

AcrossBorders
Fieldwork 2015 on SAI ISLAND (NORTH PROVINCE, SUDAN)



2015 SEASON REPORT

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1. General

The 2015 mission of AcrossBorders on Sai Island was carried out from December 31 2014 to March 13 2015. AcrossBorders is conducted with the approval and in cooperation with the concession holders, Prof. Didier Devauchelle and Dr. Vincent Fracigny, UMR 8164 HALMA-IPEL (University Charles-de-Gaulle Lille 3, France). Permission to work in the field is kindly granted by the National Corporation for Antiquities and Museums of Sudan (NCAM), sincere thanks go in particular to Abdelrahman Ali Mohamed (Director General) and El-Hassan Ahmed Mohamed (Director of Fieldwork).

Fieldwork with workmen under the supervision of Rais Imad Shorbagi Mohamed Farah was conducted from January 03 to March 11. Excavations were carried out in two areas in the Pharaonic town (SAV1 East and SAV1 West, fig. 1) and in the New Kingdom cemetery SAC 5 (fig. 9).

Besides the archaeological fieldwork, kite photography of the town area was undertaken by Martin Fera. The so-called governor's residence SAF2 was cleaned and documented by Structure from Motion.

The inspector of NCAM of the 2015 season was Huda Magzoub—we would like to express our sincere thanks for her kind cooperation and support throughout all of the season.

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Funds for fieldwork in 2015 were granted to Julia Budka by the European Research Council (ERC Starting Grant no. 313668) and the Austrian Science Fund (FWF START project Y615-G19).

