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**NOUVELLES DONNÉES  
SUR LES DÉBUTS  
DU NÉOLITHIQUE  
À CHYPRE**

**ACTES DE LA SÉANCE  
DE LA SOCIÉTÉ PRÉHISTORIQUE FRANÇAISE  
PARIS,  
18-19 MARS 2015**

Textes publiés sous la direction de  
**Jean-Denis VIGNE, François BRIOIS et Margareta TENGBERG**

SÉANCES DE LA SOCIÉTÉ PRÉHISTORIQUE FRANÇAISE

9

NOUVELLES DONNÉES  
SUR LES DÉBUTS DU NÉOLITHIQUE  
À CHYPRE

NEW DATA  
ON THE BEGINNINGS OF THE NEOLITHIC  
IN CYPRUS

ACTES DE LA SÉANCE  
DE LA SOCIÉTÉ PRÉHISTORIQUE FRANÇAISE  
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Société préhistorique française  
Paris  
2017

*À la mémoire d'Edgar Peltenburg*

*To the memory of Edgar Peltenburg*

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**Illustration de couverture :** Klimonas: sub-zenithal photo of the communal building (St 10) and its entrance device (upper left), taken at the end of the 2012 excavation season. *Klimonas : vue sub-zénithale du bâtiment communautaire (St 10) et de son dispositif d'entrée (en haut, à gauche), prise à la fin de la campagne de fouille 2012. La mire mesure 1 m. Le nord est situé vers la gauche* (© M. Azéma, Passé simple).



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(reconnue d'utilité publique, décret du 28 juillet 1910). Grand Prix de l'Archéologie 1982.

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Publié avec le concours du ministère de la Culture et de la Communication (sous-direction de l'Archéologie),  
du ministère des Affaires étrangères et du Développement international,  
du Centre national de la recherche scientifique, du Centre national du Livre,  
de l'Institut national de recherches archéologiques préventives, du Museum national d'histoire naturelle,  
de l'École française d'Athènes, de l'UMR 7209 Archéozoologie et archéobotanique (Paris),  
de l'UMR 5608 TRACES (Toulouse) et du SEEG « Limassol » (CNRS, INEE)

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Dépôt légal : 2<sup>e</sup> trimestre 2017

ISSN : 2263-3847 – ISBN : 2-913745-69-5 (en ligne)

# SOMMAIRE / CONTENTS

Jean-Denis VIGNE, François BRIOIS et Margareta TENGBERG — <b>Nouvelles données sur les débuts du Néolithique à Chypre / <i>New data on the beginnings of the Neolithic in Cyprus</i></b> .....	7
Jean GUILAINE — <b>Introduction. Le Néolithique précéramique de Chypre. Réflexions autour du bilan de la mission « Néolithisation » (1991-2013)</b> .....	13
<b>Première partie</b> <b>Klimonas et Ayia Varvara dans le contexte du PPNA</b>	
Jean-Denis VIGNE, François BRIOIS, Thomas CUCCHI, Yodrik FRANEL, Pantelitsa MYLONA, Margareta TENGBERG, Régis TOUQUET, Julia WATTEZ, George WILLCOX, Antoine ZAZZO and Jean GUILAINE — <b>Klimonas, a late PPNA hunter-cultivator village in Cyprus: new results</b> .....	21
Carole MCCARTNEY — <b>Ayia Varvara Asprokremnos: a late PPNA specialized site on Cyprus</b> .....	47
Remi HADAD — <b>Le rivage de Chypre : connectivité, architecture et résistance dans le contexte du PPNA levantin</b> .....	59
<b>Deuxième partie</b> <b>Contributions géoarchéologiques à l'étude de Klimonas</b>	
Christophe BENECH, Alain TABBAGH et Jean-Denis VIGNE — <b>Étude par prospections magnétique et électromagnétique du site de Klimonas (Chypre)</b> .....	79
Pantelitsa MYLONA, Benoît DEVILLERS, Jean-Denis VIGNE — <b>De la fin du Pléniglaciaire au début de l'Holocène à Chypre : premières analyses des terrasses fluviales proches du site néolithique précéramique de Klimonas (Ayios Tychonas, Limassol)</b> .....	95
Pantelitsa MYLONA, Julia WATTEZ, Yodrik FRANEL, Jean-Denis VIGNE — <b>L'utilisation de la terre crue au PPNA à Klimonas (Ayios Tychonas, Chypre) : construction et évolution du bâtiment communautaire (structure 10). Approche géoarchéologique</b> .....	105
<b>Troisième partie</b> <b>Techniques et pratiques au cours du Néolithique précéramique chypriote (du X<sup>e</sup> au VI<sup>e</sup> millénaire)</b>	
François BRIOIS et Laurence ASTRUC — <b>L'outillage de pierre taillée à Chypre du X<sup>e</sup> au milieu du VI<sup>e</sup> millénaire avant notre ère : une évocation</b> .....	121
Jérôme ROBITAILLE — <b>Le macro-outillage d'un site PPNA chypriote, Ayios-Tychonas Klimonas</b> .....	135
Claire MANEN — <b>Manufacturing and use of the stone vessels from PPN Shillourokambos in the context of Cypriot and Near Eastern PPN stone vessel production</b> .....	167
Solange RIGAUD, Nathalie SERRAND et Jean-GUILAINE — <b>Les parures des premières sociétés du Néolithique précéramique de Chypre : apport des gisements de Klimonas et de Shillourokambos</b> .....	183

Angelos HADJIKOUMIS, Paul CROFT, Alan SIMMONS, Jean GUILAINE, Edgard PELTENBURG †, Ian TODD, Alain LE BRUN et Jean-Denis VIGNE — <b>A first glimpse into butchery practices in Pre-Pottery Neolithic Cyprus: evidence on sheep and goat remains from six sites</b> .....	199
---	-----

**Quatrième partie  
Nouvelles réflexions sur Khirokitia**

Odile DAUNE-LE BRUN, F. HOURANI et Alain LE BRUN — <b>Khirokitia (Chypre, VII<sup>e</sup>-VI<sup>e</sup> millénaires av. J.-C.), la séquence stratigraphique dans son contexte</b> .....	217
--	-----

Alain LE BRUN — <b>Voulu ou accidentel, l'abandon à Khirokitia (Chypre, VII<sup>e</sup>-VI<sup>e</sup> millénaires av. J.-C.) de plusieurs constructions à la fin du niveau C</b> .....	229
---	-----

Andrea PARÉS et Margareta TENGBERG — <b>Étude des pratiques d'exploitation et d'utilisation des ressources végétales du village de Khirokitia (Chypre) au Néolithique précéramique récent chypriote (VII<sup>e</sup>-VI<sup>e</sup> millénaires av. J.-C.)</b> .....	241
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*Nouvelles données sur les débuts du Néolithique à Chypre*  
*New data on the beginnings of the Neolithic in Cyprus*  
Actes de la séance de la Société préhistorique française  
Paris, 18-19 mars 2015  
Textes publiés sous la direction de Jean-Denis VIGNE,  
François BRIOIS et Margareta TENGBERG  
Paris, Société préhistorique française, 2017  
(Séances de la Société préhistorique française, 9), p. 21-45  
[www.prehistoire.org](http://www.prehistoire.org)  
ISSN : 2263-3847 – ISBN : 2-913745-2-913745-69-5

## Klimonas, a late PPNA hunter-cultivator village in Cyprus: new results

Jean-Denis VIGNE, François BRIOIS, Thomas CUCCHI, Yodrik FRANEL,  
Pantelitsa MYLONA, Margareta TENGBERG, Régis TOUQUET, Julia WATTEZ,  
George WILLCOX, Antoine ZAZZO and Jean GUILAINE

**Abstract:** This paper summarizes the main discoveries from the Cypro-PPNA site of Klimonas (Ayios Tychonas, Limassol District, Cyprus) since 2009 and complements the paper published in 2012, which provided the results from the 2011 season (Vigne et al., 2012). Klimonas is located on a sea facing hillslope overlooking a small valley abundant in high quality flints. The material culture is homogeneous and refers to a regional feature dating to the Late PPNA, principally characterized by the absence of bidirectional knapping. Radiocarbon dating indicates human occupation developed here during the first half of the 9th millennium cal. BC.

In terms of buildings, the most striking discovery was a 10 m circular semi-embedded feature (St 10) surrounded by a cob wall set into a circular founding trench. This was interpreted as a communal building, similar to the largest ones discovered in the PPNA villages of Southeast Anatolia and the Euphrates valley. It was most probably covered with a light roof supported by a central post and by ca. twenty-five peripheral paired stakes. A radial partition wall framed by wooden posts might also have contributed to support the roof. In the interior of the building a series of hearths, pits and low peripheral benches with rectilinear edges were discovered, as was a large entrance sited on the opposite side to the dominating winds. This building had been reconstructed/renovated at least four times creating a palimpsest, with the latest layers more or less at ground level. The superimposed edges of the northern benches, and the entrance in successive structures indicated that the general layout of the buildings had not varied during different reconstruction/renovation phases. This paper also presents the first results from the excavation of a 6m circular shaped building, located at the north-west boundary of the archaeological area (St 800); the northern half of which was notched into the hillside while the southern half laid on a levelled embankment. This building displayed a neatly plastered floor and a complex system of features, in particular a cob peripheral wall set into a foundation trench, numerous posts and stake holes, internal smaller trenches delimitating benches or partition walls, and hidden pits containing significant artefacts. In contrast to St 10, we interpreted this building as a domestic one: it was much smaller; was only superficially terraced, rather than deeply sunk and labour intensive; and it appeared to have had a shorter habitation period.

In addition to these two buildings, geophysical surveys and extensive mechanical clearing allowed us to identify the eroded remains of at least thirty-two other buildings with a curvilinear uphill delimitation, covering an area of half a hectare. We suspect that, within this area, the density of buildings was similar to that observed in Sector B in 2015, where a minimum of twenty-three buildings overlapped an area of 400 m<sup>2</sup>. According to our estimates, the size of Klimonas fits the range of most of the PPNA villages of the north Levant.

Archaeobotanical data is scarce. However, together with aspects of the material culture and the micromorphological analyses of the mud used for the walls and floors of the buildings, indications are that the Klimonas villagers were cultivating cereals, especially emmer wheat (*Triticum dicoccoides/dicoccum*) likely introduced from the continent. More than 5,000 animal remains indicate that people were hunting the only large game living on the island at that time: the small wild boar (*Sus scrofa* ssp.), introduced previously to Cyprus by the Epipaleolithic hunters. Domestic dogs (*Canis familiaris*) and commensal cats (*Felis s. lybica*), the latter for catching mice, were living in the village. Marine fish and shellfish were not eaten, though freshwater tortoises and crabs were.

The excavation of Klimonas is ongoing, and will hopefully continue to provide the answers to numerous pending questions.

**Keywords:** Neolithic, PPNA, Cyprus, communal building, early agriculture.

### *Klimonas, un village de chasseurs-agriculteurs du PPNA récent à Chypre : nouveaux résultats*

**Résumé :** Cet article résume les principales découvertes faites sur le site Cypro-PPNA de Klimonas (Ayios Tychonas, district de Limassol, Chypre) lors du diagnostic de 2009 et des quatre campagnes de fouilles qui ont suivi. Il complète l'article publié en 2012, qui ne concernait que les résultats de la campagne 2011 (Vigne et al., 2012).



Klimonas est situé sur un versant de colline qui fait face à la mer et surplombe une petite vallée. Le territoire proche recèle d'importantes ressources en silex d'excellente qualité, qui ont été exploitées tout au long de la séquence d'occupation du site. La culture matérielle est très homogène et renvoie à un faciès régional de la fin du PPNA, principalement caractérisé par des pointes de projectile de type mureybétien et par le débitage de lames unipolaires. Les onze datations au radiocarbone publiées à ce jour indiquent une occupation au cours de la première moitié du IX<sup>e</sup> millénaire avant notre ère, en date calibrée.

En ce qui concerne le bâti, la découverte la plus frappante est une vaste structure circulaire de 10 m de diamètre, creusée sur plus de 1 m de profondeur dans le substratum (St 10). Nous l'interprétons comme un bâtiment communautaire semi-enterré, comparable aux plus vastes des bâtiments communautaires découverts dans les villages PPNA du Sud-Est de l'Anatolie et de la vallée de l'Euphrate. Il était entouré d'un mur de bauge enraciné dans une tranchée de fondation circulaire. Il était probablement couvert d'une toiture légère soutenue par un poteau central et par environ vingt-cinq couples de piquets périphériques. Au moins une cloison radiale soutenue par des poteaux de bois pourrait avoir contribué à soutenir le toit. À l'intérieur du bâtiment, nous avons mis en évidence une série de soles foyères, des fosses ainsi que des banquettes périphériques de terre crue basses et aux bordures rectilignes. Une large entrée latérale était ménagée à l'opposé des vents dominants. Ce bâtiment a été reconstruit ou restauré au moins quatre fois, les nouvelles constructions étant implantées sur les déblais des précédentes, de telle sorte que le dernier état n'était pratiquement plus semi-enterré. La superposition des bordures des banquettes septentrionales des bâtiments successifs, tout comme celle des dispositifs d'entrée, suggère que le plan d'organisation général des bâtiments successifs n'a pas varié de manière fondamentale au fil des différentes phases de reconstruction. Cet article présente également les premiers résultats de la fouille d'un bâtiment de forme circulaire de 6 m de diamètre, situé à la limite nord-ouest de la zone archéologique (St 800). La moitié nord a été entaillée dans le versant, et la partie sud repose sur un remblai de nivellement. Le bâtiment était pourvu d'un sol enduit soigné et d'un ensemble complexe d'aménagements, notamment un mur périphérique de bauge implanté dans une tranchée de fondation, de nombreux poteaux et piquets, de petites tranchées internes délimitant des banquettes ou des cloisons, des fosses cachées (ou de condamnation) comportant des dépôts d'objets remarquables. Nous avons interprété ce bâtiment comme une construction domestique, par comparaison avec le bâtiment communautaire, en raison de sa petite taille, de son implantation sur une terrasse artificielle et non dans un vaste espace décaissé, ce qui a nécessité un investissement de travail beaucoup plus faible, et de son histoire beaucoup moins complexe et probablement plus courte.

