

THE LATE CLASSIC DROUGHT CULT: RITUAL ACTIVITY AS A RESPONSE TO ENVIRONMENTAL STRESS AMONG THE ANCIENT MAYA

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Introduction

Beginning in the 1970's there has been a steadily increasing number of archaeological, iconographic, and epigraphic studies regarding ancient Mesoamerican caves (Brady and Prufer 2005). The most important collective finding of these studies is the establishment of caves as sacred space and their almost exclusive use as ritual venues by Pre-Columbian people (Brady 1989; Stone 1995). While studies have been important in the establishment of caves as ritual space there has been little or no research that identifies temporal changes in ritual cave usage. Practice theory provides a broad framework in which to conduct such a study. Sherry Ortner characterizes the study of practice not just as a methodology to locate the point of view of agents but one that seeks to understand 'the configuration of cultural forms, social relations, and historical processes that move people to act in ways that produce the effects in question' (1989, 12). It is not surprising that Ortner advocates an historical overview and considers a long temporal perspective to be vital to the study of changes in practice. This suggests that despite limitations of their data, archaeologists are in a unique position to evaluate ritual transformations over considerable time scales. Changes in practice may be studied in the archaeological record by taking a behavioural approach. The approach shifts research efforts away from the interpretation of the meaning of artefacts to those aimed at understanding the behaviours that created the site's depositional patterns (Reid *et al.* 1975; Schiffer 1995; 1996; 1999; Walker 1995). Once changes in ritual behaviours are defined, it is possible to correlate them with social, political, and environmental factors and thereby reconnect religious rites with the contexts in which they took place and had meaning.

In this chapter I use this approach to define changes in ritual practice between the Early Classic (AD 250–600) and Late Classic (AD 700–900) periods at Chechem Ha

Cave, an ancient Maya ritual site in western Belize. Ritual transformations are identified through evaluating changes in the use of space and differences in the condition and placement of artefacts, and variation in the use-intensity of the site. A Geographic Information System (GIS) was created for the site to facilitate the spatial analyses and organize the data. A rigorous assessment of the site's chronology was undertaken using radiocarbon dates and ceramic chronology.

What I refer to as *use-intensity* is a study that is closely related to what is known in anthropological contexts as 'ritual density'. This examines why some societies or historical periods have more ritual than others (Bell 1997, 173). In the archaeological record, *use-intensity* can be studied by identifying a material signature that correlates with ritual activity. This measure must be distinguished from estimates of frequency of use because, depending on the signature that is used, it is impossible to distinguish whether the deposits are a result of more or fewer discrete rituals, the participation of more or fewer individuals in a fixed number of rituals, the result of rituals of a longer or shorter duration, or the effects of a change in ritual practice. Two methods can help to resolve this issue. One is to use multiple proxies and the other is to employ an *indirect* signature that is a consequence of ritual activity but not part of the ritual itself.

I begin with a short discussion of the cognitive associations and general meaning of Mesoamerican caves. This is followed by a description of Chechem Ha Cave and a brief report of the work conducted at the site. Results of the analyses are discussed and ritual transformations occurring between the Early and Late Classic periods are identified. Having identified these transformations, I situate ritual changes within broader socio/political and environmental contexts and discuss their implications.

Cave rites

In Mesoamerica caves are integrally connected with water and fertility. This phenomenon is demonstrated in iconography from the early Olmec civilization dating from 1200–200 BC on the El Rey monument from Chalcatzingo (Figure 29.1). Although it has been variously interpreted, scholars agree that the image represents a man who is a king or ancestor sitting on a cloud scroll within a cave (Angulo 1987, 133–158; Grove and Gillespie 1984, 110–111; Reilly 1994, 78–79). Mist or smoke emanates from the entrance and clouds rain on the scene. Corn and other vegetation is depicted on the surface on top of the cave.

The same cave/fertility theme is pervasive throughout Mesoamerica and is found much later in the Preclassic Maya murals from San Bartolo, Guatemala that date to the first century BC (Saturno *et al.* 2005). The mural on the north wall illustrates a creation event in which maize tamales and gourds of water are being handed out of entrance of a cave, probably the cave of origin. The

association suggests that both the first maize and primordial water originated in caves. The ancient Maya Maize God is depicted at the mouth of the cave accepting the offerings. The seventeenth century Popol Vuh story of the Maya creation tells us that the Maize God is intimately connected with caves as he is an Underworld denizen.