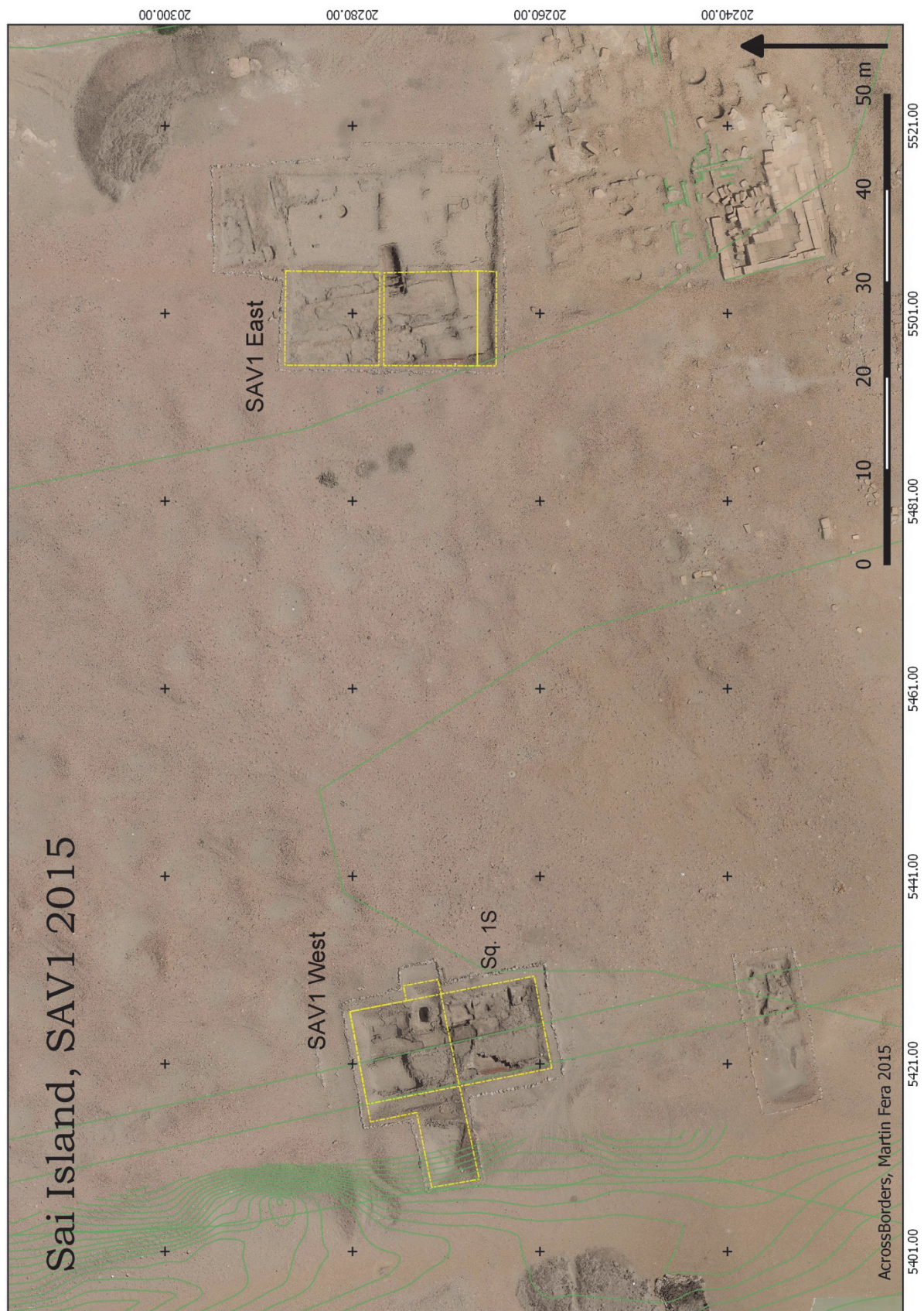


Fig. 1: Location of 2015 excavation areas within the New Kingdom town, Sai Island: SAV1 WEST with new Square 1S (M. Fera).

2. Excavations at SAV1E, fieldwork report (by Julia Budka)

Objectives

In 2013 and 2014, an orthogonal structure, visible on the magnetometric survey results from 2011 and measuring roughly 15 x 10m, was partly exposed in the area called SAV1 East. The structure, labelled Building A, is in line with Temple A and also follows the alignment of the buildings in the Southern part of the town, investigated by the French mission in the 1970s. Excavation confirmed its date to the mid-18th Dynasty, not prior to Thutmose III.¹

Work focused in 2015 on the western side and the south-western corner of this building (Squares 3 and 4) as well as to adjacent southern remains (Square 4 and 4a).

SAV1 East, Squares 3 and 4

The upper levels of Squares 3 and 4 are dominated by a destruction layer with mud brick fragments, charcoal, pottery and worked stones. This layer was up to 40-50cm thick and yielded abundant stone tools, lots of ceramics and other materials. The material is of a mixed character and the latest finds date to the Ottoman Period (e.g. the wooden furniture fragment or kohl pot stopper SAV1E 1913). A large percentage of 18th Dynasty ceramics indicates that the later destruction sits directly on the Pharaonic remains.

New walls and pavements of Building A

Back in 2014, a North-South wall of Building A was traced in Square 3 as a negative outline: wall 34 and its foundation bed 33 are running approximately north-south from Square 3 to Square 4, meeting wall 16, the “southern wall” of Building A. The not-yet cleaned fillings of the foundation trenches 33 and 16 were excavated this season. Extensions towards the west were exposed.

A total of 13 new features were documented in 2015 in SAV1 East—these comprise sections of walls and pavements of Building A (features 45-49), remains of an earlier occupation (features 50-56) and a dry-stone terracing wall (feature 57). Although the state of preservation is rather poor, a sequence of the walls and floors could be established (Fig. 2).

The southern wall of Building A was traced as going further to the west: feature 49 is set against feature 34 (excavated in 2014 and joining wall 16). Interestingly, earlier remains were discovered below this part of the mud brick wall. These early occupation remains, consisting of mud floors and half-brick-thick walls, extend towards the south – they follow the natural slope and are set against the gravel deposit. Thanks to (1) the relation with the well-dated walls of Building A, (2) the pottery and (3) the comparison with both our excavation in 2013 in the eastern part of SAV1 East and Azim’s excavation around Temple A, a dating for this occupation phase to the early 18th Dynasty can be proposed.

¹ See J. BUDKA, Die 18. Dynastie auf Sai Island (Nordsudan) – neue Puzzlesteine als Ergebnisse der Feldkampagne 2013, *Sokar* 26, 2013, 78–87; J. BUDKA, Neues zur Tempelstadt der 18. Dynastie auf Sai Island (Nordsudan) – Ergebnisse der Feldkampagne 2014, *Sokar* 28, 2014, 28–37.



Fig. 2: Overview of eastern part of Squares 4 and 4a – note the south-western corner of Building A with a deep foundation trench and earlier remains towards the south, along the slope.