Des prospections géophysiques et de vastes décapages mécaniques ont permis d'identifier, en plus de ces deux bâtiments remarquables, les restes (certes parfois très érodés) d'au moins trente-deux autres bâtiments terrassés sur le versant. Leur délimitation amont est systématiquement curvilinéaire. Ils décrivent une zone de 0,5 ha dans laquelle la densité des bâtiments était probablement similaire à celle observée, en 2015, dans le secteur B, où au moins vingt-trois bâtiments se chevauchent les uns les autres sur une surface de 400 m<sup>2</sup>. Selon nos estimations, la taille de Klimonas s'inscrit bien dans la gamme de la plupart des villages du PPNA du Levant nord.

Les vestiges archéobotaniques sont très mal conservés. Cependant, comme le confirment certains aspects de la culture matérielle ainsi que les analyses micromorphologiques de la terre à bâtir utilisée pour les murs et les sols, elles montrent que les villageois de Klimonas cultivaient des céréales, notamment le blé amidonnier (*Triticum dicocoides/dicocum*) qu'ils avaient probablement introduit depuis le continent. Plus de 5 000 restes fauniques indiquent qu'ils chassaient le seul grand gibier qui vivait alors sur l'île, un petit sanglier (*Sus scrofa* ssp.) précédemment introduit à Chypre par les chasseurs épipaléolithiques. Chiens domestiques (*Canis familiaris*) et chats commensaux (*Felis s. lybica*), ces derniers introduits pour lutter contre les souris, vivaient dans le village. Les poissons et les coquillages marins n'étaient pas consommés, contrairement aux tortues et aux crabes d'eau douce.

Les fouilles de Klimonas se poursuivent. Espérons qu'elles permettront de répondre aux nombreuses questions encore en suspens et d'ouvrir de nouveaux champs de réflexion.

**Mots-clés :** Néolithique, PPNA, Chypre, bâtiment communautaire, premières agricultures.

**D**URING THE LAST THIRTY five years, the history of humans in Cyprus had been pushed back by more than 3,500 years. At the end of the 1980s, excavations at Akrotiri-Aetokremnos revealed the presence of Epipaleolithic human groups of fisher-hunter-collectors around 10500 cal. BC (calibrated radiocarbon date Before Christ; Simmons, 1988 and 1999; Vigne et al., 2009; Zazzo et al., 2015; see also Ammerman, 2014). During the following two decades, the gap between this early evidence and the beginning of the Neolithic (i.e. Khirokitia, c. 7000–8000 BP, 7000–6000 cal. BC; Le Brun et al., 1987) was partly filled by the discovery of the remains of the Cypro-PPNB villages at Parekklisha-Shillourokambos, Kissonerga-Mylothkia and Akanthou-Arkosykos (Guilaine et al., 2000 and 2011; Peltenburg et al., 2001; Peltenburg and Wasse, 2004; Şevketoğlu, 2008). During the last decade, new discoveries at Ayios Tychonas-Throubovounos (Briois et al., 2005 and 2013), Agia Varvara-Asprokremnos (Manning et al., 2010) and Ayios Tychonas-Klimonas

(Vigne, Briois et al., 2011; Vigne et al., 2012) revealed the presence, between the end of the 10th and the beginning of the 9th millennia, of early Neolithic human groups pertaining to the PPNA koine. This deeply modified our vision of the PPNA which was primarily considered as a formative period before the PPNB geographical expansion (Goring-Morris and Belfer-Cohen, 2011; see also Hadad, this volume).

However, we still know very little about these Cypro-PPNA human groups. Test excavations conducted at Throubovounos in 2003, by two of the authors (F. B. and J.-D. V.), concluded that large numbers of flint were the only preserved evidence from the original site. The actual site was completely destroyed by the erosion of the hill, however, vast quantities of flint were washed down the slope and trapped in the natural cracks of the clayey bedrock. Due to the lack of more substantial evidence, it is only possible to say that this site's lithic industry was related to the Epi-Natufian tradition (Briois et al., 2005). The second-

ary deposits of flint were subsequently destroyed by a new property development during the winter of 2015.

Concerning the other two Cypro-PPNA sites, the excavations are either just finished (Asprokremnos) or still ongoing (Klimonas), though the processing of the considerable information already collected will take several years. C. McCartney presents an update of the preliminary results for Asprokremnos in this volume (see also McCartney et al., 2008), and convincingly argues that the site was a non-permanent or semi-permanent settlement. Concerning Klimonas, we have already published the preliminary results of the 2009 test excavation (Vigne, Briois et al., 2011) and of the first excavation season (2011: Vigne et al., 2012).

Since then, three six weeks excavation seasons and a geophysical survey (Benech and Tabbagh, this volume) have been conducted, which have considerably increased our knowledge of the site and of the Cypro-PPNA. This paper aims to provide a brief overview of the main results and of the pending questions.

## GENERAL PRESENTATION

### Location

Klimonas is located at the northeastern edge of Limassol's coastal basin, southern Cyprus, near the village of Ayios Tychonas (fig. 1), 137 m asl. It is dominated by a small cliff to the north, and Throumbouvounos hill to the west. Both Throumbouvounos and Klimonas are located in the small valley of Athiaki<sup>(1)</sup>, the rich flint and chert benches of which have been exploited from the Pre-Pottery Neolithic until the 20th century AD (Briois et al., 2005; Briois and Guilaine, 2013). This flint has been found in large quantities in the Cypro-PPNB site Shillourokambos, which is located approximately 2.5km to the north of Klimonas. The quality and abundance of flint in the Athiaki valley, and in some of the neighboring valleys, explains the abundance of Neolithic sites in this area (Briois et al., 2005).

Because it faces the sea, which is ca. 2 km further to the south, the gentle and naturally terraced Klimonas slope (fig. 2 and 3; Mylona, Devillers et al., this volume) represents a privileged location in the landscape. This explains both its frequentation during the Neolithic, and the high pressure of building development in this area during the last decade; the latter creating an urgency to excavate the site and rescue as much archaeological information as possible.

### Brief overview of the discovery and study of the site

The abundant flint industry, covering a substantial percentage of the Klimonas slope, allowed C. Petit-Aupert and collaborators to detect the presence of an important Prehistoric site, whilst carrying out a systematic survey of the Amathous region in 1989 (Briois et al., 2005). In

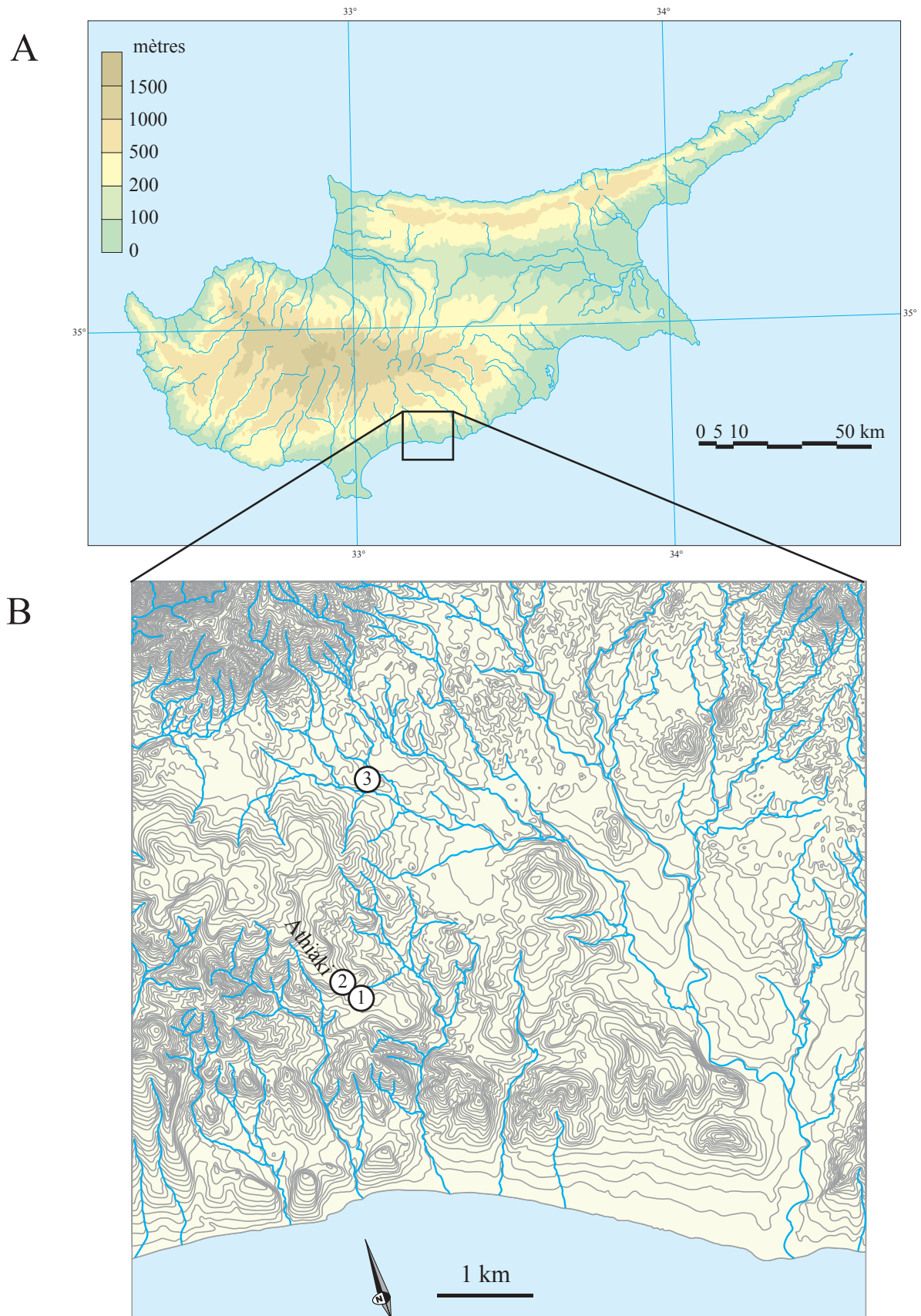
2009, eleven test trenches revealed the presence of generally well preserved Cypro-PPNA deposits dating to the 10–9th millennia transition. “The bottom of one of the test excavations (168.5) evidenced an archaeological feature dug at the expense of the substratum [...] with a right angled floor and wall, the latter being lined by a channel” (Vigne, Briois et al., 2011).

This was confirmed during the first season of excavation in 2011 when the southern half of a large circular semi-embedded building, 10 m in diameter, was discovered (fig. 4), and immediately identified as a PPNA-like communal building (Vigne et al., 2012). The 2012 season allowed us to excavate the northern half of the building, and a complex mud and stone device which probably corresponds to its entrance. In 2014, test excavations east and north of the area occupied by the communal building (central sector) suggested rich PPNA accumulations in these peripheral areas (fig. 5). An extensive geophysical survey (Benech et al., this volume) followed by large mechanical clearing (fig. 2), west and south of the central sector, allowed us to delimitate the extension of the preserved PPNA village, and to identify three new buildings: a rather well preserved 6 m one at the north-western corner (St 800; F Sector), and two other badly eroded ones at the south-western corner (B1 and B2; B Sector), just down from the main terrace of the site. The 2015 season allowed us to achieve the excavation of St 800 and discover the remains of more than twenty buildings in a 400 m<sup>2</sup> trench, which we opened in B Sector between the communal building and B1-B2.