The archaeological record also suggests that among the Classic period Maya many of the cave rites were related to rain control. This is not surprising when we consider that a number of deities thought to reside in caves were associated with agricultural success. For instance, in Classic period iconography, Chac the Maya Rain god, is depicted sitting in a cave house (Coe 1978, 78, no.11). A reified example of this was found at the Classic period cave of La Pailita in Guatemala where a life size sculpture of Chac sits on a throne in the cave's interior (Graham 1997). Water rites are also suggested at the Late Classic site of Balankanche in Yucatan where large anthropomorphic censers modeled with images of the central Mexican rain

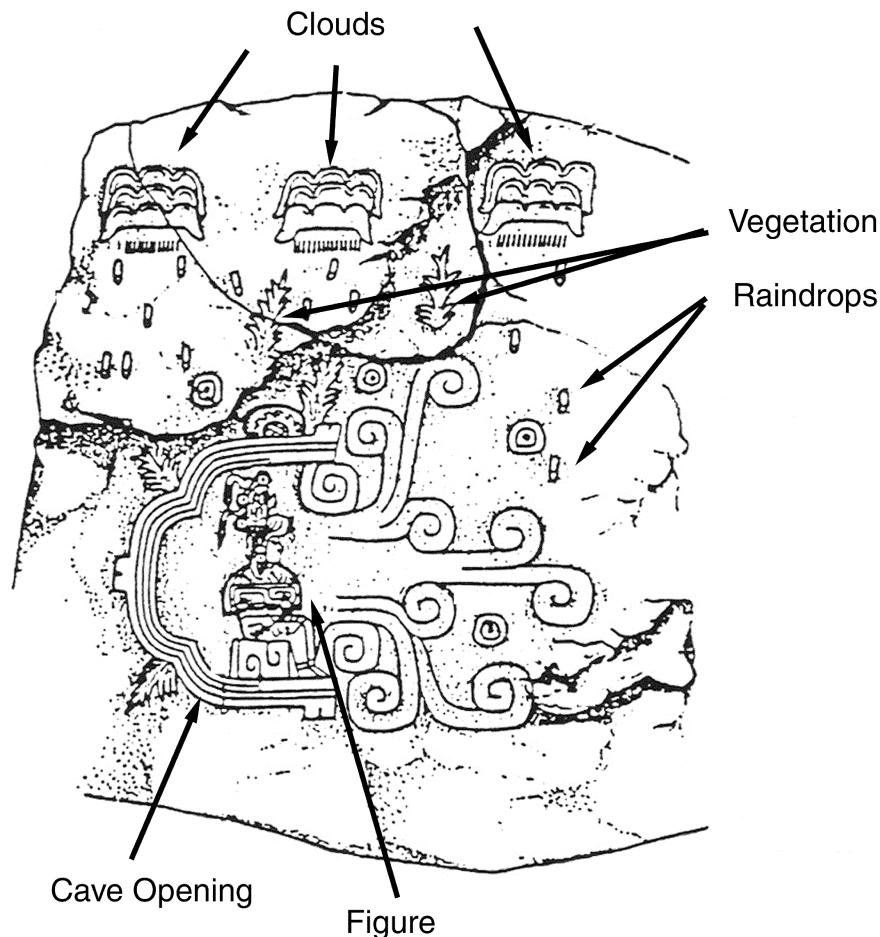


Figure 29.1. El Rey monument is a bas relief illustrating an important person sitting within a cave. Clouds rain on top of the cave and plants are shown growing on the surface (after Reilly 1994, 85).

god Tlaloc were discovered surrounding a large stalagmitic column (Andrews 1970, 69).

Activity areas in caves that appear to be focused on water features also suggest that water was an important element in cave rites. In his survey of 48 caves in the Yalahau area of Quintana Roo, Dominique Rissolo (2001; 2005) noted that many of the caves in his survey contained interior water features such as intermittent pools. Both rock art and architectural modifications tended to be associated with these features and art from the cave of Pak Che'n contained rain-god motifs. Similarly, a spatial analyses conducted in the Main Chamber of Actun Tunichil Muknal demonstrated that 51% of the artefact assemblage was placed in intermittent pools (Moyes 2001; 2002; Moyes and Awe 1998; 2000).

Given that cave rites were strongly associated with agricultural success entailing the control of rainfall, we might expect cave ritual to be influenced by climatic factors. The use of ritual as a technology to anticipate and minimize agricultural risk, has been demonstrated among the modern Maya by David Freidel and Justine Shaw (2000). Based on the 43 ethnographic and ethnohistoric cases studied, they reported that where agriculture was risky it was primarily due to water availability. What this implies is that ethnographically, water availability is one of the primary concerns of modern Maya agriculturists and that ritual investment is somewhat linked to agricultural risk based on environmental factors.

