Changes and Continuities in Ritual Practice at Chechem Ha Cave, Belize:
Report on Excavations Conducted in the 2003 Field Season

Abstract

Data from excavations conducted during the 2003 field season in Chamber 2 at Chechem Ha Cave, Belize, has provided a rare opportunity to examine deep sub-floor deposits in a ritual context. These data have forced us to rethink models of the use of space within caves and have established that significant changes in ritual practice that took place over time within the cave. These changes are demonstrated by analyzing mapped charcoal distributions from excavated levels and by implementing an intensive program of radiocarbon dating. AMS dates show that Chamber 2 was utilized in two major phases—during the early part of the Middle Preclassic period and from the Protoclassic to the end of the Early Classic period. The Middle Preclassic levels of the excavation have provided insight into previously unknown early cave ritual that utilizes speleothems as ritual objects.

Key Words: Cave, Ritual, Middle Preclassic, Early Classic, GIS, Maya
**Introduction**

The Western Belize Regional Cave Project (WBRCP) under the direction of Dr. Jaime Awe has conducted investigations since 1997 in Chechem Ha, an ancient Maya ritual cave site. Cave research programs have traditionally emphasized the meaning of caves and their contents rather than the ritual behavior that occurred within them. Some researchers have tried to define the types of rituals that may have taken place within caves (Awe 1998; Brady 1989; Helmke & Awe 1998, 2001; Moorehart 2002a, 2002b; Pohl 1981; Pohl & Pohl 1983, Reents-Budet & MacLeod 1997; Stone 1995), but despite years of research, little is known about ritual practice or its continuity and change over time. One of the reasons for this is that chronology in caves is difficult to establish. Major artifacts and features are often surface deposits that become co-mingled. Although ceramic chronologies can provide estimates of when a cave was utilized, the palimpsest nature of these deposits interferes with the determination of absolute dates from preserved or charred organic remains. In some cases the investigation of sub-surface deposits and radiocarbon dating may help sort out chronologies, but unlike surface sites, the enclosed cave environment often prevents a thick sediment buildup. The deep sub-floor deposits in Chechem Ha Cave are exceptional and provide a rare opportunity to evaluate sealed deposits in a cave context. The 2003 excavations in Chamber 2, funded by FAMSI, were initiated to examine changes in ritual practice in the chamber during the course of its use from the early part of the Middle Preclassic through the Early Classic periods.

**Setting**

Chechem Ha is a complex cave system located in western Belize (Figure 1). It is an un-looted ancient Maya ritual site discovered in 1989, and may be one of the most remarkable finds in Maya cave archaeology. Although the cave was opened for tourism long before archaeological investigations commenced conscientious curation by the owners has preserved much of the data and the cave still offers a fruitful venue for the study of ancient ritual practice.

The cave is not directly associated with any settlement centers. It is located in a peripheral area between two mid-sized Maya sites, Las Ruinas to the north and Minanhá to the south. Las Ruinas dates from the Late Middle Preclassic (600-300 BC) to the Post Classic period (900-1225 AD) (Taschek and Ball 1999). Minanhá dates from the Late Preclassic (300-100 BC) until the Late Classic period (Iannone 2001). Both sites report termination events. Based on a radiocarbon date, Structure 30 at Las Ruinas was terminated between 850-950 AD, and at Minanhá, a royal residential group was terminated at roughly 800 A.D. based on ceramic chronology.

Chechem Ha sits on a steep hillside above the Macal River 370m above sea level. It is composed of hard compact limestone. The tunnel system is 198m in length and consists of over 300m of tunnels (Figure 2). The cave is classified as "dry" because there is no interior water source (Awe et al. 1997). Drip formations (speleothems) are present in only two areas: Chamber 1, just inside the entrance, and in Chamber 2 deep within the tunnel system. Intermittent pools of water form beneath these formations during rainstorms and drain shortly afterward. Water may enter the tunnel system from Chamber 1 during very heavy storms. A natural water channel has been cut along the edge of the tunnel and terminates in a natural drainage in the center of Chamber 2.
great deal of ancient speleothem breakage and removal was noted throughout the cave system. In fact, the only remaining stalactites are in Chambers 1 and 2, and the only stalagmites are located beneath the drip formation in Chamber 2 and are quite small (<16cm). The largest of these was harvested for purposes of study and dated using AMS. The calibrated two-sigma date indicates that the speleothem began to grow 881-903 AD. (Henry Schwarcz 2003 personal communication).