### Material and symbolic culture

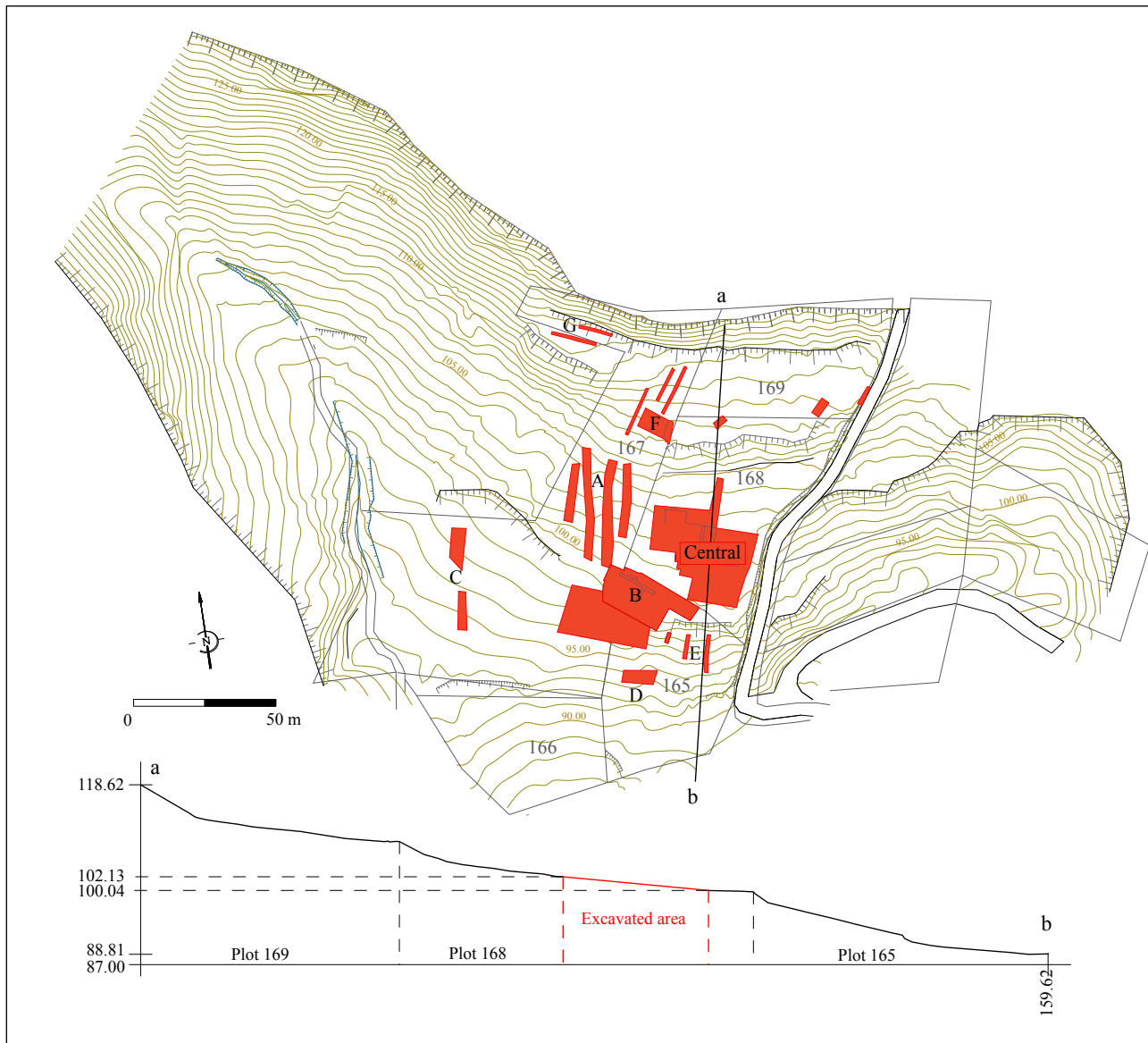
Inside the mud of the floor and walls, and in the sediments which secondarily filled the abandoned buildings, we found an abundance of items. Flint represented the majority of it, and was especially abundant in the communal building with more than one ton recorded for each excavation season. The flint industry is characterized by unidirectional knapping primarily devoted to the production of small blades with an axial rib, a good deal of which were used for making arrow heads in the Mureybetian tradition (Briois et al., 2013; Briois and Astruc, this volume). Only three obsidian bladelets and one blade were found. The presence of several stone shaft-straighteners confirms that the Klimonas material culture closely refers to the PPNA koine: their decoration, with hatchings and criss-cross patterns, parallels that of Tell Abr' in the Euphrates valley (Yartah, 2004, p. 156). Stone macro-tools were also numerous and included abrasion tools, polishers, mortars, pestles, querns, mullers, hammerstones, grinders, *retouchoirs* as well as non-modified, but certainly used, pebbles or blocks (Robitaille, this volume).

We also found a large series of body ornaments (Rigaud et al., this volume); primarily marine shells, collected from the beach thanatocenosis or from the nearby Pleistocene emerged fossil beaches, and various other stone objects, especially the local green picrolite.



**Fig. 1** – Location of (1) Klimonas, in the Athiaki valley, near (2) Throumbouvounos and (3) Shillourokambos (CAD A: M. Sauvage, CNRS; B: P. Devèze).

**Fig. 1** – Localisation de (1) Klimonas, dans le vallon d’Athiaki, près de (2) Throumbouvounos et de (3) Shillourokambos (DAO A: M. Sauvage, CNRS; B: P. Devèze).



**Fig. 2** – Digital field model of the Klimonas site with the delimitation of the areas cleared from 2009 to 2015 (in red). Altitudes are given in relation to level 0 of the site, arbitrarily set at +100 m asl in 2011, and measured at 137.2 m in 2012. The capital letters A to G indicate the different excavation sectors, as well as ‘central’ (drawing and CAD R. Touquet).

*Fig. 2* – Modèle numérique de terrain pour le site de Klimonas montrant la délimitation des surfaces décapées entre 2009 et 2015 (en rouge). Les altitudes sont mesurées par rapport au point zéro du site, fixé arbitrairement à l’altitude + 100 m en 2011, et mesuré à + 137,2 m en 2012. Les lettres capitales A à G désignent les différents secteurs de fouille, ainsi que la mention « central » (dessin et DAO R. Touquet).

In general, macro-tools and ornaments often bear marks of colouring. The discovery here of numerous small and large fragments of colouring stones (e.g. ochre, hematite, malachite), testifies that colours played an important role for the Klimonas villagers, as they did for the Asprokremnos people (McCartney et al., 2008). A symbolic element is documented by several conic artefacts made out of the local chalky limestone (fig. 6). Some of them are divided transversally into two or three separate parts by one or two grooves carved around the cone. Such partitions have previously been discovered in numerous examples of Cypriot Neolithic stone figurines, but they also support the interpretation of a phallic representation. They do

appear to be similar to the conic stone objects of both the south and north Levant PPNA (Aurenche and Kozłowski, 1999, p. 45 and 211), though more concise parallels can be drawn with objects from Mureybet, interpreted by J. Cauvin (1997, p. 48-49) as feminine statuettes. However, due to the diversity of these objects, we must await further evidence before proposing a more well-defined interpretation.

We also found, in the benches and in the bottom of the communal building, five small fragments of human cranial roof and two fragments of jaw, most of which had been deposited in small pits. These skull fragments were the only human remains found at the site. Such a pattern



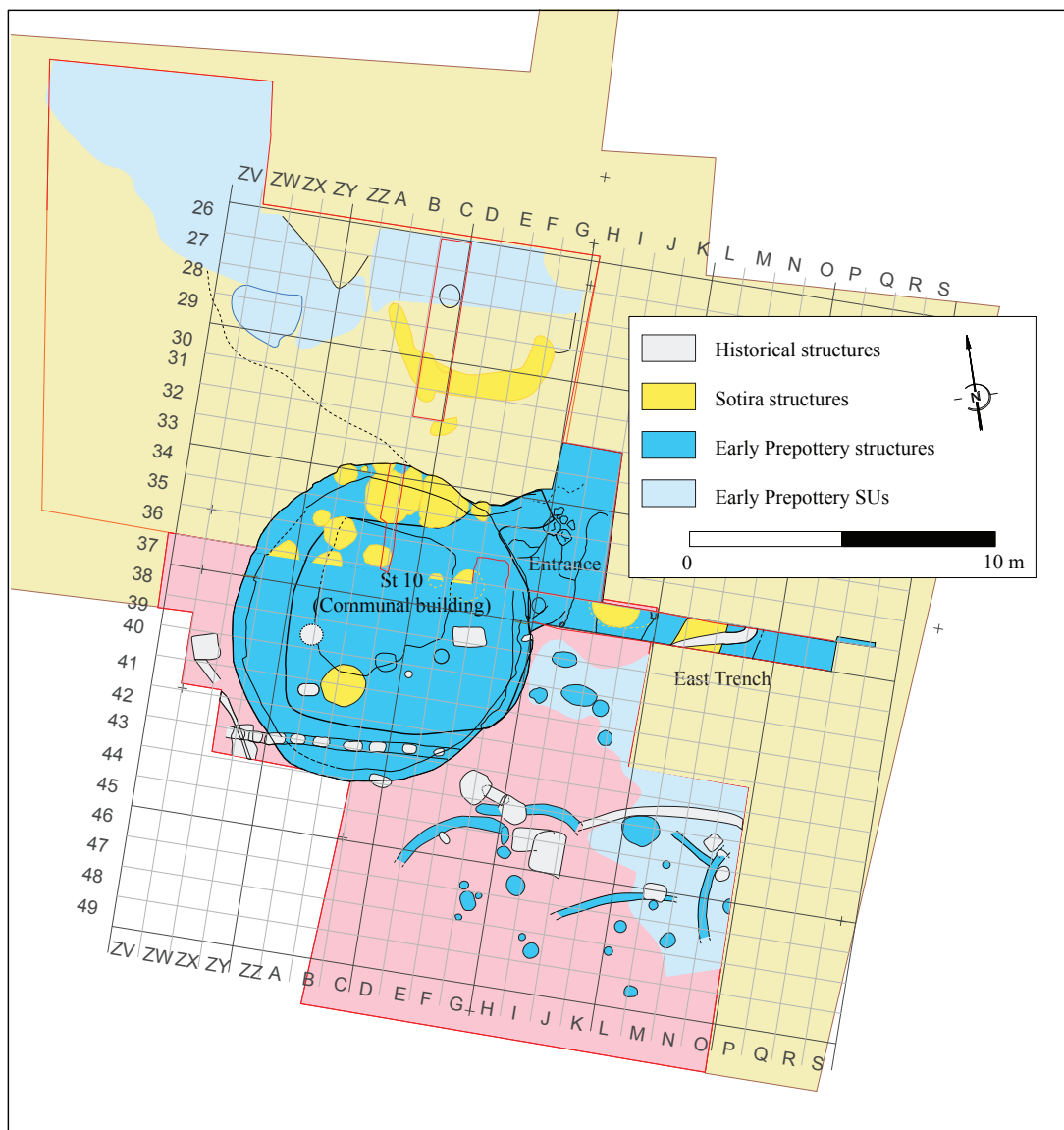
**Fig. 3** – General view of the Klimonas slope taken from the top of the Throumbouvounos hill, in an easterly direction, during the 2015 excavation season. One can distinguish Trench F (building St 800) on the upper terrace, and Trench B down to the middle terrace (photo J.-D. Vigne).

*Fig. 3 – Vue générale du versant de Klimonas, prise depuis le sommet de la colline de Throumbouvounos, en direction de l'est, pendant la campagne de fouille de 2015. On peut voir le secteur F (bâtiment St 800), sur la terrasse haute, et le secteur B, en bas de la terrasse moyenne (cliché J.-D. Vigne).*



**Fig. 4** – General view of the communal building of Klimonas taken from east to the west at the end of the 2011 excavation season. The building is 10 m in diameter. The line of pits on the left corresponds to cultivation pits dating to historical times. The round pit to the right of it, is a ceramic Neolithic silo. The large rectangular excavation in the foreground is test pit 168.5, excavated in 2009. In the background, the Throumbouvounos hill and, just behind, the Athiaki valley (photo J.-D. Vigne).

*Fig. 4 – Vue générale du bâtiment communautaire de Klimonas, prise d'est en ouest à la fin de la campagne 2011. Le bâtiment mesure 10 m de diamètre. L'alignement de petites fosses à gauche correspond à des fosses de culture d'époque historique. La grande fosse circulaire à droite de ces dernières est un silo datant du Néolithique à céramique. La grande fosse rectangulaire au premier plan renvoie au sondage 168.5, pratiqué en 2009. À l'arrière-plan, la colline de Throumbouvounos et, derrière elle, le vallon d'Atihiaki (cliché J.-D. Vigne).*



**Fig. 5** – General map of the central area of the site, excavated in 2011–12 (drawing R. Touquet; CAD R. Touquet and J.-D. Vigne).

**Fig. 5** – Plan général du secteur central du site, fouillé en 2011-2012 (dessin R. Touquet; DAO R. Touquet et J.-D. Vigne).



**Fig. 6** – Conic artefacts made out of local chalky limestone, which represents either a figurine or a phallic object (KL-14, F22, St 857, building St 800; photos J. Robitaille; CAD F. Briois).

**Fig. 6** – Artefact conique en calcaire crayeux local, représentant une figurine ou un objet phallique (KL-14, F22, St 857, bâtiment St 800; clichés J. Robitaille; DAO F. Briois).

is similar to the ones found in numerous northern Levant PPNA sites such as Jerf el Ahmar (Stordeur, 2015).

### Dating the occupation of the village

Eleven radiocarbon dates were obtained, ranging from the late 9th to the middle 8th millennium cal. BC, similar to those obtained from Asprokremnos (Vigne et al., 2012). S. W. Manning (2014) proposed using the Bayesian processing method to compare the radiocarbon dates from both sites. This confirmed their contemporaneity and suggested a relatively short period of occupation in Klimonas (c. 100 years), around 8800 cal. BC. However, this result is questionable for two reasons: the Bayesian model was not well supported by the limited and unvalidated dataset, with reference to the field observations; and it included only the communal building rather than the entire village. Nevertheless, both the material culture and the radiocarbon dates clearly indicate that Klimonas was occupied during the late PPNA.

## THE COMMUNAL BUILDING(S) IN STRUCTURE ST 10

### Strategies and methods

The communal building is located in the central sector of the site (fig. 2). Its obvious importance, as well as the magnitude and complexity of the infill, warranted intensive excavation and analysis which we undertook in two stages, 2011 and 2012; the aim being to record both the primary architecture of the building and its successive

modifications. In examining the long-term evolution of the building, we combined both spatial and horizontal excavations with the provisional preservation of the vertical stratigraphic indicators (i.e. sections, berms). By 2011, the southern two-thirds of the edifice were unearthed. This enabled us to access the east-west diametric section of the structure's total infill, while a provisional perpendicular berm, along the north-south axis, allowed for a complementary north-south diametric stratigraphic profile. This approach, associated with cautious horizontal clearings, brought to light a superimposition of structures and layers composed of the material produced by demolition. The successive steps of the life of the edifice were therefore recorded in minute detail with sections retained as evidence of these diverse episodes.

