Goldschmidt 2026 Abstract
https://doi.org/10.46427/gold2026.32823

Communicating palaeoenvironmental data through art

BENJAMIN GWINNETH
Université de Montréal

The ancient Maya civilisation of Mesoamerica responded to various socio-political and environmental challenges throughout their history. Yet, the environmental history of these societies, including response to drought, is poorly constrained, with gaps in understanding how landscapes were transformed over millennia by both natural forces and human activities. By combining organic geochemical and archaeological data from an interdisciplinary palaeoenvironmental study of the lowland Maya site of Itzan, located present-day Guatemala, "Itzan" seeks to communicate the insights of a multi-proxy study through visualising in video format the changing environmental conditions that shaped the site over the last 6,000 years. At the heart of the project is the use of digital modelling using Unreal Engine to reconstruct the shifting landscapes of Itzan, from its initial settlement in the Preclassic period (~1000 BCE) through to the height of its Classic period prominence (250–900 CE) and eventual decline in the Terminal Classic period (~1000 CE) based on quantification of fecal stanols, polycyclic aromatic hydrocarbons, and plant wax hydrogen and carbon isotopic analyses. Drawing from the extensive research of environmental change in the Maya lowlands, including studies of forest cover, agricultural practices, water management, and climate variability, the project creates a dynamic visual timeline that integrates multiple data sources to depict both the human and natural influences on the site. The project's visualisations are rooted in data extracted from a range of sources, including sediment cores and archaeological surveys, which provide insights into long-term trends in climate and water availability vegetation, soil erosion, and urban development. Central to the Itzan project is its emphasis on communicating palaeoenvironmental science to a broad audience, including scholars, students, and the general public. By presenting complex environmental data in accessible, interactive visual formats, the project aims to foster a deeper understanding of the long-term relationships between the lowland Maya and their environment. It has been shown at over 15 festivals and galleries internationally, including the Festival del Cinema di Cefalù and Sardinia Film Festival, the 28th International Symposium on Electronic Art, the Athens Digital Art Festival and Balkan Can Kino, the Global Science Film Festival, and the Earth Futures Festival.