Evidence of ritual activity is present in a number of discrete activity loci located throughout the tunnel system. Artifact deposits are located along the walls in niches and alcoves, and on eleven ledges ranging from 3-7m. above the tunnel floor. Additionally, artifacts are found in six elevated side passages. Four of these passages are narrow with low ceiling heights and designated as "crawls." Artifact assemblages in various loci are distinct from one another suggesting specialty usage. For example, Elevated Passage 1 (EP1) contains a cache of large vessels measuring up to one meter in diameter. Tunnel 2 features a series of vessels with inverted bowls covering their bottoms resembling mushrooms, and Ledge 4 contains four stone circle constructions. Of particular interest is the large cathedral-like chamber at the cave's western terminus designated the "Stela Chamber" due to the presence of a miniature uncarved stela surrounded by a circle of stones (Figure 3, Awe et al. 1997).

The site also contains undisturbed sub-floor deposits and deep stratigraphy. Throughout most of the tunnel system the surface of the floor is composed of a hard packed dark clay. Sub-surface cultural deposits range from 6cm-1.5m deep. Test excavations conducted in 2002 demonstrated that the deepest deposits with the clearest stratigraphy were present in Chamber 2.

Chamber 2 is located near the center of the tunnel system, 100m from the cave entrance at a fork in the tunnel system (See Figure 2). The best pathway to the deeper cave passages follows the Main Tunnel, which leads through this area. The chamber is roughly rectangular in shape, measures 3m x 8m, and is oriented on a SE axis (Figure 4). There is a large outcrop of limestone along the northwest wall. As one moves through the cave, the room is entered at the southeast corner and the exited at the northeast corner so that the natural pathway forms a U-shape around the stone outcrop.

An alcove containing potsherd scatters on the modern surface juts out from the southwest corner. Another alcove juts off from the northwest corner and leads to a crawl space that continues into deeper passages. The alcove slopes up toward the crawl at on a 10° slope and is muddy and slick throughout the year. This route is much more difficult to traverse than the passage that continues via the northeast corner and artifact densities in the crawl space suggest that it was rarely used. The wet conditions are caused by the large stalactite chandelier, an active drip formation hanging over the entrance to the alcove (Figure 5). Large clusters of stalactites are referred to as chandeliers by cavers because their shape bears a resemblance to elaborate light fixtures. Beneath the stalactite is an intermittent pool that fills with water during rainstorms. The water has excavated the mud well below the floor level of the chamber. A large scatter of potsherds can be seen in the muddy matrix beneath the stalactite. In the center of the chamber on the modern surface, a large broken stalactite sat on top of a roughly circular pit measuring 70cm across. Intermittent pools caused by drips from the ceiling form in the pit during heavy rains. Additionally, we witnessed a low energy stream running into the chamber from the cave entrance along the walls of the tunnel system draining into this low area
during heavy storms. Adjacent to the pool along the west wall is a pile of large speleothems approximately 50cm in diameter and 50cm high. It was unclear if this was an ancient Maya deposit, but the owners of the cave denied having placed the pile in its current position.

Two ledges are located above the chamber. Ledge 9 is a small area, 2 x 2m, located at the west end of the chamber sits 6m above the chamber floor. It is a small shelf that based on the ceramic chronology, was only sparsely utilized during the Late Classic period. Ledge 10 sits 7m above the west wall of the chamber (Figure 6). The ledge measures 6 x 2.5m and a small niche in the back wall of the ledge is covered with soda straws. These are precipitates of calcium carbonate that are the initial stages of stalactite growth and whose name derives from their resemblance to drinking straws. There is a great deal of bat guano on this ledge and it is a modern bat roost. The ledge was heavily utilized by the ancient Maya, and almost one third of all the artifacts in the cave were found in this location. Ceramics on the ledge may date as early as the Preclassic period (Jim Aimers 2004 personal communication) but most are diagnostic of the Early Classic (Ishihara 2001). Two AMS radiocarbon dates from pine charcoal collected from in between stacks of potsherds confirm that the ledge was utilized from as early as 1000BC to 420AD (Oxcal3 2760±34rcybp calibrates with a two-sigma range to 1000-820 BC 1714±33 and rcybp calibrates with a two-sigma range to AD 240-420). This suggests that Ledge 10 was an important ritual locus from a very early point in the utilization of the cave.