We had aimed to fully excavate this exceptional building by 2013; however, as the landowner would not provide authorisation for us to continue, and because the Cypriot Government was unable to acquire the plot as planned, because of unfavourable politico-economic contexts, we were not able to carry out this plan.

### General organisation of the primary building

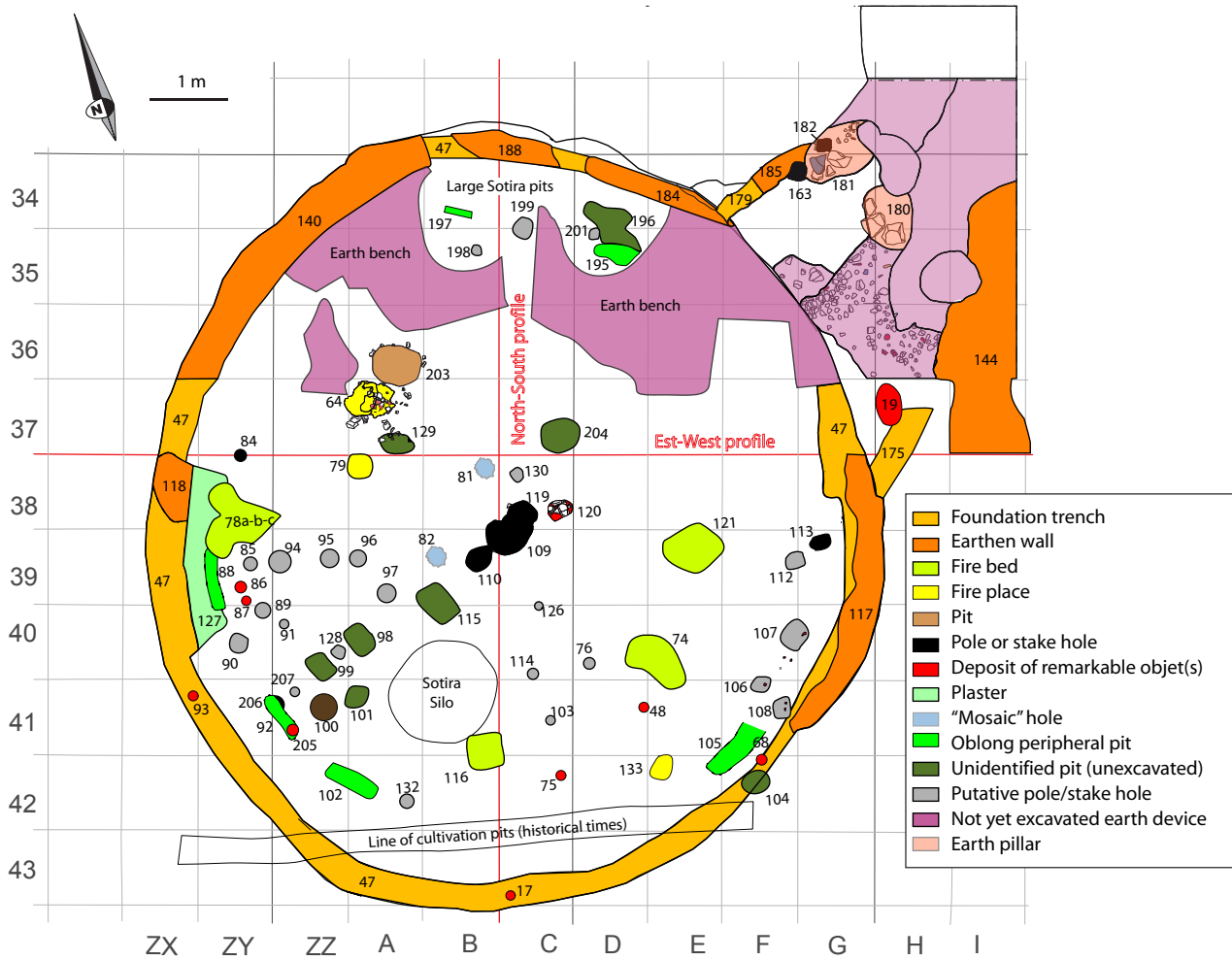
Consequently, the majority of the southern half of the primary building's features (previously described in Vigne et al., 2012) remain unexcavated; and the lower part of the filling from the northern half, fully excavated in 2012, only partially understood. Therefore, we can only provide a brief general description here of the initial building.

The initial building (building 1) was circular, with a diameter of 10 m (i.e. a surface of 78.5 m<sup>2</sup>; fig. 7 and 8). It had been dug into the local calcrete ('havera') and



**Fig. 7** – Sub-zenithal photo of the communal building (St 10) and its entrance device (upper left), taken at the end of the 2012 excavation season. The yardstick measures one meter long. North is to the left (photo M. Azéma, Passé simple).

**Fig. 7** – Vue sub-zénithale du bâtiment communautaire (St 10) et de son dispositif d'entrée (en haut, à gauche), prise à la fin de la campagne de fouille 2012. La mire mesure 1 m. Le nord est situé vers la gauche (cliché M. Azéma, Passé simple).



**Fig. 8** – Map of the features observed at the bottom of the communal building of Klimonas (St 10). The numbers indicate structures St (drawing and CAD R. Touquet, Y. Franel, J.-D. Vigne).

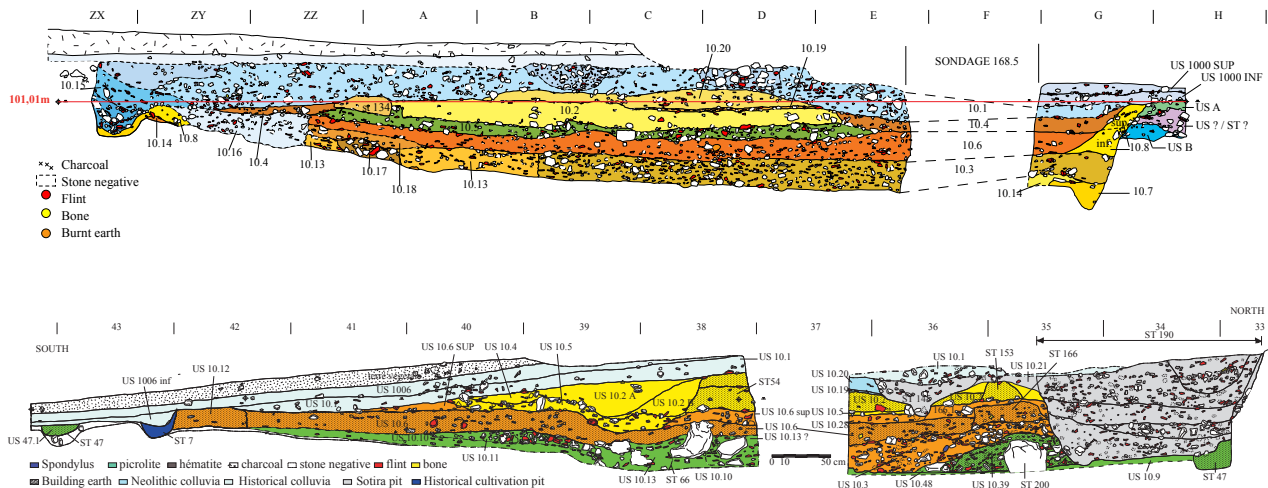
**Fig. 8** – Plan des structures observées au fond du bâtiment communautaire de Klimonas (St 10). Les numéros désignent les structures St (dessin et DAO R. Touquet, Y. Franel, J.-D. Vigne).

other carbonated colluviums of Late Pleniglacial age (Mylona, Devillers et al., this volume). The erosion of the slope during the Holocene removed all contemporaneous deposits from outside of the building, bar a small surface to the east. Here, the foundations of St 10 appear to have been 1 m deep, with reference to the PPNA exterior occupation level, though it is possible that they were deeper than that in the uphill (northern) area, and shallower in the downhill (southern) limit of the building. However, the latter was most probably also dug into the substratum, at least by some tens of centimetres. We can conclude that it was completely semi-embedded. The lower northeast quadrant is flat, but up to 70 cm higher in the southern half and in the west (fig. 9a and 9b), forming a low bench which is wide in the south and narrower in the west. We estimated the excavated volume to be a maximum of around 70 m<sup>3</sup> (Vigne et al., 2012).

The excavated surface was surrounded by a 30 cm wide and 30 cm deep peripheral trench, acting as a base for the earthen wall pressing against the enchasing substratum. On the east and west sides, the wall abruptly widens to 50 cm

in the ZX/40 and G/38 squares (see fig. 8). It was built out of cob formed by a connection of hand-shaped earth balls, compacted while still humid (Mylona, Watzet et al., this volume). In the southernmost part, which was the shallowest, the wall had completely vanished due to bioturbations. The southernmost part of the peripheral trench was much eroded for the same reasons; therefore, it was not possible to ascertain that it had not been interrupted on a short distance. Numerous significant artefacts had been deposited inside the peripheral wall during the course of its construction (i.e. pendants, beads, large arrow heads, long flint blades, mullers covered with ochre). In the rest of the periphery, the wall was better preserved though it has been damaged sporadically in the northern area by more recent pits. To the east (G/38-41) and to the north-east (E-F/34), the limits of the excavation had been slightly widened and the wall has been reconstructed at least once (St 117 and St 184 on fig. 8). This peripheral wall is in a similar position to the retaining walls of the PPNA sunk buildings of Jerf el-Ahmar (Stordeur, 2015) but, possibly due to the relative sturdiness of the substratum, it was much less robust:





**Fig. 9** – Diametric east-west (a) and north-south (b) profiles of the communal building of Klimonas showing the successive phases of reconstruction: ‘building 1’ (green; 10.3, 10.7, 10.13, 10.14), ‘intermediate building’ (orange; 10.6, 10.8), ‘building 2’ (yellow; 10.2, 10.4, 10.5), ‘upper building’ (beige; 10.19, 10.20; drawing Y. Fanel; CAD Y. Fanel, C. Martin, [CNRS], J.-D. Vigne).

**Fig. 9** – Coupes est-ouest (a) et nord-sud (b) du bâtiment communautaire de Klimonas, pratiquées selon les diamètres de la structure et montrant les phases successives de reconstruction : « bâtiment 1 » (vert ; 10.3, 10.7, 10.13, 10.14) « bâtiment intermédiaire » (orange ; 10.6, 10.8), « bâtiment 2 » (jaune ; 10.2, 10.4, 10.5), « bâtiment supérieur » (beige ; 10.19, 10.20 ; dessin Y. Fanel ; DAO Y. Fanel, C. Martin [CNRS], J.-D. Vigne).

made purely of mud with no stones or wood poles. It was possibly prolonged above the level of the soil to constitute the delimitating wall of the elevated part of the building; however, it seems too fragile to have played a significant role for supporting a 78 m<sup>2</sup> roof.

To the northeast, on the opposite side to the prevailing marine winds, both the peripheral wall and the vertical delimitation of the circular excavation were interrupted over a 3 m long section. Two short external and radial portions of wall (St 175 and St 179) delimited this interruption. Here, we found a floor built on a structured stone surface sloping slightly towards the interior of the building. We interpreted this sophisticated device as a lateral entrance; a hypothesis which could not be definitively confirmed because it was overlapped by a series of later earth constructions, probably created to reduce the width of the entrance, and which obscure the initial device. Such a lateral entrance is reminiscent of the PPNA communal buildings of Wadi Faynan in Jordan (Flohr et al., 2015) and the Palmyra region (Abbès, 2014), though interestingly the Dja’de communal building also shows a lateral entrance (Coqueugniot, 2014); however, the roof entrances have only been evidenced in buildings of the Euphrates valley (Stordeur, 2015).

A series of post holes, and putative post holes (i.e. not excavated), were identified in the floor; three of them are located in the centre of the circle (St 109, 110, 119; fig. 8) and correspond to contemporaneous or successive central poles; between four and seven of them are grouped within a restricted surface in the ZY-A/39 area, and may have supported a radial partition wall; and finally, several pairs of stake holes were found in the two oblong peripheral pits already excavated (St 92 and St 112-113), suggesting similarities with the remaining unexcavated oblong peripheral pits (St 102, 105,

127, 195, 197). This evidence indicates that the building was probably covered with a light roof, supported by the central pole hole(s), by a series of twenty to twenty-five peripheral pairs of stakes positioned 50 cm inside the peripheral wall, and also probably by at least one partition wall built on a wooden frame.

We also identified three small hearths and four more elaborated rubefied fire beds which seemed to be arranged in an internal circle, and numerous 5-30 cm large pits dug into the floor of the building. Some of them contained deposits of significant objects (i.e. beads, pendants, arrow heads, flint cores). Two of the pits were ‘mosaic’ pits: semi-hemispheric bowls, the bottom of which was covered with joint polyhedral knapped stone of sandstone or limestone which play a role similar to the ones of the tessera in the mosaics. The majority of the pits and pole holes were not excavated.

In the northern half, partly destroyed by two large Pottery Neolithic pits dating to the Sotira period, we found a large earth bench built on top of a thick stone floor, which was itself laid on the primitive floor of the building (fig. 8). As we could not finish the excavation of these benches, we cannot decide if they were part of the primitive building or simply a further stage in its development.

