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# Climate, agriculture, and changing landscapes in the Malpas Valley, Zactecas: an interdisciplinary approach to untangling the roots and consequences of Classic period settlement on Mesoamerica's northern frontier (AD 200-900)

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## Résumé

The 3rd to 10th centuries AD represented a phase of unprecedented territorial and cultural expansion along Mesoamerica's northern fringe. The swell of Mesoamerican farmers into semi-arid deserts traditionally occupied by hunter-gatherer groups seems to have followed the collapse of the influential Teotihuacan state in Central Mexico, resulting in the creation of a frontier zone that encompassed roughly 100,000 km<sup>2</sup> and increased the northern limits of Mesoamerican settlement by up to 250 km. This region also was a crossroads for new social and economic interactions between the traditional Mesoamerican core of Central Mexico and more distant, "foreign" regions. Nomadic groups (*Chichimecs*, or "barbarians") came to coexist or meld with the more newly arrived Mesoamerican farmers. Marine shell crossed the western Sierra Madre Mountains, while copper and turquoise, originating in what is today the Southwest of the United States and West Mexico, travelled more than 2000 km northward and southward via trade networks that are not yet fully understood.

Nevertheless, settlement within the northern frontier did not persist beyond the end of the Classic period (AD 900/100). Instead, the region abruptly underwent a series of site abandonments and severe demographic declines. Permanent agricultural settlements ceased to be occupied, and nomadic or semi-nomadic groups based strongly on wild resources once again dominated the landscape. The simultaneous appearance of regional abandonment, shifts to mobile foraging strategies, ruptures of Classic period trading networks, and observations of what is today an ecologically fragile desert landscape led several researchers to suggest regional-scale climate change drove the rise and fall of Mesoamerican settlement in these northern regions. Nevertheless, very little empirical data have been available to test and explore this environmental hypothesis.

In this paper, we present a synthesis of work we have carried out in the Malpas Valley

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of Zacatecas, a settlement system of over 200 contemporaneous Classic period sites located in an alluvial valley on the extreme northern edge of the frontier zone. Combining archaeological survey, excavation, plant macrofossil analysis, multi-proxy sedimentary study, and dendrochronology, we propose an integrated vision of the social and environmental interactions that accompanied the founding of this Mesoamerican polity as well as its subsequent decline and abandonment. We also address the difficulties inherent in the confrontation and reconciliation of a wide range of datasets, derived from a number of different disciplines that are often highly divergent in the temporal and spatial scales represented.

**Mots-Clés:** climate, agriculture, drought, frontier, Mesoamerica, desertification, phytoliths, dendrochronology