Methods

In this study, charcoal flecks recorded in excavation contexts are used as a proxy for both intensity of use and as an indicator of activity areas. Since the dark zone of the cave begins approximately 33m inside of the tunnel system, all tunnel branches and activity loci beyond this point were necessarily negotiated using artificial light. Evidence that the Maya used wood torches to light their way in caves is abundant (Morehart 2002a) and ceramic torch-holders have been found in caves (Brady 1989; Graham et al. 1980; Reents-Budet 1980). In his study of plant remains in Chechem Ha, Christopher Morehart (2002a) reported that all charcoal flecks collected from surface deposits were of the *Pinus* species. This agrees with ethnographic data collected in the 2003 field season, which indicates that local pine is used today in the construction of torches to save money on fuel costs. Pine is easily available in the area and stands of trees are located near the cave.

Chamber 2 is located well within the dark zone meaning that all activity must be illuminated by some artificial source. Therefore we can reasonably assume that unless otherwise indicated, the charcoal deposits at Chechem Ha were produced by torches used as sources of light. There are only two basic classes of activities that one can envision taking place within the chamber. Individuals are either passing through on their way to one of the deeper areas or they are pausing within the chamber to engage in some kind of ritual activity. Passing through Chamber 2 on the way to some other location within the cave should produce a rain of charcoal in the U-shape of the pathway. Pausing to engage in prolonged ritual activities should generate localized densities of charcoal adjacent to the location of torch bearers.

We chose Chamber 2 to conduct a broad horizontal excavation because to reach any of the deeper sections of the cave one would necessarily pass though it and
additionally, test units conducted in 2003 indicated that the area had deep subsurface deposits. The excavation extended from the south wall to the north wall of the chamber and measured 2m x 8m. (Figure 7) The test unit excavated in 2002 was re-opened to provide a guideline for recognizing level (Figure 8). A total of 18 levels were recorded. There were no prepared floors in this cave, so use surfaces were determined during excavation by 1) observing changes in coloration and texture in the sediment matrix, 2) noting the presence of horizontally embedded ceramic sherds or other artifacts within the matrix, which suggested trampling, and 3) noting charcoal flecks embedded within the matrix.

Photomapping was used to record surfaces. This recording technique is an infield GIS based data collection strategy tailored to the documentation of small artifact distributions (Aldenderfer in press; Aldenderfer and Craig 2002; Craig 2000; Craig and Aldenderfer in press; Craig et al. 2003). The excavation is divided into 1m units. A digital image was taken of each unit within the level. These were stitched together and georeferenced in ArcView 3.2. The final product recreates the continuous surface of the excavation so that the entire level may be viewed and analyzed as a single entity. Artifact distributions were recorded directly into the GIS during excavation. All artifacts including charcoal flecks were represented as a distribution of points. The geomorphology of the cave and cultural features were represented by lines and polygons.

The advantage of this system is that 1) the accuracy of the GIS database can be checked on the spot because it is created infield, 2) an entire excavation layer can be viewed on a single screen, 3) a photographic record and georeferencing are conducted simultaneously, and 4) small finds such as carbon flecks can be rapidly piece plotted in situ. Excavation profiles were also made using the photomapping technique. Presented here is the georeferenced north wall profile (Figure 9). Excavation levels are illustrated in the photograph.

Eight classes of artifacts were found in the excavation listed in order of quantity 1) charcoal flecks, 2) ceramic sherds, 3) speleothems (stalactites, stalagmites, spalls, and soda straws), 4) limestone rock, 5) jute shell (*Pachychilus indiorum*), 6) ethnobotanic remains, 7) animal remains, and 8) an obsidian blade. Matrix samples from Units B7 and C7 were transported to the camp for infield flotation. Charcoal from the flotation was weighed in order to estimate the increase or decrease of the chamber's usage between layers.