### Successive developments, restorations or reconstructions of the building

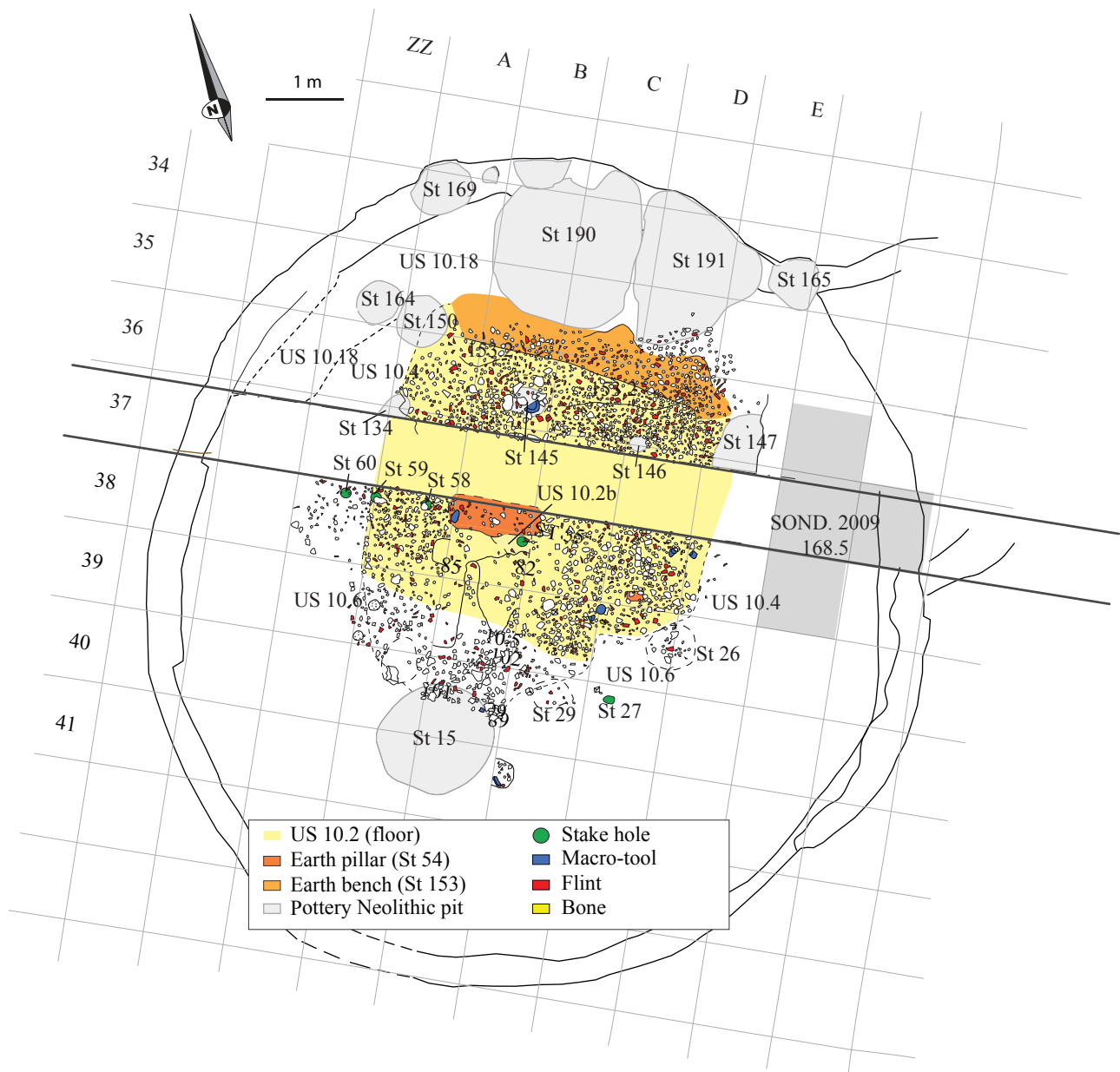
Unfortunately, strong erosion in the southern part of the large St 10 pit, plus several large deep pits dug during the Sotira period (fig. 7 and 8) obscured most of the peripheral areas or the Cypro-PPNA sedimentary accumulation and earthen facilities. However, the east-west and north-south diametric profiles of St 10 have allowed us to

understand the fundamentals of the building’s evolution (fig. 9a and 9b).

In addition to the primitive building phase, building 1, which may have actually included two different phases of development (the second one being possibly represented by the northern earthen benches), we recognized at least three additional phases of superimposed built earth accumulations, which ended at the almost terminal fill of St 10. The 2012 excavations revealed that building 2, that we initially interpreted as a domestic building of much smaller dimensions than building 1 (Vigne et al., 2012), was probably a earthen floor laid on top of a stone layer in the polygonal central part down to peripheral earthen low benches; this device represents a later stage of the communal building’s reconstruction superimposed on building 1. Indeed, at the northern limit of this floor, we

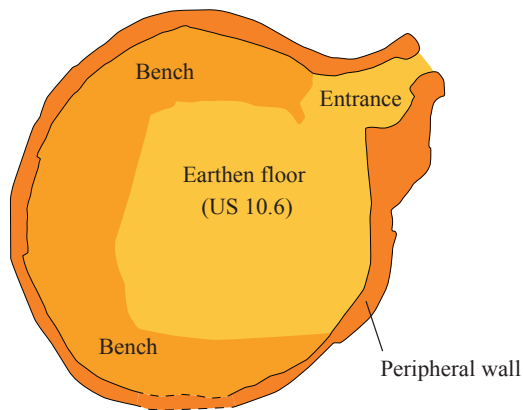
discovered the rectilinear edge of a 5-30 cm high earthen bench (St 153; fig. 10) which probably extended northwards to the peripheral wall, and which has unfortunately been destroyed by the two large Sotira pits (St 190 and 191). Nothing precludes building 2 having been extended within the same area as building 1.

During the 2012 season, it became apparent that the 20 cm thick earthen layer, which separated building 1 from building 2, was not laid for levelling “the irregular basin that was formed by the destruction of building 1” as we had initially proposed (Vigne et al., 2012). Here again, the horizontal floor was delimited to the north by the rectilinear edge of a low earthen bench, corresponding to an intermediate phase of the communal building’s development/reconstruction that we called the ‘intermediate building’ (fig. 11). We were able to establish strati-



**Fig. 10** – Map of features representative of building 2 (drawing and CAD R. Touquet, Y. Franel and N. Delsol).

**Fig. 10** – Relevé planimétrique des structures du bâtiment 2 (dessin et DAO R. Touquet, Y. Franel et N. Delsol).



**Fig. 11** – Hypothetical reconstruction of the communal building during the intermediate building phase (CAD J.-D. Vigne).

**Fig. 11** – Reconstitution hypothétique du bâtiment communautaire durant la phase intermédiaire (DAO J.-D. Vigne).

graphic connections between this phase and a recharge of the walls around the entrance area, probably when the breadth of the entrance was reduced to 1 m.

In addition, we evidenced the potential presence of a later phase of building laid on the remains of building 2, enabled by the much eroded earthen layers of US 10.19 and 10.20 (fig. 9a).

It seems that the primitive building was restored/reconstructed between three and four times, and that these different development phases were superimposed without removing the remains of the earlier constructed earthen features. Unfortunately, the data is too fragmentary to fully discuss the successive modifications to the architectural device. We can, however, assess that the southern delimitation of the northern earthen bench was located at approximately the same distance from the northern peripheral wall in building 1, the intermediate building and building 2, and that the north eastern entrance was remodelled between the two first phases, but with no structural change. This suggests that the fundamental pattern of the building was not drastically modified between renovational phases. This is also attested to in the micromorphological analyses (Mylona, Wattez et al., *this volume*) which confirms a strong sedimentological continuity between the successive stratigraphic units accumulated in St 10. These successive renovation/reconstructions are, therefore, simply different episodes within the same building; suggesting a rapid turnover and a relatively short period of utilisation which would accord with the proposal of c. 100 years by S. W. Manning (2014). It is anticipated that ongoing geoarchaeological and radiocarbon analyses will provide further information concerning this.

### Preliminary comparisons

It would be unfeasible to attempt a thorough comparison with the numerous communal and contemporaneous buildings from the continent within this paper (for more details and reflections on this topic see Hadad, *this volume*).

However, a rapid overview reveals that this communal building was much wider than most of the ones of the north Levant, the diameters of which fluctuate between 5–6 m in the Palmyra area (Abbès, 2014; Stordeur, 2015), 5–8 m in the Jezireh and the high valleys (Qermez Dere, Hallan Çemi, M'lefaat, Nemrik, Kortik Tepe: Betts et al., 1989; Kozłowski, 1989; Watkins, 1990; Kozłowski et al., 1998; Rosenberg et al., 1998),<sup>(2)</sup> and 7–8 m in the middle Euphrates valley (Mureybet, Jerf el Ahmar, Dja'de: Stordeur et al., 2000; Ibañez, 2008; Coqueugniot, 2014; Stordeur, 2014 and 2015). The only exceptions in the north Levant are Tell Abr' where the (heavily eroded) communal building was potentially up to 10–12 m in diameter (Yartah, 2004 and 2005) and the 15–20 m wide buildings, D and maybe C, of Göbekli (Schmidt, 2000). However, the communal building of Klimonas is not so large when referencing the south Levant (Bar-Yosef et al., 1991; Aurenche and Kozłowski, 1999; Goring-Morris and Belfer-Cohen, 2011 and 2014) especially if we consider the giant communal 20 m building of Wadi Faynan in Jordan (Mithen et al., 2011). Despite this the presence of benches and pillars suggests a closer connection with the north than the south, according to O. Aurenche and S. K. Kozłowski (1999).

The more or less radial symmetry of the building and the presence of peripheral low benches describing a polygon, are reminiscent of the communal buildings of the PPNA/PPNB phase of transition (-II/E, I/W) at Jerf el Ahmar (Stordeur, 2015), as well as the ones of the Palmyra region (Abbès, 2014). The similarity to the latter is strengthened by the lateral entrance. But there are also numerous peculiar characters (thin and fragile peripheral wall, light roof, superimposition of the successive buildings, possible partition wall) which may be peculiar to the Cypro-PPNA.

## FIRST INSIGHTS INTO THE TERRACED DOMESTIC BUILDING (ST 800)

### Brief description

Building St 800 is a circular structure with a diameter of 6 m (fig. 12 and 13), located at the northwestern limit of the preserved extension of the PPN village in F sector (fig. 2). Its northern half (uphill) was excavated to at least 70 cm into the havara substratum (fig. 14), which was covered by thin Pleistocene colluviums. The floor was carefully levelled and neatly plastered.<sup>(3)</sup> To the south, the downhill half was settled on the sub-vertical benches of the Lefkara chalky limestone and was severely eroded; however, it appears to have been levelled using the crushed havara extracted from the northern section (fig. 15). This circular area was surrounded by a 30 cm peripheral foundation trench, which was filled with the remains of a cob wall in the northern half. The extension of the peripheral trench to the southern half (bar a 1.4 m interruption to the south) leaves no doubt that the earthen peripheral wall was extended to this part of the building. Sadly, this has completely dis-



**Fig. 12** – Sub-zenithal view of building St 800 at the end of the excavation, taken from the south. On the right, the limits of two other buildings (St 906 and 907) are visible (photo J.-D. Vigne).

*Fig. 12 – Vue subzénithale du bâtiment St 800 à la fin de la fouille, prise depuis le sud. Sur la droite, on remarquera la limite des deux bâtiments St 906 et 907 (cliché J.-D. Vigne).*

appeared due to its shallowness, with reference to the modern arable soil and intense bioturbations; however, the foundation trench is interrupted to the south, suggesting a lateral entrance.

A complex system of paired/singular posts in the southern half, both inside and outside<sup>(4)</sup> the building and in the peripheral wall itself (fig. 13), as well as the strong and deeply struck (70 cm; fig. 14) central post, points towards a roof cover of unknown height and shape. Some of the biggest posts were extracted at the end of the house's occupation. The interior is structured by five trenches, smaller than the peripheral one. Two of them are narrow and lined with alternating stake holes on both sides of the trench (St 860 and 919; fig. 13); these were interpreted as trenches for bench nosing made out of stone slabs or wooden boards. Interpretation of the other three is more difficult, but it seems that at least one of them (St 882-853) can be justified as the foundation trench of an eastern partition wall, due to the presence of two big post holes; suggesting that the house was separated into two distinct spaces (fig. 15).

We also found numerous significant artefacts secreted in the walls and in some of the pits; two hearth beds; numerous, often coupled, stakes holes; a complex arrangement of earth layers in the northeast quadrant and a series of pits, some of which were filled during the PPN occupation of the building. Further analyses of the excavation record will allow us to propose more precise interpretations.