The cave

Chechem Ha Cave has been under investigation by the Western Belize Regional Cave Project (WBRCP) under the direction of Dr Jaime Awe since 1998. It is located on the western bank of the Macal River near the Guatemalan border (Awe *et al.* 2005). The cave is a complex system that contains over 300 m of tunnels consisting of two primary conduits, Tunnel 1 and Tunnel 2 (Figure 29.2). There are four side passages and elevated eleven shelves located from 3–7 m above the Tunnel 1 floor. Artefacts are found throughout the entire cave system in niches and alcoves along the tunnel floors, in the elevated passages, and on all eleven shelves (Moyes 2004; 2005; 2006).

Based on calibrated radiocarbon dates reported at the 2-sigma range, the site dates from the Early Middle Preclassic period (1100–820 BC), possibly as early as 1300 BC, to the end of Late Classic period as late as AD 960. The entrance of the cave was blocked with medium to large sized boulders sometime prior to AD 960. This correlates roughly with the Classic Maya Collapse and agrees with termination events from the two nearest surface sites Las Ruinas de Arenal (Taschek and Ball 1999) and Minanhá (Iannone 2001; 2005) occurring approximately AD 850.

Chechem Ha contains the earliest radiocarbon dates for ritual cave use in the Maya lowlands and is contemporaneous with the earliest settlements in the Belize Valley. This is important because the cave's use spanned

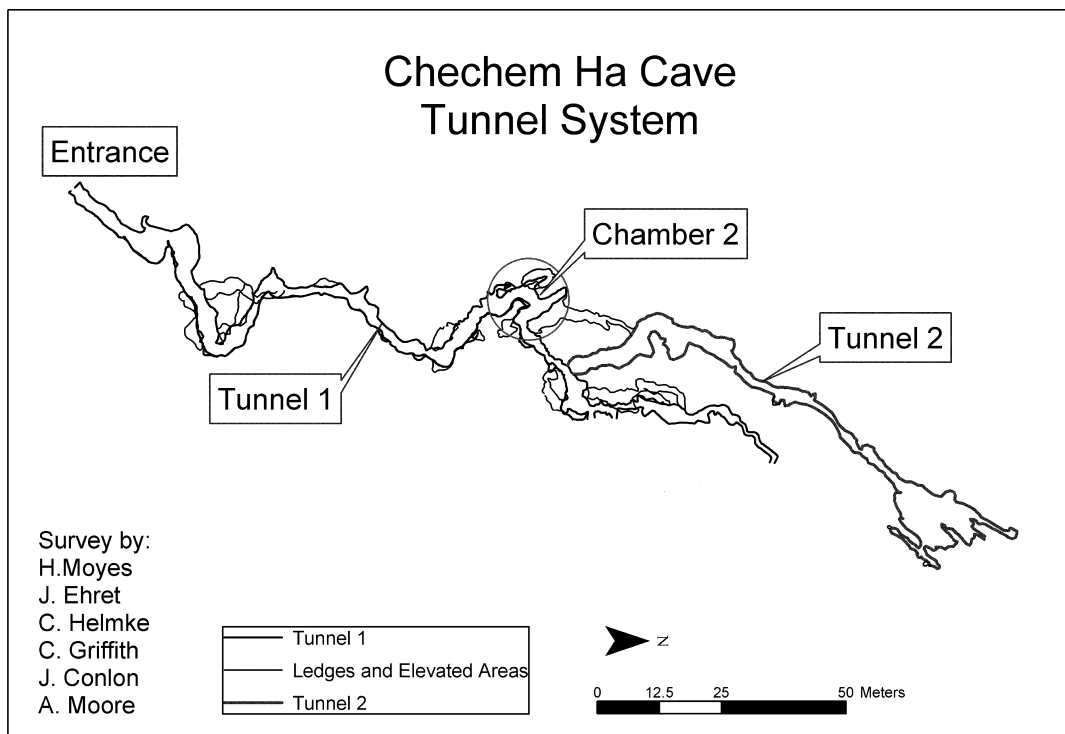


Figure 29.2. Map of Chechem Ha tunnel system.

the 2,000-year development of Maya kingship to its ninth century collapse thus providing a broad temporal perspective on ritual cave use within a single site.

Methods

Two field seasons were spent mapping the cave's surface artefacts (Moyes 2004; 2005; 2006). A test-pitting program conducted in the third season revealed that the site contained deep subsurface deposits. In the fourth season a broad horizontal excavation (2 m × 8 m) was conducted in Chamber 2, an area located 134 m from the cave entrance. The excavation consisted of 17 natural and cultural layers that were excavated to bedrock. This area was crucial in understanding the cave's use because of its geographic location in the center of the tunnel system. To enter the deeper parts of the tunnel system one must traverse this chamber. Therefore the sediments in the chamber were expected to contain a comprehensive record of the cave's overall use.