Levels were dated using pine charcoal. A sample from each layer was sent to the AMS dating facility at the University of Arizona. Results were calibrated using Oxcal 3 and reported at the two-sigma range.

To aid in evaluating site formation processes, a combination of micromorphology and geochemical analyses are also underway. A column sample from the north wall profile was collected in the 2003 field season. The sample was resin impregnated and thin sections were produced. Bulk samples from each excavation layer were also collected for elemental analyses.

**Excavation**

Although more than one matrix type is present in each level, laboratory analysis indicated that, with the exception of Level 7, the primary texture characterization throughout the excavation was clay. Several observations suggested that 2:1 clays
(shrink/swell) were present in the matrix: 1) we noted crack patterns on the surfaces of many areas, 2) the sediment was very sticky, and 3) samples brought from the field shrank considerably when dried. Preliminary XRD analysis indicates that the sediment contains mixed clays which include 2:1 varieties as well as kaolinites. Besides the heavy clays, the entire deposit contains bat guano or other excretory organics in a varying percentage within each layer as well as differing amounts of limestone marl.

Below is a brief description of each level that includes the most interesting findings in each. Diagnostic ceramics are pictured in Appendix A. The excavation data is compiled in Table 1. Although there is overlap at the two-sigma range some of the AMS dates at both the top levels and the bottom levels (See Figure 17), the stratigraphy of the excavation was clear and layers do not appear to be mixed to any significant degree (See Figure 9).

Table 1. Summary of excavation data by level.

<table>
<thead>
<tr>
<th>Level</th>
<th>AMS Date</th>
<th>Period</th>
<th>Color</th>
<th>pH</th>
<th>Excavated Area m²</th>
<th>Surface Charcoal</th>
<th>Flotation Charcoal (gr.)</th>
<th>Ceramic Sherds</th>
<th>Speleothem Finds</th>
<th>Special Finds</th>
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<td>12.581</td>
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<td>29</td>
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<td>917</td>
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</table>
Level 1 was the modern use surface. The matrix consisted of heavy plastic dark gray clay mixed with poorly sorted white limestone marl. The layer ranged in thickness from 2-4cm. The surface had been regularly trampled by tourists wearing boots with thick treads or sneakers which caused the matrix to compact to a consistency resembling modeling clay. In the center of the chamber in the area we noted above as a natural drain was an oval shaped pit measuring 60 x 80cm designated Feature 1. The matrix within the pit was wetter than that of the rest of the level and this continued throughout every level to bedrock. On top of the pit sat a stalactite fragment measuring 55 x 72cm. The plastic matrix of the layer literally peeled away revealing the shiny smooth surface of Level 2 below (Figure 10). On the modern surface 265 charcoal flecks were recorded. Within the unit matrix there were 108 ceramic sherds and seven small soda straws. Data recovered from the flotation of Unit B7 is likely to be underestimated due to the heavy clay matrix and problems with deflocculating this sample. This level is probably of limited analytical value because of the impact of modern usage.

Level 2 dated to the Early Classic Period. The surface of this layer was unusual because the texture was smooth and shiny. The color was dark gray similar to Level 1, was mixed with 1% marl, and was 1-2cm in thickness. Although the matrix was primarily clay, thin lenses of sand and silt were present in the northwest area of the excavation. These thin strata can be seen in the north wall profile (See Figure 9). Preliminary analysis of the unit's micromorphology suggests that these deposits were water-laid. On the Level 2 surface there were 770 charcoal flecks. The layer contained 241 ceramic sherds, a single spire-lopped jute shell, and 16 speleothems all of which were small soda straws.

Level 3 dated to the Early Classic Period. It consisted of a clay or clay-like matrix of medium compaction containing 1% fine marl. The color was dark grayish brown and the level was 1-2cm thick. Thin lenses of water laid silt and sand were also present in this level particularly in the center and the northwest areas of the excavation. There were 2179 charcoal flecks recorded on the surface of the level. The matrix contained 165 ceramic sherds, 16 small speleothems, and a single spire-lopped jute shell. Two features were present and both were located in the northwestern part of the excavation. In this area, the cave wall slopes inward and there was little sediment covering the bedrock. Ceramic sherds were deposited on the bedrock in two small natural depressions measuring 8-10cm in diameter (Figure 11, Feature 3). This type of feature has also been noted in surface deposits throughout the cave.