### Comparisons and preliminary interpretation

Like the communal building (St 10), St 800 is circular in shape, partially buried, encircled by an earthen wall built

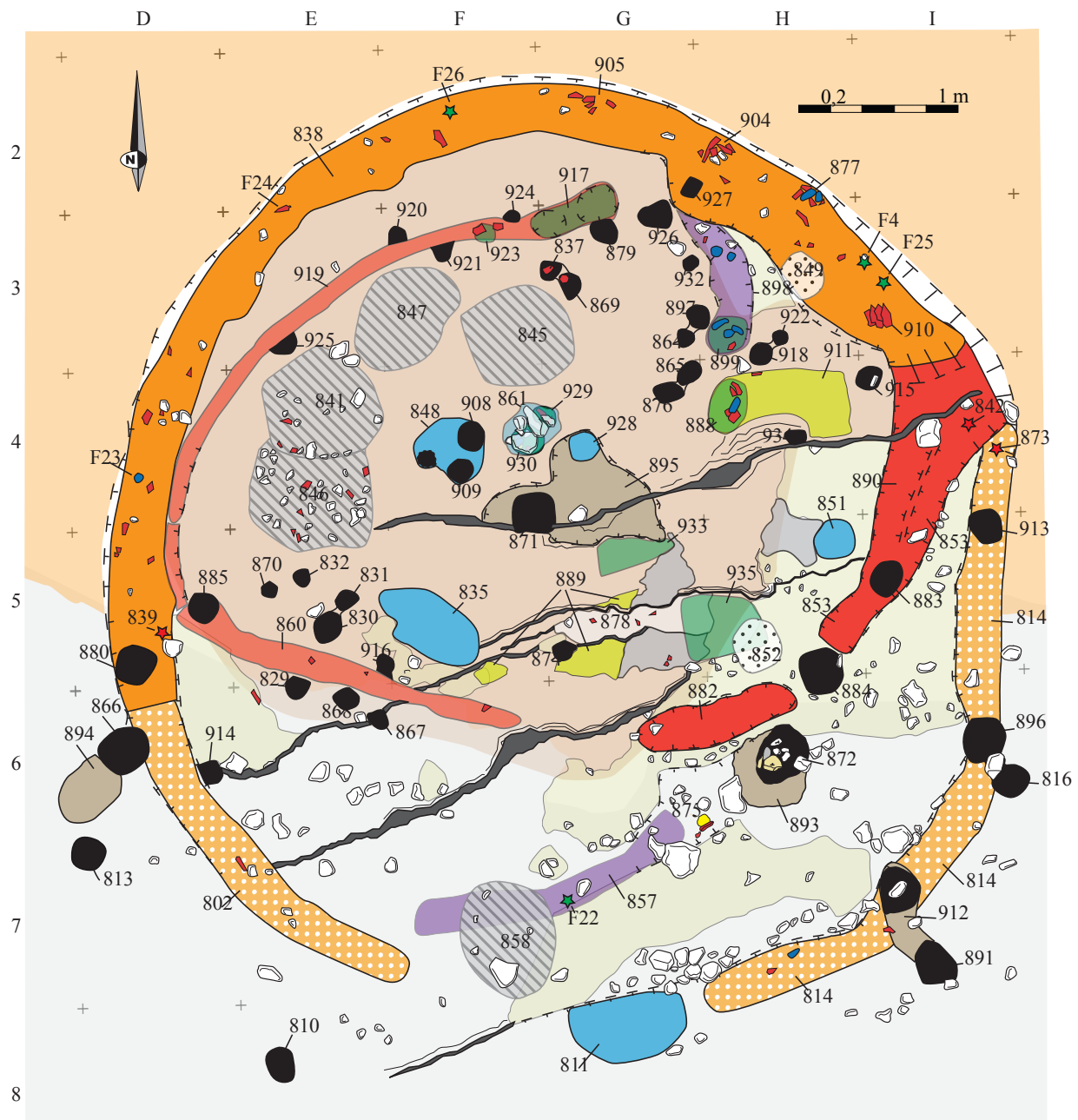
on a peripheral foundation trench around a central post, and characterized by a number of foundation deposits hidden in the walls and floor. However, the two buildings also display distinct differences:

- their size, a diameter of 10 m (or 78 m<sup>2</sup>) for St 10 as opposed to 6 m (or 28 m<sup>2</sup>) for St 800;

- the investment required for their construction: St 10 was dug into the 'havara' and ancient carbonated colluviums and forms a vast cylindrical pit with an estimated volume of 70 m<sup>3</sup>; St 800 is not a sunk building, but rather a terraced building: it was constructed horizontally in the gentle slope by notching the 'havara' and partially backfilling the slope to the south; the total excavation volume is estimated to have been between 5 and 10 m<sup>3</sup>;

- the duration and complexity of the occupations: St 10 clearly displays at least four phases of construction/reconstruction; St 800 might have undergone reorganization during its existence (e.g. adding partitions, post holes), but these modifications were not equivalent to the reconstruction shown by the reloaded earth on the walls of St 10, or on the superposed floors of the intermediate building or building 2.

These observations suggest that, contrary to St 10, St 800 was a domestic building, comparable in size with the non-communal buildings of numerous sites of the north and south Levant (Aurenche and Kozłowski, 1999). The laying out of a terrace is something which is also known from several sites of the northern (e.g. Jerf el-Ahmar; Stordeur, 2014) and southern Levant (e.g. Nahal Oren; Noy et al., 1973). The delimitation of the benches with stones slabs has previously been observed on several Middle Euphrates valley sites, but only for communal



#### Fundation trenches and walls

- North earth peripheral wall
- Southern peripheral trench
- Eastern partition wall
- Bench nosing trench
- Shallow trench

#### Floor

- Plaster on calcrete
- Plaster on earth (US 800.23)
- Fire bed
- Collapse into a tectonic break

#### Holes and pits

- Pole or stake hole
- PPNA pit
- Hidden PPNA pit
- PPNA pit for pole extraction
- Sotira pit
- Historical pit

#### Substratum

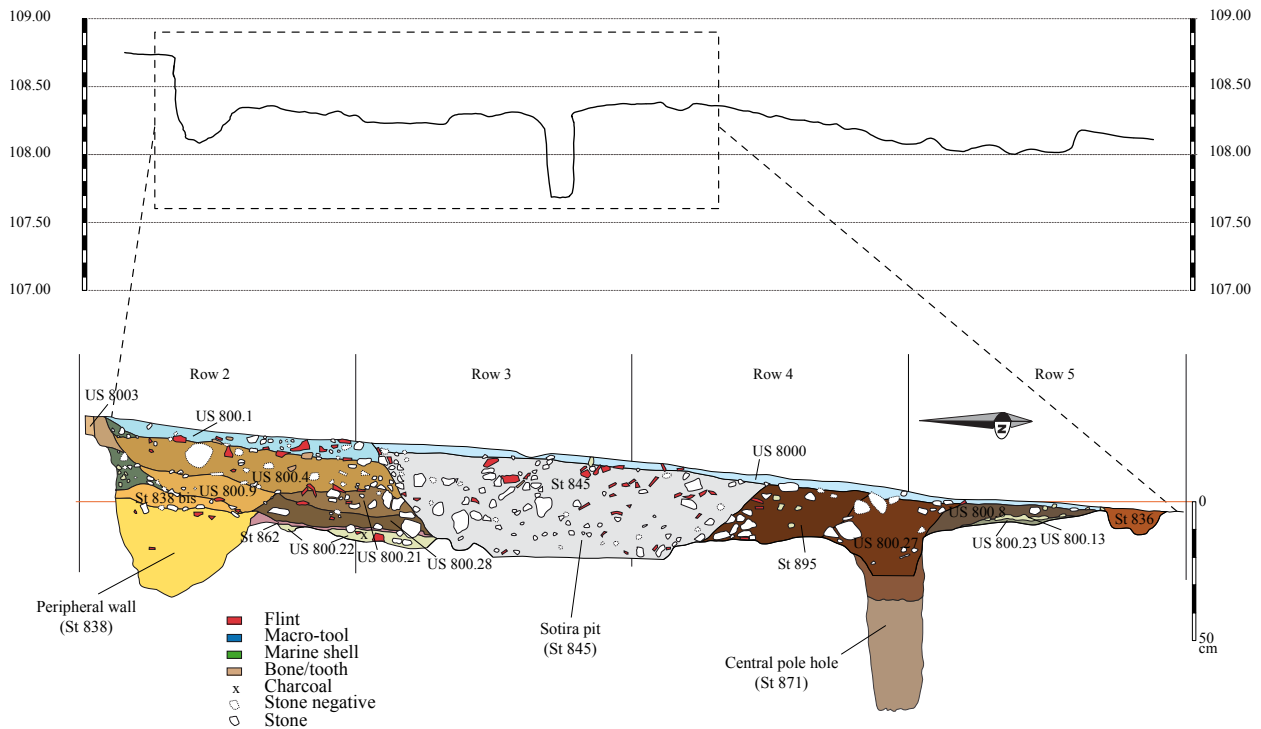
- Pleistocene colluvium (US 8003)
- Calcrete in secondary deposit (Havara)
- Lefkara chalky limestone
- Diaclases and breaks

#### Objects

- Flint
- Macro-tool
- Ochré
- Significant blade deposit
- Other remarkable deposit
- Stone negative
- Stone

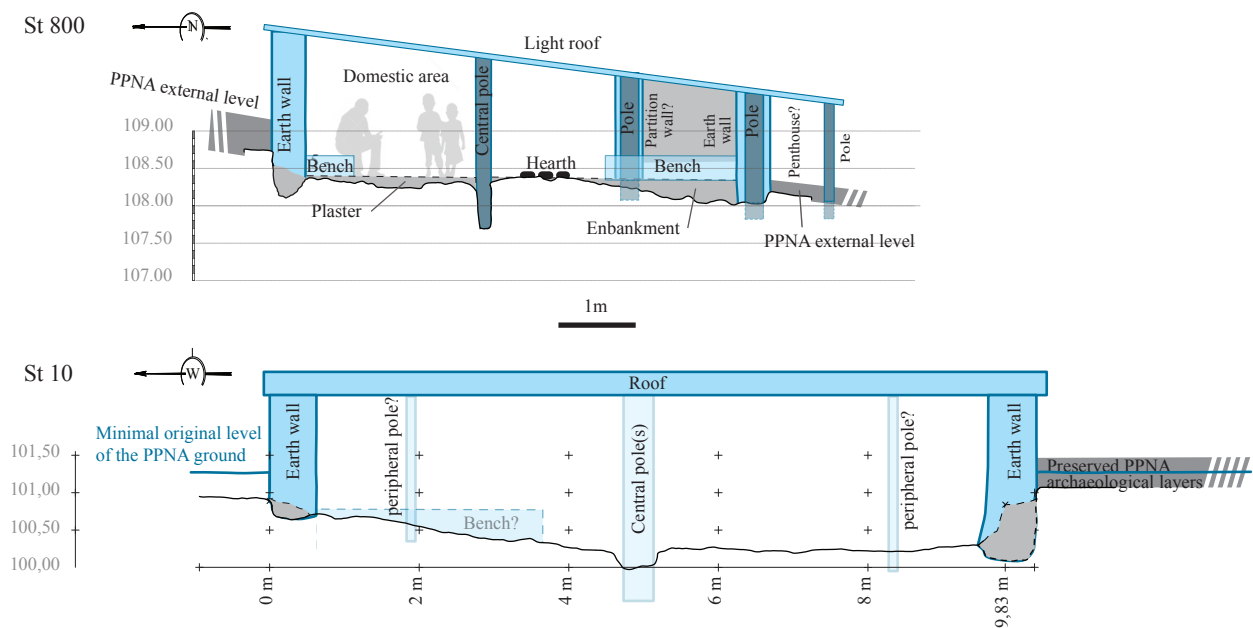
**Fig. 13** – Map of the floor of building St 800 at the end of the excavation (May 2015). The numbers refer to features; when they are preceded by “F” they indicate deposits of significant objects (1/20th drawing and CAD Y. Franel).

**Fig. 13** – Relevé planimétrique du sol du bâtiment St 800 à la fin de la fouille (mai 2015). Les numéros renvoient aux structures ; lorsqu'ils sont précédés de F, ils désignent des dépôts d'objets remarquables (dessin au 1/20 et DAO Y. Franel).



**Fig. 14** – Diametric north-south profile of the bottom of building St 800 (top) and drawing of the fillings (bottom). Blue represents recent colluviums. The drawing of the central post-hole is a projection, since it was located 10 cm to the east from the plan of this profile (drawing R. Touquet, Y. Franel and R. Hadad; CAD Y. Franel and J.-D. Vigne).

*Fig. 14 – Coupe nord-sud du fond du bâtiment St 800, pratiquée selon son diamètre (en haut) et selon son remplissage (en bas). La couleur bleue figure les colluviums récents. Le dessin de la coupe du poteau central a été projeté sur cette coupe : il était localisé 10 cm à l'est du présent plan de coupe (dessin R. Touquet, Y. Franel et R. Hadad ; DAO Y. Franel et J.-D. Vigne)*



**Fig. 15** – Attempt at a reconstruction of the terraced domestic building St 800 (top), with comparison to the semi-embedded communal building St 10 (bottom; drawing J.-D. Vigne).

*Fig. 15 – Essai de reconstitution du bâtiment domestique terrassé St 800 (en haut) et comparaison avec la reconstitution en coupe du bâtiment communautaire semi-enterré St 10 (en bas ; dessin J.-D. Vigne).*

buildings (Yartah, 2004 and 2005; Stordeur, 2014 and 2015). The presence of two convergent marginal trenches is reminiscent of houses A and B in Hallan Çemi (Rosenberg et al., 1998); however here, the two trenches are not unique and are not really symmetric with reference to the north-south axes of the building. We found no strict similarities with any of the known PPNA buildings on the continent, though St 800 can easily fit the wide range of variability of the continental PPNA buildings.

The perfect circularity of this building contrasts with the more irregularly round or even quadrangular late Mureybetian buildings of Jerf el-Ahmar (Stordeur et al., 2000; Stordeur, 2014 and 2015). It fits better with some of the more regularly round or elliptic houses from sites such as Mureybet, Göbekli, Nemrik, M'lefaat, Hallan Çemi or Kortik Tepe (Kozłowski, 1989; Kozłowski et al., 1998; Rosenberg et al., 1998; Ibañez, 2008; Özkaya and Coşku, 2009), or most notably with some sites in the south Levant (e.g. Nahal Oren, ZAD 2 or Netiv Hagdud; Noy et al., 1973; Bar-Yosef et al., 1991; Edwards et al., 2002).

### THE AUXILIARY BUILDINGS AND EXTENSION OF THE VILLAGE

In the central sector (fig. 2), extensive clearing of arable soil and upper colluviums evidenced three significant areas of archaeological interest adjoining the communal building. To the south-east, a series of small curvilinear trenches, together with several deep fire pits, indicated the existence of some badly eroded buildings, with a diameter of roughly ca. 4.3 m, 6.3 m and 7 m (fig. 5). East of the communal building, a 10 m long excavation

trench evidenced a less eroded complex of pits and mud walls, suggestive of a rich accumulation of PPN earthen facilities. Located at the eastern extremity of this trench, the trench excavated in 2009 (168.3), provided thousands of flints in what was almost certainly a PPNA knapping area (Vigne, Briois et al., 2011). North of the communal building, mechanical clearing exposed large outcrops of building earth, one of which probably corresponded to an additional PPNA building.