To establish the site's chronology there were 44 AMS dates collected from multiple surface and sub-surface contexts that were processed at the University of Arizona Accelerator Mass Spectrometry (AMS) Laboratory. Dates were calibrated using Oxcal 3.9 and are reported at the 2 sigma probability range unless otherwise specified. The ceramic chronology used James Gifford's (1976) type-variety-mode system for the Belize Valley. Ceramics were the most numerous artefacts within the cave. There were a total of 1901 ceramic sherds, whole, or partial vessels of which 470 were typed for chronology (Jaime Awe personal communication 1999; James Aimers pers. comm. 2003; Joseph Ball pers. comm. 1999; Joseph Ball and Jennifer Taschek pers. comm. 2005, Ishihara 2000; Kay Sunahara pers. comm. 2001).

Two proxies provided quantitative measures for the site's use-intensity – ceramics (sherds and reconstructable vessels) and the number of charcoal flecks present in the excavated deposits. Evidence that the Maya used wood torches to light their way in caves is abundant (Morehart 2005; Morehart *et al.* 2005) and charcoal flecks from torches are found in virtually every utilized cave dark zone in Mesoamerica. Chamber 2, the area of the most intensive excavations, was located far into the dark zone of the cave and was necessarily lit by torches. Flecks from the torch fires were deposited on every excavated level and there is no evidence to suggest that there were changes in fuel use over time. These data provide a good indirect proxy for use-intensity because torchbearing is not directly linked to the ritual itself. Ceramics are a direct proxy because they are likely to be used within rituals or as votive offerings.

Recording of charcoal flecks was accomplished using a GIS technology called *Photomapping*, developed by Mark Aldenderfer and Nathan Craig (Aldenderfer and Craig

2002; Craig 2000; Craig and Aldenderfer in press; Moyes *et al.* in press). The technique uses digital photographs to record each level of the excavation units and was perfect for rapidly piece-plotting large numbers of charcoal flecks in the field. The excavation was blocked off into 1 m grid squares. Each square of each level was photographed and the photos were imported into ArcMap 8.1 where they were rubber sheeted (or stretched) onto a grid. They could then be brought up onto the computer screen and artefacts were digitized onto the photos while viewing them in the field, which insured the accuracy of the data. By stitching together the 1 m units each level could be viewed in a single screen. An example of a finished photomap is illustrated in Figure 29.3.

Results

AMS dates from the Chamber 2 excavations determined that Levels 1–13 dated to the Maya era. The number of charcoal flecks per level ranged from 265 to 8,244. A correction to the raw data was made because the excavated surface areas were not of identical size on each level. As the excavations progressed the cave walls curved inward and spatial areas narrowed toward the bottom. The number of flecks from each level was divided by the area of excavation to create a use-intensity index (Figure 29.4). The number of flecks per level fluctuates considerably and the cave's heaviest use dates from the Terminal Preclassic to the beginning of the Early Classic period 210–420 AD (reported at the 92.6% probability). After this time, use-intensity wanes and by the Late Classic period there is very little charcoal found in the chamber. This is curious because Late Classic ceramics were found on the chamber's surface and on Ledge 9 above the chamber floor indicating that the chamber was in fact used during this time.

The ceramic analysis tells a very different story. Counts from both surface and subsurface contexts indicate that over 50% of the assemblage dates to the Late Classic Spanish Lookout complex (700–900 AD). Based on these data alone one might expect that the cave underwent its most intensive usage in Late Classic period, but the charcoal proxy measure suggests that this is not the case (Figure 29.5). What these data do suggest is that in the Late Classic period deposition of ceramic vessels or sherds in the cave became the focus of ritual activity to the exclusion of more prolonged rites or ritual performances. Ritual participants could not have spent long periods of time in the cave because long rites would have produced greater amounts of charcoal rain from torches. This is supported by the fact that many Late Classic period activities occurred on high ledges or in other restricted spaces that limited the number of participants. The condition of the ceramic assemblage changed somewhat between the Early and Late Classic periods as well. In the Early Classic period whole or