Level 4 dated to the Early Classic Period. The level was 2-6cm thick and the matrix color and texture was similar to Levels 2 and 3 but there was no visible evidence of thin water laid lenses. Clay cracking was noted in this level. Patches of brown silt (7.5yr5/6) are present in the central part of the excavation and between cracks. There were 1779 charcoal flecks on the surface of the level and the matrix contained 112 ceramic sherds and 7 speleothems. Of these 25 sherds and a speleothem were located in Feature 1.

Level 5 was the lowest level that dated to the Early Classic Period. The matrix was dark brown to black in color with medium compaction. Although the sediment was somewhat similar to Levels 1-4, there was slightly more marl (2%) within the 2-6cm thick level. Heavy cracking of the surface was noted in this layer. On the surface, we
recorded 3341 charcoal flecks. Within the matrix 210 ceramic sherds and 21 speleothems were excavated. Thirty-nine of the sherds were found in Feature 1, which continued to this level.

There was a great deal of activity on this level, particularly along the western boundary adjacent to the cave wall. Feature 4 was a concentration of 16 ceramic sherds, a spire-lopped jute shell, and an animal bone fragment. There was burning a good deal of charcoal associated with this deposit. Some of the wood was only partially charred. Adjacent to the wall and 30cm north of Feature 4 was Feature 5. This was a concentration of 74 ceramic sherds, a spire-lopped jute shell, and a great deal of carbonized wood. Interestingly, both of these deposits were located directly below sherd concentrations found on the modern surface

**Level 6** dated to the Proto-Early Classic Period. The sediment in this layer was clay or clay-like, dark grayish brown in color, and mixed with 20% marl. Orange to brown (7.5yr4/4) patches of silt were also present throughout the level. Although the level was only 1-3cm thick, the amount of charcoal from the intra layer flotation was much higher than in other layers (21.98 gr). The matrix also contained 462 ceramic sherds and 29 speleothems. Additionally, the numbers of charcoal flecks on the surface of the level were the highest recorded in the excavation (8357). A stalagmite was encountered on this level. Although speleothems were found on all levels, this was the first time that we encountered a stalagmite in the excavation.

Features 4 and 5 both originated on this level and were used continuously through Level 4. An obsidian blade fragment was found under a cobble at the base of Feature 5.

**Level 7** dated to the Late Preclassic Period. The sediment on this level was less compacted as compared with others, the color was light brown to yellowish brown, was 1-2cm thick, and contained 4% marl. An XRD analysis of this deposit demonstrated that, although the deposit had the texture of clay loam, it is almost entirely organic. The high phosphate (16.13%) and elevated copper content (300 ppm) of this level further suggested that it was composed primarily of bat guano. On the surface there were 836 charcoal flecks and from the matrix only 10 ceramic sherds and 3 speleothems were recovered.

**Level 8** dated to the Middle Preclassic Period. The sediment was very dark grayish brown, medium compaction, 1-3cm thick, and was mixed with 2% marl. Crack patterns were present throughout the matrix. On the surface of the level there were 1304 charcoal flecks and in the matrix there were 13 ceramic sherds and 28 speleothems. The speleothems within this level were larger than in levels 1-7. A circle of 14 cobble-sized limestone rocks and one speleothem was found adjacent to the east wall of the cave. This feature was located directly below Feature 4 on Level 5.

**Level 9** dated to the Middle Preclassic Period. The matrix was very dark gray, contained little marl, was 2-4cm thick, and exhibited medium to heavy compaction. Patches of different dark yellowish brown matrix mixed with poorly sorted sand were also found on this level. On the surface of the level 2919 charcoal flecks were recorded and there were 6 ceramic sherds and 6 speleothems collected from the matrix. Two well-preserved corn kernels were recovered from flotation.

**Level 10** dated to the Middle Preclassic Period. The matrix was dark brown to black in color, 2-3cm thick, and contained little marl. There were numerous crack patterns in this layer and lighter colored sediment filled the cracks. On the surface of this
level were 3537 charcoal flecks and in the matrix, 4 ceramic sherds and 1 speleothem. This was stratigraphically the lowest level in the excavation that contained ceramic sherds.