Adjoining building St 800, clearing of the arable soil revealed large sections of the curvilinear outline of two other partially superimposed buildings (St 906 and 907; fig. 12). They have not been excavated, but their diameter is estimated to be between 3 m and 5.8 m, respectively. East of this area, two small trenches excavated in 2009 at the boundary of plots 168 and 169 (168.7 and 169.3; fig. 2) “revealed a one meter thick colluvial accumulation covering rich archaeological deposits [...] without any pottery” (Vigne, Briois et al., 2011). These deposits, which have not been excavated, probably indicate PPNA deposits or even buildings, both covered by thick Holocene colluviums. Just ten meters to the east, in the profile provided by the recent widening of the small road which delimitates the site to the east, we also observed at least two features very similar in profile to St 800 (fig. 14).

No PPNA features were found in the A, C, D, E and G sectors of the site (fig. 2). However, in 2014, the remains of two PPN buildings (St 601 and 602) were revealed in sector B, in the form of short sections of curvilinear trenches which were interpreted as the much eroded uphill foundation trenches of a peripheral wall (fig. 16). Their respective diameter has been estimated to 4.5 m and 3.5 m; they were associated with several stakes holes, a combustion pit and a ‘mosaic’ pit.



**Fig. 16** – The much eroded buildings B-01 and B-02 discovered in 2014 in Sector B, together with several Cypro-PPNA features including a ‘mosaic’ pit, on the left (photo J.-D. Vigne).

**Fig. 16** – Restes très érodés des bâtiments B-01 et B-02 découverts en 2014 dans le secteur B, accompagnés de structures en creux datées du Cypro-PPNA. Parmi ces dernières figures une petite fosse « mosaïque », à gauche (cliché J.-D. Vigne).

In May 2015, B sector to the north was widened towards the central sector by clearing an area of 400 m<sup>2</sup>. By doing so, we discovered the overlapping curvilinear outlines of more than twenty buildings, some of which were badly eroded like St 601 and 602, but some were largely well preserved due to their being protected by historical and modern cultivation terraces (fig. 17). This exceptional set of features provides a snapshot of the Klimonas village around 8800 cal. BC, and will be studied in more detail during forthcoming excavation season(s).

Since 2009, we have located the remains of 34 PPNA buildings and have, almost fully, excavated seven of them. The communal building and St 800 were circular, though they differed in that the former was semi-embedded, whilst the latter was terraced. The five other buildings (St 601, 602 and three others in 2015) were built on the slope in the same way as St 800: on artificial terraces notched into the uphill substratum. This feature is redolent of several PPNA villages in Syria, such as Wadi Tumbaq 1 and Jerf el-Ahmar (Abbès, 2014; Stordeur, 2015).

Their uphill limit was always circular, but downhill their shape was not visible due to erosion, except for two buildings (St 800 and 907) which are completely round. It seems that the domestic building layout was much less variable as in other Late PPNA sites such as Jerf el Ahmar



**Fig. 17** – The 2015 excavation in the upper part of Sector B, with numerous overlapping outlines of PPNA buildings (photo J.-D. Vigne).

*Fig. 17 – Décapage de la partie haute du secteur B lors de la campagne 2015, on voit plusieurs délimitations de bâtiments PPNA se chevauchant les uns les autres (cliché J.-D. Vigne).*

(Stordeur, 2015). Except for the communal building, the diameter of the uphill arch of the 29 buildings, for which we were able to take a reliable measurement, varied between 3 m and 8 m, with a mean and a median of 5 m.

These observations allowed us to sketch the limits of the preserved PPNA village (fig. 18).

## EXPLOITATION OF THE NATURAL RESOURCES

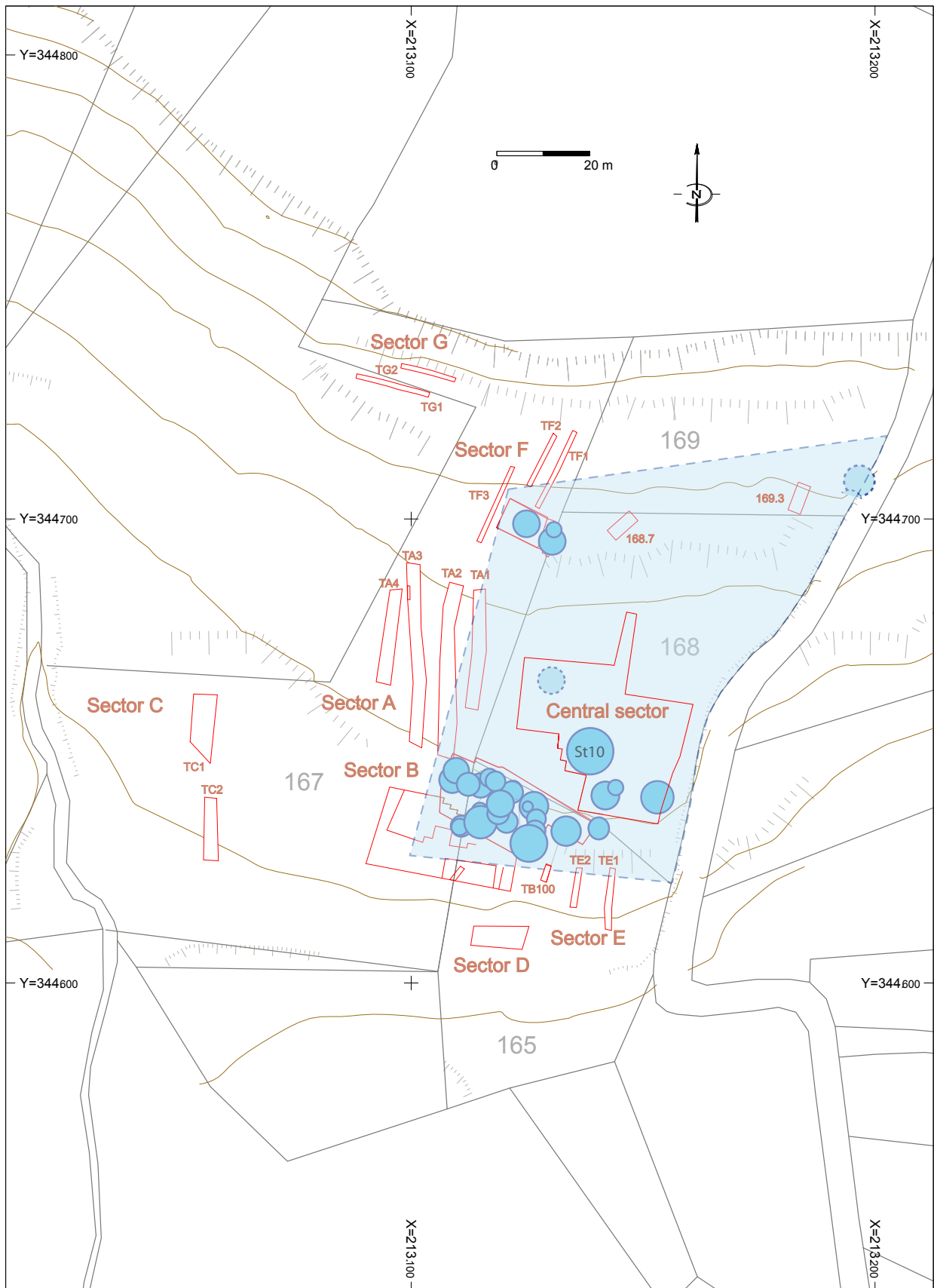
### Plant resources and cultivation

Most of the Klimonas structures lie at less than 50 cm below the modern arable soil. They have been submitted to intense bioturbations not only by plant roots but also by small soil animals, principally the small ‘potworm’ annelids (Enchytraeidae); the microscopic marks of their intense activity are visible in numerous micromorphological samples (Mylona, Wattez et al., this volume). This explains why we found so few botanical remains in spite of water sieving and flotation of more than 1,500 litres of sediment, especially during the 2012 excavation season.

The large majority of small charcoals refer to *Pistacia* sp., with a small number of attestations of *Prunus* sp. and *Quercus* sp. (Thiebault in Vigne et al., 2012). Besides numerous questionable mineralized seeds of *Celtis* and *Lithospermum*, or *Buglossoides*, we found a small number of carbonised seeds of *Malva* sp. and *Pistacia* sp. Carbonised *Pistacia* seeds were also well preserved in the carbonated concretions which sealed some of the deep pits of building St 800. Further analyses will provide more information about the archaeobotanical potentialities of these concretions. To date, the most exciting botanical discoveries have come from a small number of fragments of fire hardened earth: in numerous PPN sites, including Klimonas, chaff was used as a tempering material in building earth (Willcox and Fornit, 2002). Based on the impressions of spikelet bases, awns or glumes, five of these samples evidenced the presence of the emmer wheat for which the domestic or wild status cannot be determined (*Triticum dicoccum/dicoccoides*: fig. 19). This species, which was just beginning to be cultivated on the mainland at the time of Klimonas’ occupation, was not yet domesticated, was probably not growing naturally in Cyprus, and is thus likely to have been introduced from the mainland. This suggests the Klimonas villagers were practising cereal cultivation from the earliest period of occupation.

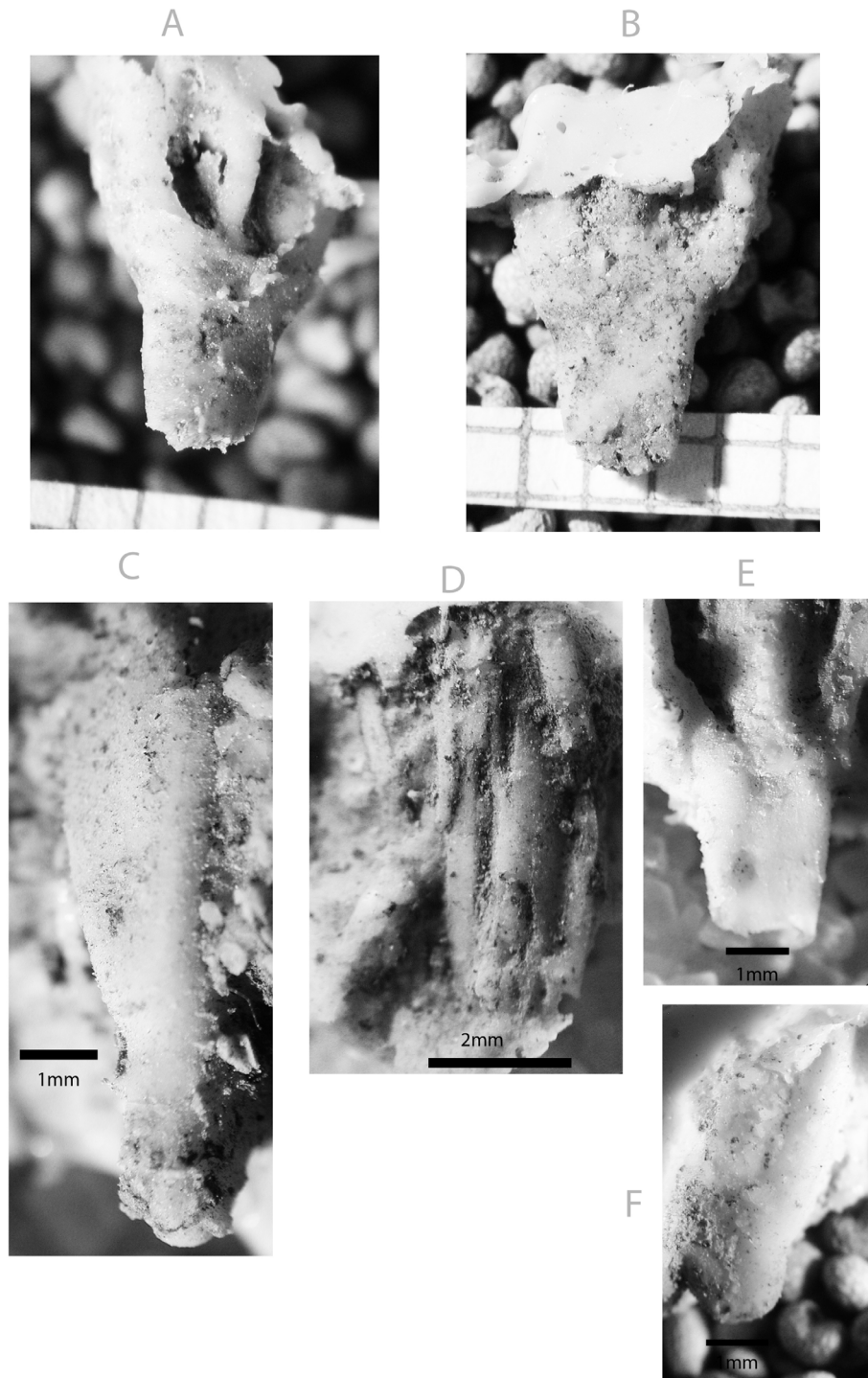
This hypothesis is strengthened by several observations. Micro-morphological analyses of the walls and floor mud show thousands of plant remains (cob), including phytoliths, which suggest that people cautiously collected and kept refuse coming from plant processing in the aim of making cob, like that also did in several other PPNA sites such as Jerf el Ahmar (Willcox and Stordeur, 2012; Stordeur, 2015). We also found several sickles and numerous macro-tools used





**Fig. 18** – Location of the PPNA buildings discovered at Klimonas up to 2009 and delimitation (blue) of the area where the village is preserved (drawing and CAD R. Touquet and J.-D. Vigne).