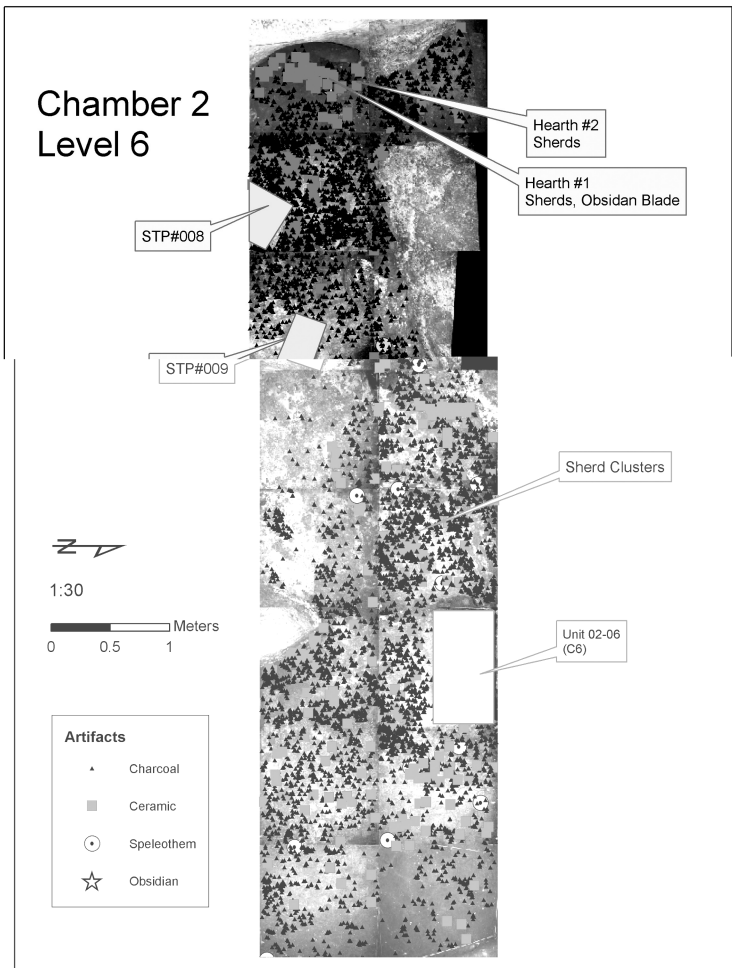


Figure 29.3. Photomap of Level 6.

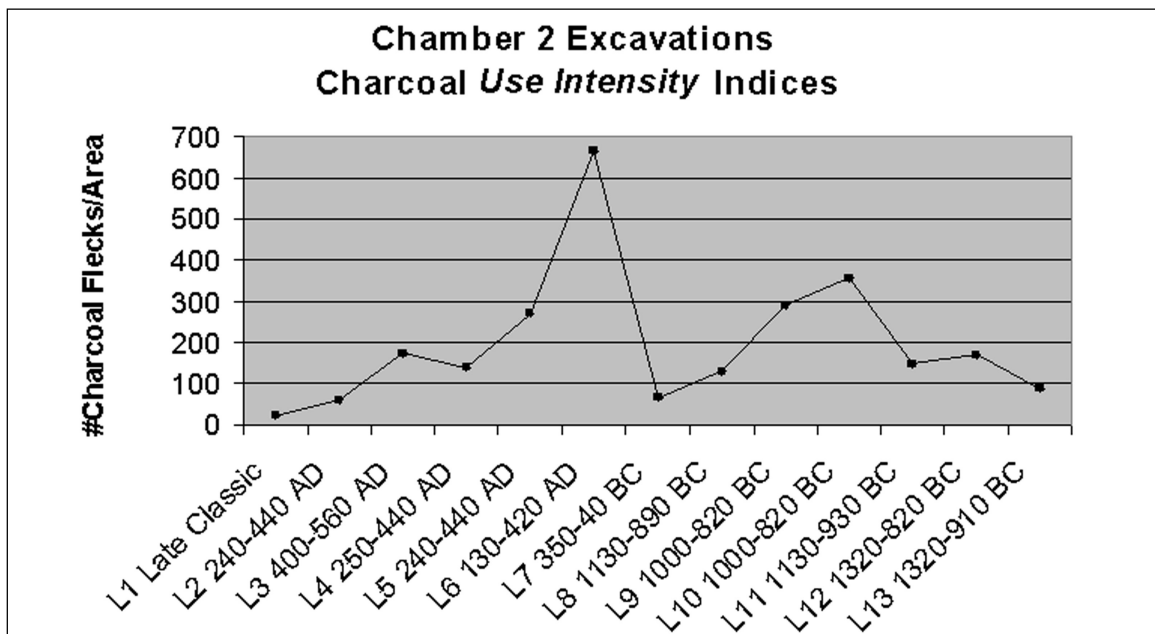


Figure 29.4. Graph of use-intensity index shows numbers of charcoal flecks by excavated level divided by surface area of excavated space. Chart moves from youngest to oldest deposits.

partially intact vessels are rare. The only intact jar dating to this period is located on Ledge 10. In the Late Classic there are 51 fully intact vessels and numerous others that are partially intact. Most of these intact or partially intact vessels are jar forms though large bowls are present as well (Figure 29.6).

