words: Tuxtla volcanic field, Thermoluminescence dating in ancient ceramics, Precolumbian mesoamerica.

Introduction

The basaltic Los Tuxtlas Volcanic Field (LTVF) also known as Tuxtla Volcanic Field, and Los Tuxtlas Massif, is located in the Mexican State of Veracruz (Figure 1), where it emerges from the lowlands of the western margin of the Gulf of Mexico. Composed of four large volcanoes and more than 250 cones and maars, it spans approximately 200,000 km2 an area known as *La region de los Tuxtlas* (Los Tuxtlas Region). Nelson and Gonzalez-Caver (1992) dated the rocks of the LTVF, and found that they can be grouped in two age groups separated by a hiatus of about 1.8 Ma, they dubbed these groups as the 'Older Volcanic Series' (OVS; 7 to 2.6 Ma BP) and the 'Younger Volcanic Series (YVS; 8Ka BP–Present). Nelson *et al*. (1995) found that in the LTVF alkaline rocks are prevalent, although not unique, and considered that some rocks of the LTVF had signatures of subduction related to the Cocos plate. Nevertheless researchers such as Verma (2006) consider that the origin of the LTVF is not related to the subduction of the Cocos plate thereby the problem of its origin is still unsolved. In this paper we will focus in an area surrounding San Martin Tuxtla volcano, which constitutes most of the YVS (Figure 1). Due to the fertility of the soils formed from the basaltic rocks and heavy rainfalls, the area covered by rocks of the younger series, is nowadays the center of a 1551.2 km^2 forest reserve (Figure 1). In the past, however, the rainforest covered the entire volcanic field and beyond. At the margins of the LTVF important pre-Columbian settlements of different cultures flourished. To the west, the city of *Tres Zapotes* was occupied by the Olmec and later cultures for almost two millennia (900 BC to 900 AD). Some 30 km to the east, the city of *Matacapan* had also a long occupational history. Apparently, the site was first occupied during the Pre-classic period but it thrived in the classic and late classic periods (~100 AD -900AD), when it had a "key role in the trading network dominated by Teotihuacan", the dominant culture in central Mexico in those times (Santley *et al.*, 1984; Diehl, 2000). Smaller archeological constructions have been found to the southeast of the volcanic field and on the western side of Catemaco lake, but none in the area surrounding San Martin Tuxtla (Figure 2). However, in that area the villagers have found numerous artifacts in stone and ceramics, which being removed from its original place are difficult to date or conjecture about their emplacement. Looking for evidence about possible pre-Columbian settlements in those areas we were able to find pottery shards and charcoal fragments in four mudflow deposits. The pottery fragments correspond to the domestic type of pottery, which does not allow its cultural identification, but their age can be determined through thermo-luminescence methods. In this paper we present the general characteristics of the deposits were the objects were found, of the fragments and their ages whenever possible. We believe this findings are relevant to the historical and environmental studies on the area.