**Level 11** dated to the Middle Preclassic Period. The matrix was very similar to that of Level 10 but was mixed with slightly more marl. It was 2-4cm thick. There were 1390 charcoal flecks present on the surface and 2 speleothems found in the matrix.

**Level 12** dated to the Middle Preclassic Period. The 5-7cm thick sediment was very dark brown and exhibited medium compaction. There were 1591 charcoal flecks on the surface and one speleothem in the matrix. In the 2002 test excavation, two bowl-shaped speleothem spalls were found sitting in an upright position on the surface (Figure 12). Both contained a black sticky residue. The first spall (a) was round and measured 6cm in diameter and 3cm in height. The second (b) was triangular in shape measuring 5 x 4cm and 2.5cm in height.

**Level 13** dated to the Middle Preclassic Period. The 5-7cm thick sediment had a high concentration of marl (22%) and the color was dark grayish brown. This layer was 6-10cm thick and a water channel ran through it. The channel originated in the east side of the excavation and continued to the north wall. Seven speleothems were recorded in this level and all were located in the channel. There were 917 charcoal flecks located on the surface.

Dates are not yet available for **Levels 14-17**. As we began approaching bedrock, the sampled area became progressively smaller. This is noted in Table 1. The sediment from Level 14 was very dark grayish brown containing 11% marl and was 8-10cm thick. Crack patterns were distinct on this level. Nine small speleothems and soda straws and a spall were found in the channel. The spall resembled those found in Level 12 but did not contain residue. There were 172 flecks of charcoal recorded on the surface.

**Level 15, 16, 17, and 18** were composed of a similar matrix. The color of the sediment was brown to grayish brown, contained almost 40% marl, and was very wet throughout. In the field, it appeared to have a greenish gray cast. The marl was friable and some of the pebbles were colored green. Cobble-sized mudstone was also present. Layer 15 is located at the same level as the intermittent pool beneath the stalactite chandelier below surface of the tunnel floor. This suggests that it may have collected water from seepage beneath the floor when the pool filled during rainstorms. This could account for the very wet conditions of the basal layers of the excavation. Although it was unclear as to whether these levels were cultural, charcoal was present throughout the matrix of Level 15, small flecks were present in Level 16 and a few flecks were found in Level 17. Additionally, all levels contained numerous large speleothems. Some are visible in the north wall profile (See Figure 9). Thirty four speleothems were collected in Level 15, 67 in Level 16 (Figure 13), and 42 in Level 17. They were not spread throughout the excavation but were found in clusters. In Levels 16, 17, and 18 the clusters were directly on top of one another suggesting that they were stacked. Many of the speleothems were large stalagmites. Although stalactites could conceivably fall from the ceiling, it is highly unlikely that stalagmites could have arrived at their current position without assistance. Additionally, the placement of the speleothems within the excavation is reminiscent of the speleothem pile located on the modern surface. Bedrock was reached at Level 18. Six speleothems including three stalagmites and a spall were
collected on this level. There was one small piece of charcoal which was too small for dating.

**Preliminary Analyses**

To evaluate the variation in the use of space within the chamber, charcoal distributions will be analyzed and compared using the point data recorded in the field for each level. The goal of the analysis is to find areas that have distributions of charcoal that are denser than one would expect. Levels 6 and 7 are used to demonstrate the method and present preliminary findings. These two levels were selected because they were dissimilar. On the surface of Level 6 there are 10 times as many fragments of carbon and in the matrix 31 times as many ceramic sherds as there are on Level 7. These differences are striking and indicate a major change in the intensity of activity between these two adjacent levels that can be described numerically.

The analysis was carried out using GIS (Craig et al. 2004). Traditional clustering algorithms are inappropriate for the analysis since the goal was to locate and examine unexpected densities not clusters. A new method using observed and expected density maps was employed to produce *Density Difference* maps. These were created by subtracting the expected densities from the observed densities. To create the density map of the observed data, nearest feature distances were calculated to determine the minimum distance between two points using the ArcView 3.3. This value was used as the search radius in calculating density to avoid producing densities composed of single objects. The resulting raster is the *Observed Density Count*.