Throughout the cave system there was a change in the use of space between the Early and Late Classic periods (Figure 29.7). Early classic distributions fell into three major areas: the passage leading to Chamber 2, Ledge 10 located in Chamber 2 and in the deepest passages of Tunnel 1. During the Late Classic period ceramics were more widely distributed throughout the site. At this time Ledge 10 fell out of use but the other ten ledges were used for the first time in the cave's history. In addition to the ledges, artefacts were also placed in the elevated passages and crawl spaces. While some of these spaces were used in earlier periods they clearly became the activity areas of choice in the Late Classic. Radiocarbon dates based on five samples collected from the ledges and from Elevated Passage 3 agree with the ceramic chronology indicating that these changes in practice occurred after AD 680 and before AD 960 (Table 29.1).

The change in practice is not limited to Chechem Ha but is widespread phenomena throughout Belizean cave sites. Some sites were only used in the Late Classic period but all

known Maya cave sites in Belize show evidence of Late Classic usage. Whole or partial vessels including medium to large jars, large bowls, or dishes dating to this period are found in many sites in similar contexts such as hard to reach or remote areas. These vessels are reported by the Western Belize Regional Cave Project in the Entrance Chambers and Main Chamber at Actun Tunichil Muknal (Griffith 1998; Moyes 2001; Moyes and Awe 1998; 2000), Barton Creek Cave (Mirro and Mirro 2001), Laberinto de las Tarantulas (Helmke *et al.* 1999), and Yaxteel Ahau (Mirro and Halperin 2000; Owen and Gibbs 1999). In his survey of 48 caves in southern Belize, Keith Prufer (2002) also found numerous sites containing partial or whole Late Classic vessels placed in difficult-to-access or remote areas. The pattern was also noted at Edward Quiroz Cave in the Chiquibul region of southern Cayo District (Pendergast 1971) and at Rio Frio Cave E in the Mountain Pine Ridge (Pendergast 1970). In the Caves Branch area Elizabeth Graham and her colleagues (1980) illustrated a number of Late Classic jars and bowls from the high ledge at Footprint Cave and numerous intact Late Classic jars and dishes were found in Alcoves I and II at Actun Polbiche in the Sibun Hills (Pendergast 1974). Patricia McAnany and her colleagues (2003) also working in the Sibun area reported large Late to Terminal Classic vessels found in inaccessible areas at Pottery Cave.

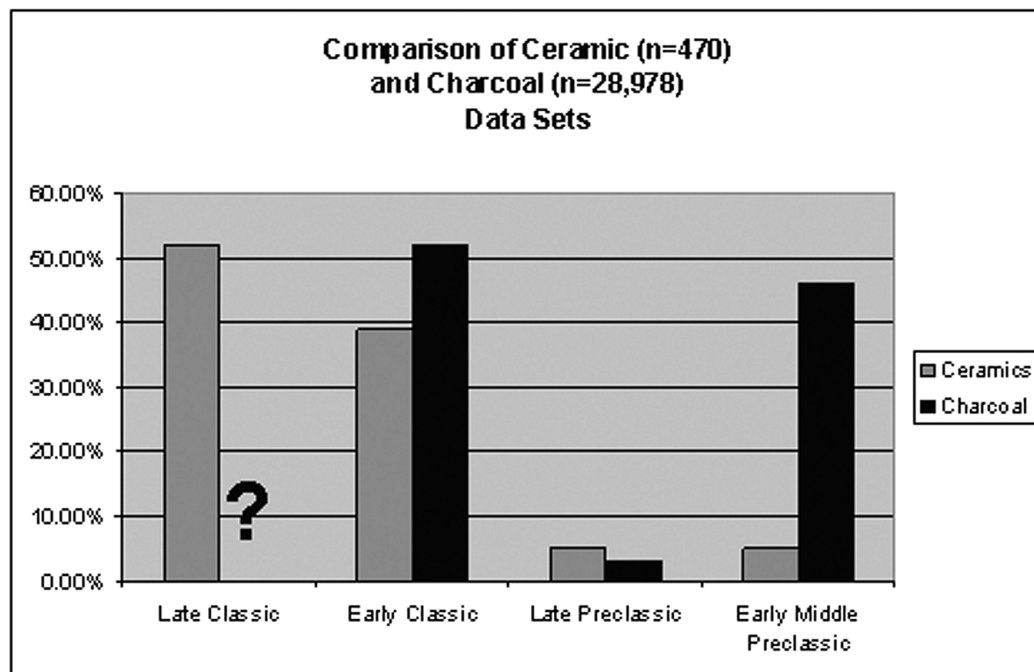


Figure 29.5. Chart shows the percentages of ceramic and charcoal data sets for each major temporal period. There is less than 1% of the total number of charcoal flecks on the surface of Chamber 2 which is curious considering that over 50% of the ceramics in the cave dated to the Late Classic period.



Figure 29.6. Photo illustrating differences between typical Early and Late Classic cave ceramic assemblages. a) Early Classic assemblage is highly fragmented whereas b) Late Classic assemblage contains larger number of whole or partial vessels.