**Fig. 18** – Localisation des bâtiments PPNA découverts à Klimonas depuis 2009 et délimitation (en bleu) de la zone dans laquelle le village est préservé (dessin et DAO R. Touquet et J.-D. Vigne).



**Fig. 19** – Photos of silicone casts obtained from impressions left by cereal chaff fragments recovered from baked building earth at Klimonas. A (front view) and B (back view) are photos of a spikelet fork of emmer showing the widely separated glumes. C is a spikelet seen in lateral view with rounded keels on the glume. D shows broken fragments of awn and other chaff fragments. E and F are other examples of emmer spikelet forks. A, B and F come from SU 10.3, Passe 3, PR 09. C, D and E come from St 10, SU 10.3, D/38, PR9. Scales are 1 mm with the exception of D and F which are 2 mm. The casts were made using vinyl polysiloxane precision impression material. Photos were taken through a low-power binocular microscope with a digital camera (photos G. Willcox).

**Fig. 19** – Photos de moulages en silicone obtenus à partir des empreintes laissées par des balles de céréales dans la terre à bâtir brûlée de Klimonas. A (vue ventrale) et B (vue dorsale) d'un épillet de blé amidonnier, montrant des glumes bien séparées. C est un épillet en vue latérale, avec une glume à arête arrondie. D correspond à des fragments de barbes et d'autres éléments de balle. E et F montrent d'autres exemples de furcas d'épillets d'amidonnier. A, B et F sont issus de l'US 10.3, passe 3, PR 09. C, D et E viennent de St 10, US 10.3, carré D/38, PR9. Les échelles mesurent 1 mm, excepté pour D et F pour lesquels elles mesurent 2 mm. Les moulages ont été réalisés à l'aide de vinyl polysiloxane de haute précision. Les photos ont été prises à l'aide d'une loupe binoculaire à faible grossissement, munie d'un appareil photo numérique (clichés G. Willcox).

for grinding, including cup-mark slabs sometimes set into the floor, as observed at Wadi Faynan (Mithen et al., 2011, p. 360; here fig. 9). None of these observations are totally convincing by themselves, but combined they imply an expansive exploitation of herbaceous plants; including the use of one cereal species (of which there were two) introduced from the continent and involved in the PPNA early ‘pre-domestic’ cultivation (Willcox and Stordeur, 2012). Preliminary results from the geomorphological study of the fluvial terraces of the Athiaki river, suggest that at the time of Klimonas’ occupation they provided a small alluvial plain, though much larger than it is today, with ideal conditions for cultivation (Mylona, Devillers et al., this volume).

### Animal and animal resources

The preservation of faunal remains at Klimonas is variable between contexts, most of which come from the building material, from the demolition of walls or floors or from the final filling of the buildings’ ruins (e.g. St 800), and are generally very fragmented. So far, we have not found any large primary accumulations of domestic middens; therefore well preserved faunal assemblages are exceptionally rare, with the remarkable exception of the deep stratigraphic units of B Sector (fig. 20) which is yet to be excavated.

To date, we have extracted and studied almost 9,000 animal remains (bar marine shells; Rigaud et al., this volume) of which 5,324 have been taxonomically identified (table 1). The overwhelming majority ( $96.8 \pm 0.5\%$ ) refer to the small Cyprus wild boar (*Sus scrofa* ssp.), which was introduced to the island two millennia earlier, as attested at Aetokremnos (Vigne et al., 2009). Together with the abundance of flint projectile heads, numerous of which were impacted, age profiles and sex ratios indicating an unselective slaughtering strategy (Vigne et al., 2012) make it clear that these wild boars were hunted. In this respect, the Klimonas villagers did not differ from their continental contemporaries (e.g. Conolly et al., 2011; Zeder, 2011). However, contrary to the continental PPNA, the Cypro-PPNA villagers’ prey was unvaried and consisted purely of the wild boar until the introduction of domestic goats and cattle around 8400–8300 cal. BC, as attested by the early phases of occupation at Shillour-okambos (Vigne, Carrère et al., 2011).

Klimonas has also provided the earliest evidence of the presence in Cyprus of dogs (*Canis familiaris*). It is represented by thirty-three bones coming from different skeletal parts, and its presence in the village is attested by some gnaw marks and digested suid bones (Vigne et al., 2012). Dogs could have been introduced to Cyprus long before the occupation of Klimonas, even during the Epipaleolithic, since they were already present on the continent during the Natufian and Zarzian (see the recent synthesis in Larson et al., 2012).

Cats (*Felis s. lybica*) are also attested to by one single phalange of large size, from a secure context (US 10.6, the floor of the intermediate communal building). It refers

to a much larger cat than those of the Khirokitia or Sotira periods (Vigne et al., this volume). The presence of mice is attested on site by about ten remains and several gnaw marks on suid bones. It is reasonable to assume that cats were introduced to the island to control the mouse population (Vigne, 2014), during the earliest cultivation practices shortly before the occupation of Klimonas.

Small game, in the form of birds, freshwater turtle (*Mauremys rivulata*), freshwater crabs (*Potamon cf potamios*), and possibly snakes and lizards, were also exploited. However, no evidence for the exploitation of sea food was discovered in any form, with the exception of one fish vertebra which is probably a Sotira contamination. It is striking that these people, who were highly connected to the mainland via the sea, turned their back on it when it came to their diet.



**Fig. 20** – Occlusal view of the horizontal ramus of a Cyprus wild boar found in one of the rare PPNA accumulation of primary domestic midden (photo R. Khawam).

**Fig. 20** – Vue occlusale des branches horizontales d’une mandibule de sanglier chypriote, trouvée dans l’un des rares dépôts domestiques PPNA fouillés (cliché R. Khawam).

		2009	2011	2012	2014–2015		Total 2009– 2012	%
		Sound. 168.3-5	(without US10.1)	Preliminary	ST 800	Sect B		
Fresh water crabs	<i>Potamon cf. potamios</i>		3				6	0.1
Fish	Teleostea		1				1	0.0
Fresh water tortoise	cf. <i>Mauremys rivulata</i>	1	5				6	0.1
Lizard	Sauria		10	1			11	0.2
Snake	Ophidia			3			4	0.1
Bird	Aves	11	32	29			74	1.4
Mouse	<i>Mus</i> sp.		2	8			10	0.2
Small carnivores	Felidae/Viveridae	2	20	5			27	0.5
Cat	<i>Felis s. lybica</i>		1				1	0.02
Domestic dog	<i>Canis familiaris</i>	2	23	8			33	0.6
Wild boar	<i>Sus scrofa</i> ssp.	223	2,385	1,207	153	2,183	5,151	96.8
Total identified		239	1,482	1,261	153	2,189	5,324	100.00
unidentified (2011 : subsample)		384	3,390	3,628	574	933	8,909	
% unidentified (2011 : subsample)		61.6	78.8	74.2	79.0	29.9	62.6	

**Table 1** – Preliminary faunal spectrum from the Pre-Pottery levels of Klimonas for each excavation season.

*Tabl. 1* – Spectre faunique préliminaire des niveaux précéramiques de Klimonas, pour chacune des campagnes de fouille.

## DISCUSSIONS PRELIMINARY, CONCLUSIONS AND PERSPECTIVES

Although excavations are still ongoing, evidence from the Pre-Pottery Neolithic occupation of Klimonas has already provided a substantial dataset concerning the recently discovered Cypro-PPNA: building techniques and strategies, material culture, radiocarbon dates, and the economic pattern (hunting and cereal cultivation). All of which refer to the Late PPNA *koine* and a relatively short period of occupation, due to their homogeneity. With reference to Jerf el Ahmar (Stordeur, 2015), the large size and the radial layout of the communal building would refer to the transition phase between the PPNA and the early PPNB, but the absence of bipolar knapping and of a rectangular building would indicate a strong Early PPNA tradition. However, there is a large diversity of models from the north to the south Levant and Klimonas may represent just another variant within this range; displaying a series of specificities, such as the limited use of stone for building; yet the massive use of cob, the unidirectional lithic knapping, or the superimposition of the successive communal buildings, which one could consider to be regional particularities. Only the very limited diversity of food resources, especially large game, can be attributed to insularity. Cypro-PPNA (Peltenburg et al., 2001) remains the most reasonable denomination for this chrono-cultural stage.

The site is organized around a 10 m large semi-embedded communal building, which has been periodically restored or rebuilt, surrounded by numerous 3 m to 8 m large buildings, a large proportion of which are circular and terraced on the slope. Its specific organization indic-

ates that Klimonas is a village, the earliest not only in Cyprus but of any Mediterranean island.

Geophysical surveys and large mechanical clearings have allowed the area within which the PPN buildings are preserved to be clearly defined: it covers half a hectare. If we consider that the two areas where a thorough exploration was conducted (F and B Sectors) provided a minimum number of 26 buildings across a total surface of 500 m<sup>2</sup>, and if we postulate that building density across site was similar, then we can estimate that the total minimum number of buildings was approximately 260. Of course, each building was used for only a short duration and several could have belonged to the same household; however, it can be estimated that a dozen households could have been maintained on a semi-hectare. This is a minimal estimate, since the limits of the distribution of the buildings that we evidenced result at least partly from erosion; they are probably not the actual limits of the village.

This is much less than Göbekli (Schmidt, 2000), Cayönü, Jericho, Gilgal I (Noy, 1989) or Netiv Hagdud, the latter covering 2.5 ha (Bar-Yosef et al., 1992; Goring-Morris and Belfer-Cohen, 2011), but similar to Hatoula (2–3,000 m<sup>2</sup>; Lechevallier et al., 1989), Jerf el-Ahmar (0.7 ha for the Late phase; Stordeur, 2015), Kortik Tepeh (5,500 m<sup>2</sup>; Özkaya and Coşkun, 2009), Nemrik (4,500 m<sup>2</sup>; Kozłowski, 1989), M'lefaat (0.6 ha; Kozłowski et al., 1998), Hallan Çemi (0.7 ha; Rosenberg et al., 1989), Qermez Dere (7,600 m<sup>2</sup>; Watkins, 1990).<sup>(5)</sup> Comparably, Klimonas is a sizable PPNA village, similar to most of the Mureybetian or Sultanian villages; it even plots slightly above the mean settlement size for the beginning of the 9th millennium, as modeled by I. Kuijt (2000, p. 83, fig. 2).

Klimonas was also much bigger than the only other known Cypro-PPNA site at Asprokremnos (Manning et al., 2010), which was probably more of a temporary or specialized site than a permanent village (McCartney et al., 2008); however, it is unlikely that it was the only large village in Cyprus at the time. Indeed, it is plausible that the PPNA people were already resident on the island and had been for some time: the Klimonas villagers, as well as the Asprokremnos occupants, appear to have been well acquainted with the island's mineral resources, including microliths and colorants. Nevertheless, there is still a 1500 year time gap between evidence of the Epipaleolithic frequentations to the island and the earliest known manifestations of the Neolithic; though that does not mean that Cyprus was uninhabited during this time, especially as navigation skills had already begun to be well mastered (Ammerman, 2014; Vigne et al., 2014). Sites such as Roudias may contribute to fill this gap in the near future (Efstratiou, 2014).

Klimonas, however, still poses many questions as our information about the way of life in this Cypro-PPNA village is still fragmentary: how long was it occupied? Was there only one (or several successions of) communal building? Were all the 'non-communal' buildings dwellings, or were some of them built for other purposes, and, if so, which one(s)? Due to strong erosion we have not yet found any trackways, craft activity areas or even rich domestic midden accumulations, which would have provided much needed information about the *chaînes opératoires* for lithics, cereals, animal food, and the bone or ornament industry. Were there indeed no human burials in the village, as it is the case at Jerf el Ahmar and in numerous other Northern Levant PPNA sites? We anticipate that the fantastic potentialities of Klimonas will allow us to address these questions in the near future, and that other Cypro-PPNA sites can be found and studied in order to obtain more information about the regional

features of the PPNA and its potential connections with those of the Near-East continent.

**Acknowledgements:** The archaeological work at Klimonas has been granted by the French ministère des Affaires étrangères et du Développement international (mission 'Neolithisation-Klimonas'), the French School at Athens, the CNRS (Site d'étude en écologie globale 'Limassol'), and the Muséum national d'histoire naturelle (actions thématiques 'Emergence' and 'Dynamique des socio-écosystèmes'). This project has greatly benefited from the help and support of the Department of Antiquity of the Cyprus Republic. We are incredibly indebted to all the young colleagues who voluntarily contributed to the excavations, and to D. Stordeur and R. Haddad who contributed to improve a first version of this paper. Many thanks also to J. Cucchi who copy-edited this paper.

## NOTES

- (1) This may be a phonetic syncretism: according to one of the authors of the present article (P. M.), *athkiaki* means 'flint' in Cypriot; another local denomination of this valley is *argaki*, which means 'small river'.
- (2) It is not clear if all the buildings that we have taken into consideration for this preliminary comparison are actually communal buildings, especially in the Palmyra area or at sites such as Kortik Tepe, M'lefaat or Nemrik (see however Aurenche and Kozłowski, 1999). In addition, some of them (Hallan Çemi) are significantly earlier than the Late PPNA.
- (3) Ongoing analyses, by one of the authors (P. M.), will allow the identification of the plaster composition.
- (4) The outside poles suggest that the internal space was prolonged to the south by a narrow external canopy.
- (5) This is only a raw preliminary comparison aimed at providing an order of magnitude; a more refined comparison would require a spatial and chronological critical analyses most of these sites.

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