To generate an expected density, the Animal Movements extension was used to produce a random distribution of points that have the same number of elements as the observed set. Nearest Neighbor was calculated for this set to determine whether the set was clustered or not. If the set was clustered, another set was created and tested until a set of unclustered points was generated. The density of the observed point array was used to generate the *Observed Density Count* following the procedures described above.

To create the *Density Difference* field, the Raster Calculator was used to subtract the Expected Density Count from the Observed Density Count. The resulting raster illustrates areas where there are relatively more or fewer objects than would be expected in a random unaggregated distribution. The maps are displayed using the standard deviation stretch with a two color ramped palette (Figure 14, Figure 15).

The similarities and differences between these two levels help to both expand and constrain aspects of interpretation of the use of Chamber 2. The following observations can be drawn from this preliminary analysis:

1. Charcoal aggregations indicate that activities were taking place within Chamber 2 rather than people quickly moving through the chamber during both the Level 6 and Level 7 temporal periods.
2. There is more than one locus of ritual activity on both Levels 6 and 7.
3. Some loci of ritual activity persist from one level to the next. For instance, there is activity along the southwest wall beneath the overhang in both levels. These semi-enclosed areas are noted as common ritual foci in other caves as well (Brady 1989; Moyes 2001).
4. Some activity loci have changed between the two levels. In Level 7, there is activity along the north wall, but in Level 6 there is little activity in this area. Additionally, in Level 6 there is a good deal of activity present in the area.
between the stalactite chandelier and the intermittent pool/drain in the center of the chamber. These preliminary results suggest that there may have been a shift in ritual behavior to a greater intensity of water-related rituals during the Level 6 time period (130-420 AD).

Discussion

A number of observations can be made from these preliminary data. Changes over time in the artifact assemblage are of note. In the initial stages of cave use, no ceramics were imported into the cave for a very long period of time. Ceramic sherds first appear in Level 10 (1000-820BC) but the cave was utilized at least 100 years or more prior to this date. Along with the introduction of ceramics into the cave was evidence of agricultural rituals. In Level 9 (1000-820BC) two corn kernels were recovered in the flotation.

Early cave usage (Levels 11-18) appears to have focused on the removal, stacking, and opportunistic use of speleothems. The use of stalagmites illustrates the intensity of this practice. The most recent level to contain a stalagmite is Level 6 (130-420AD). Because no large stalagmites are left standing in the entire cave system today, this suggests that by the Early Classic period all of the cave's stalagmites had been harvested by ancient people. Additionally, the small stalagmite harvested from underneath the speleothem did not begin to grow until the Late Classic period. This provides additional evidence to suggest that the cave was stripped of stalagmites by this time. It is possible that some may have been removed from the site, but due to the small size of stalactites found in more recent levels of the excavation, this scenario is unlikely.

An interesting continuity in ritual practice was demonstrated by artifact placement along the west boundary of the excavation and in the area of the central drainage pit (Feature 1). Adjacent to the west cave wall beneath the overhang a sherd scatter was found on the modern surface. Located directly below the modern feature in Level 5 (240-440AD) were two caches of artifacts and evidence of intense burning. Both of these features originated in Level 6 (130-420AD). Below Feature 5 near bedrock was the stone circle in Level 8 (1130-890BC). It is hardly accidental that the most elaborate deposits discovered in the excavation were located beneath the surface feature. In the second area, a large stalactite fragment sat on the modern surface on top of the depression in the center of the chamber. We noted ceramic sherds in this area on each level continuously to the depth of Level 5. This suggests two possibilities. Either the location of these areas are significant because of geomorphic and other spatial or cognitive features traditionally utilized as criteria for artifact placement, or they are significant ritual activity areas due to their histories of repeated use.

One of the major goals of the project is to examine changes in ritual frequency or intensity using the data derived from the quantification of charcoal flecks within the excavation. Charcoal flecks recorded and mapped on use surfaces represent a slice of time and create a picture of spatial usage on a horizontal place whereas the charcoal recovered from flotation indicates the intensity of usage between levels. A graph illustrates the general trends of the data (Figure 16) and actual values are found in Table 1. Charcoal recorded on surfaces was counted by number of flecks and charcoal recovered by flotation was weighed. Heavy usage occurred in the Middle Preclassic phase in Levels 9 and 10 (1000-820BC) and drops off considerably in the Late Preclassic.