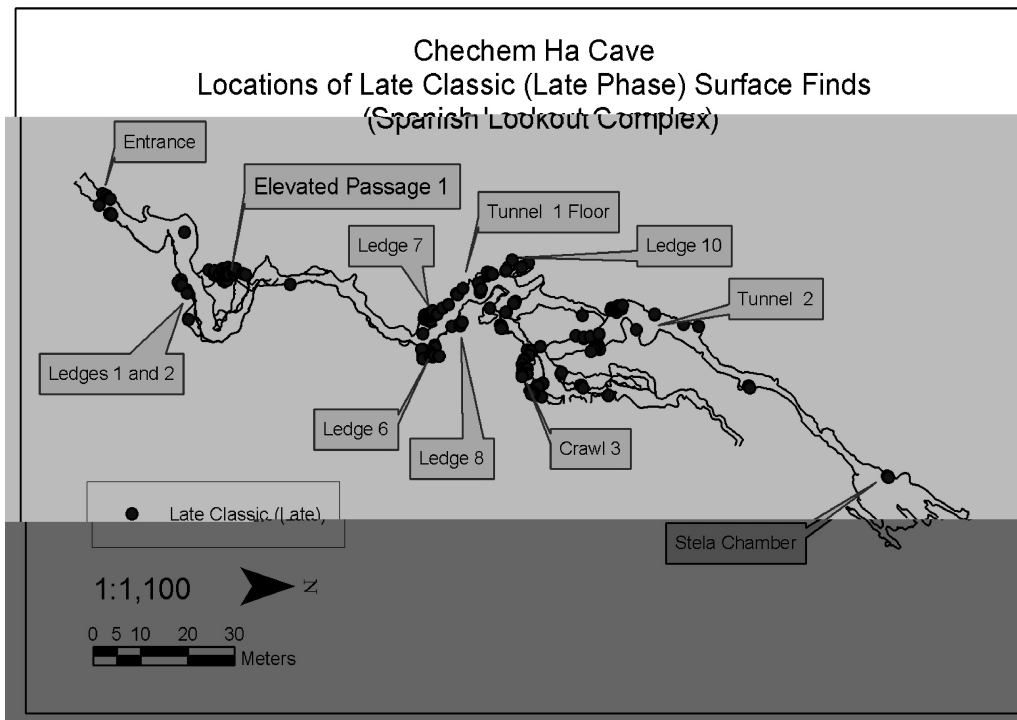
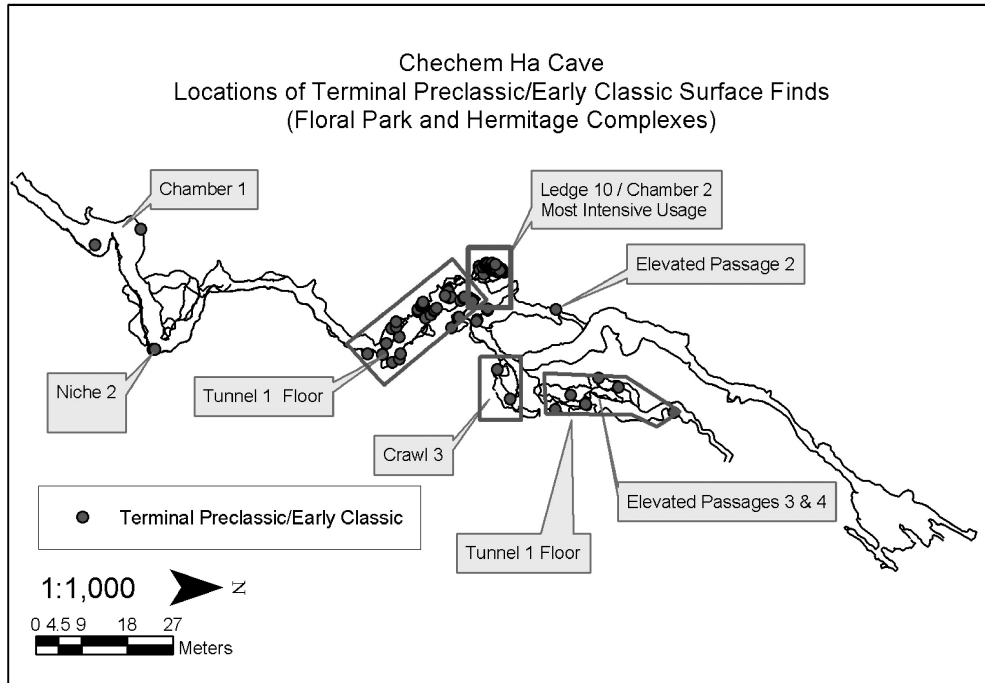


Figure 29.7. Maps of cave illustrating differences in the distributions of ceramics between the Early (top) and Late (bottom) Classic periods. In the Late Classic ceramics are more widely distributed throughout the site. Ledges and high level passages become the preferred activity areas at this time.

AZ Lab #	Period	Area	Radiocarbon Age	Calibrated Date 2 Sigma	Alternative Probabilities
AA57293	Late Classic	Ledge 6	1187±33	AD 720–960	
AA57288	Late Classic	Ledge 4	1210±31	AD 690–900	AD760–900(85.4%)
AA59754	Late Classic	Ledge 6	1224±38	AD 680–900	
AA59753	Late Classic	EP3	1239±36	AD 680–890	
AA57291	Late Classic	Ledge 7	1244±31	AD 680–890	

Table 29.1. Late Classic AMS dates calibrated using OxCal 3.9.

Caves and climate

Because of the cognitive association between caves and agricultural or water-related rites, one might expect a relationship between caves and the environment; particularly fluctuations in rainfall. Speleothems from caves provide one of the best local rainfall reconstructions in paleoclimate research. Speleothems include both stalactites and stalagmites, usually formed by calcite deposition that accumulated as bands or rings (Ford and Williams 1989; Hill and Forti 1997). In areas with annual wet and dry seasons the bands suggest yearly events much like tree rings (Baker *et al.* 1993; Genty and Quintif 1996; Holmgren *et al.* 1999; Railsbeck *et al.* 1994; Webster 2000, 63–65). Bands can be dated using radiocarbon or Uranium-series (U-series) dating (Broecker and Olson 1965; Schwarcz and Rink 2001).

James Webster (2000) conducted a paleoclimate study of relative rainfall availability using a speleothem collected from the Macal Chasm in western Belize, a cave located approximately 5 km from Chechem Ha. Webster evaluated the thickness and frequency of bands, their colour, luminescence, and isotopic ratios ($\delta^{18}\text{O}$). He found that between AD 700 and AD 1225 there was a long dry period with spikes one standard deviation below average occurring approximately AD 809, 928, 1126, and 1206. The first two spikes in dryness roughly correlated with the Classic Maya Collapse in the ninth century. The severity and length of this dry period is not paralleled at any other time in Maya history. Webster's data is in general agreement with the results from Lake Chichancanab in the nearby Petén (Hodell *et al.* 2001) although the speleothem is a better proxy for this study as it is locally obtained and is derived by a more fine-grained approach. Webster's data suggests a temporal correlation between the onset of this dry period and the change in practice noted at Chechem Ha Cave and elsewhere.

Iconography of jars

Not only is there a strong temporal correlation that suggests a ritual response to this period of increasing dryness, but the presence of large jars is suggestive as well. In both

modern Maya ethnography and ancient iconography large jars are associated with water deities. Ethnographic evidence from Lake Atitlan in Guatemala illustrates that Maria Castellana, a female creatrix is associated with the moon (Tarn and Prechtel 1986, 176). The moon itself is envisioned as a large water jar that turns on its side during rainy season until the water spills out. Images in the Dresden codex suggest that this is an ancient belief. On page 74 an old woman named in the codex as *Chac Chel* or Goddess O, the Moon Goddess, hangs in the sky (Taube 1992, 100; 1995, 71) (Figure 29.8). In her hands is an inverted jar from which she pours water onto the earth. She is depicted similarly on page 43b. In the Madrid Codex flood pages she is seen in a similar position on pages 10b and 29b. On page 30a of the Madrid both she and Chac the rain god are in similar poses pouring water from inverted jars. Because she is pictured in the cave paintings at Naj Tunich, James Brady (1989, 47–49) has long argued that the association with caves extends not only to Chac the rain god but to this female deity as well.

The Late Classic drought cult

Data from ancient Maya caves in Belize suggests that the changes in ritual practice in the Late Classic period represent a drought cult pervasive at a regional scale. At Chechem Ha Cave the phenomena can be temporally circumscribed beginning after AD 680 and ending by AD 960. The correlation between the changes in practice and the onset of a prolonged dry period can hardly be accidental. The deposition of large jars in hard to reach areas and restricted spaces also suggests that rituals at this time became more costly and esoteric. We may conclude that in the Late Classic period the environmental change was drastic enough to have affected the everyday lives of Maya people. The study not only defines the behaviors that produced the artifact record but implies a cognitive aspect as well. No matter the severity of the dry period as it relates to the Classic Maya Collapse, the data from the ritual sites suggest that we are witness to the collective response of a *perceived* stress.



Figure 29.8. Page 74 of the Dresden Codex illustrates the Moon Goddess hanging in the sky. In her hands is a large jar from which she pours water. Taube (1988a, 146; 1995, 71) has interpreted this scene as the primordial flood event. Chac the rain deity is positioned below.

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