Ceramic chronology suggested that the cave was used from 600BC until approximately 900AD (Ishihara 2000). Radiocarbon dates demonstrated that the chamber was used much earlier than the ceramics suggested. There were two major phases. Based on two-sigma calibrations, the first phase dated to the Middle Preclassic from as early as 1320BC until as late as 820BC. The second phase lasted from the Protoclassic as early as 130AD to the Early Classic as late as 560AD (Figure 17). The chamber received little or no usage from approximately 820BC until 130AD. It is of interest that during this time the Stela Chamber which is the deepest most remote area of the cave was in use. This area is morphologically quite different from Chamber 2 in that there are no active drips or water related features. It is a cathedral-like space that contains surprisingly few artifacts but has a small uncarved stela surrounded by a circle of stones placed in the center of the chamber (See Figure 3).

It was surprising to find early use of the cave in the deepest and most remote areas. Observations based on ceramic chronologies from Petroglyph Cave (Reents-Budet 1980) and Actun Tunichil Muknal (Helmke 1999) suggested that entrances and light zones were utilized at earlier time periods than dark zones and that utilization progressed deeper into the cave's interior at later time periods. According to this model the cave's latest use would be expected in the deepest chambers. At Chechem Ha there is heavy usage in remote areas at very early dates and later usage appears to be in areas closer to the entrance.

Finally, Chechem Ha may be considered a pilgrimage cave because it is not located within a site core or in close proximity to any particular surface site. What is of particular interest is that the initial utilization of Chechem Ha pre-dates the earliest occupations of nearby surface sites. It is possible that people were living in the area at time of the cave's initial use and that information regarding an early occupation has not been found by archaeologists. However, if people were not living in the area they may have traveled great distances to visit the cave.

The possibility exists that the cave may have attracted settlers to the area, though this is a tentative suggestion and far from conclusive. The early dates lend viability to the model of pan-Mesoamerican settlement pattern choice researched by ethnohistorians Angel García-Zambrano (1994) and María Elena Bernal-García (1993). Their research indicates that immigrants searched for an ideal location described in ethnohistoric texts as a watery places surrounded by four mountains with a fifth protruding in the middle of the water. The configuration formed a horseshoe-shaped valley in the center of which was a natural cave containing water. The configuration was called a rinconada or axomulli (water-corner). Although Chechem Ha does not have an interior water source, it could be considered a watery place to the ancient people because of the intermittent pools and dripstone formations found within the cave. Its geographic location on a hill and the proximity of the valleys below to the Macal River also suggests that the cave could have been an element in settlement selection criteria. Extensive research and more comprehensive dating of early cave use would be required to support or refute this model, but it is worth considering in future cave research and settlement pattern analyses.
Conclusion

Preliminary analyses suggest that data collected during the 2003 excavations of Chamber 2 at Chechem Ha Cave are useful in addressing changes in the form and intensity of ritual practice within the cave. Changes in the use of space on a global scale (the entire cave system) are indicated from radiocarbon dates demonstrating that different areas of the cave were utilized during disparate temporal periods. The differences in cave morphology and variation in artifact assemblages between these areas suggests variation in the rituals conducted in these spaces. On a local scale, changes in the use of space over time in Chamber 2 were indicated by the analyses of carbon distributions and their densities. Concentrations of charcoal near water features such as wet areas or the stalactite imply rain related rituals whereas activities conducted in other parts of the chamber suggest other activities. Continuity over time in at least two activity areas, beneath the overhang against the west wall of the cave and in the central drainage area, was also noted.

Radiocarbon dates were instrumental in establishing that the cave was used much earlier than the ceramic chronology indicated. Chamber 2 was used intensively in the early part of the Middle Preclassic period and with even greater intensely beginning in the Protoclassic and ending in the Early Classic period. Data from the excavation also provided insights into previously unknown ritual cave use from early time periods that focused on the utilization of speleothems as ritual objects but did not involve the deposition of ceramic artifacts. Ongoing research will concentrate on linking ritual practice within the cave to environmental and socio/political events occurring locally and throughout the region.

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APPENDIX A
Diagnostic Ceramics

Level 1

Level 2

Level 3

Level 4

Level 5

Level 6

Level 7

Level 8