Feature 15

The most interesting find in SAV1 East is the subterranean room, feature 15 (Fig. 6). Partly excavated in 2013 and 2014, it was now completely exposed (5.6m x 2.2m x 1.2m). Dug into the natural gravel deposit, feature 15 represents a New Kingdom storage installation of a rectangular shape, with a vaulted roof now missing. Its inner part is lined with red bricks and red bricks also form the pavement of the structure. Due to a number of ashy deposits, large amounts of charcoal, hundreds of dome-palm fruits and abundant animal bones with traces of burning, feature 15 might have been used as a kitchen respectively a room for food preparation. More than 80 almost intact vessels (with an approximate minimum number of 150 more vessels) were found in feature 15—the main pottery types are plates and dishes, beakers, storage jars, *zir* vessels and pot stands, thus supporting a connection with food serving. The most important finds, however, in feature 15 was a large set of seal impressions: more than 200 remains of scarab seals on clay sealings were documented (see below).



Fig. 3: *In situ* remains of vessels on the pavement of feature 15.

Several phases of use can be reconstructed for feature 15: Most importantly, a section of wall 44 is set into feature 15, definitely later in date and sitting on top of the lowermost deposit of feature 15. Feature 15 must therefore have already been in place before the main north-south wall of the courtyard of Building A, wall 44, was built. Based on the seal impressions and the ceramics, feature 15 was originally set up not later than in the reign of Hatshepsut, remaining in use as subterranean room/magazine/kitchen until Thutmose III. Changes happened in the later phase of Thutmose III and maybe even Amenhotep II: Building A was extended and wall 44 was set into feature 15. A collapse of the section of wall 44 in feature 15 must have happened a bit later, presumably before or during the time of Amenhotep III. These phases of use of feature 15/Building A correspond well with the building phases of Temple A.²



Fig. 4: Feature 15 at the end of excavation; note the section of a later wall (wall 44) set into its western part. The red brick pavement is nicely preserved.

All in all, in 2015 much progress has been made in understanding the function of Building A. Because of its architecture and layout, I proposed already in 2013 a parallel to SAF2, the so-called governor's residence in the southern part of the Pharaonic town. The newly discovered large number of seal impressions, presumably used to seal boxes and chests containing diverse materials, indicate that this suggestion rests on even more solid ground. A domestic character of Building A can definitely be

² Cf. M. AZIM & J.-F. CARLOTTI, Le temple à de l'île de Saï et ses abords, *Cahiers de Recherches de l'Institut de Papyrologie et d'Égyptologie de Lille* 29, 2011–2012, 39–46.

excluded—it was rather an administrative unit related to the storage and distribution of productions and thus possibly in close connection with the temple.

3. Excavations at SAV1W, fieldwork report (by Julia Budka)

Objectives and method

One of the goals this season was to investigate the New Kingdom remains on the inner side of the enclosure wall of the New Kingdom town in SAV1 West. In order to study a representative area, a new southern extension to the 2014 Square 1 was opened—Square 1S (10 x 10m).

Based on our experience from 2014, we continued our excavation method to a single surface documentation, conducting a stratigraphical excavation. Every stratigraphical unit was documented with a Structure from Motion model.

Square 1 South

Upon removing the upper debris levels of Square 1S, it soon became clear that its western half is occupied by the remains of the New Kingdom town enclosure, while its eastern part displayed large sandy pits with much 18th Dynasty pottery, loose mud bricks and many worked stone fragments.

Towards the east of the enclosure wall, thus within the New Kingdom Pharaonic town, large amounts of sandy backfilling of pits and collapsed mud bricks have been removed. Below, remains of several mud brick buildings were found. All in all, 7 features were documented in Square 1S (f. 117-123). Most promising is a small rectangular structure in the south-eastern corner—it sits on debris and might therefore conceal an earlier phase of occupation, to be excavated in 2016.

Square 1

This season work focused in Square 1 on the eastern half where *in situ* New Kingdom structures were visible in 2014. A total of seven features (features 110-116) were documented. In the south-eastern corner, while cleaning the bottom part of a large sandy pit, a nicely preserved rectangular cellar with a vaulted ceiling was found (feature 115). Several ceramic vessels were found on its base and these indicate a dating to the mid to maximum late 18th Dynasty.

Feature 111 is the remaining part of a building along the “wall street” in the northern part of Square 1. It has several building phases and the earliest could be dated to the mid-18th Dynasty. Because of substantial deposits of ash and charcoal, feature 111 can be interpreted as an oven room.

For the stratigraphy of SAV1 West, it was highly interesting to find stratigraphic units holding mostly early Ramesside sherds—these layers were directly on top of the features tentatively assigned to the late 18th Dynasty (especially feature 113). All in all, several floor levels, re-building phases and new sections of walls testify that this area was in use for a considerable time span during the New Kingdom, from Thutmose III until Seti I/Ramesses II.

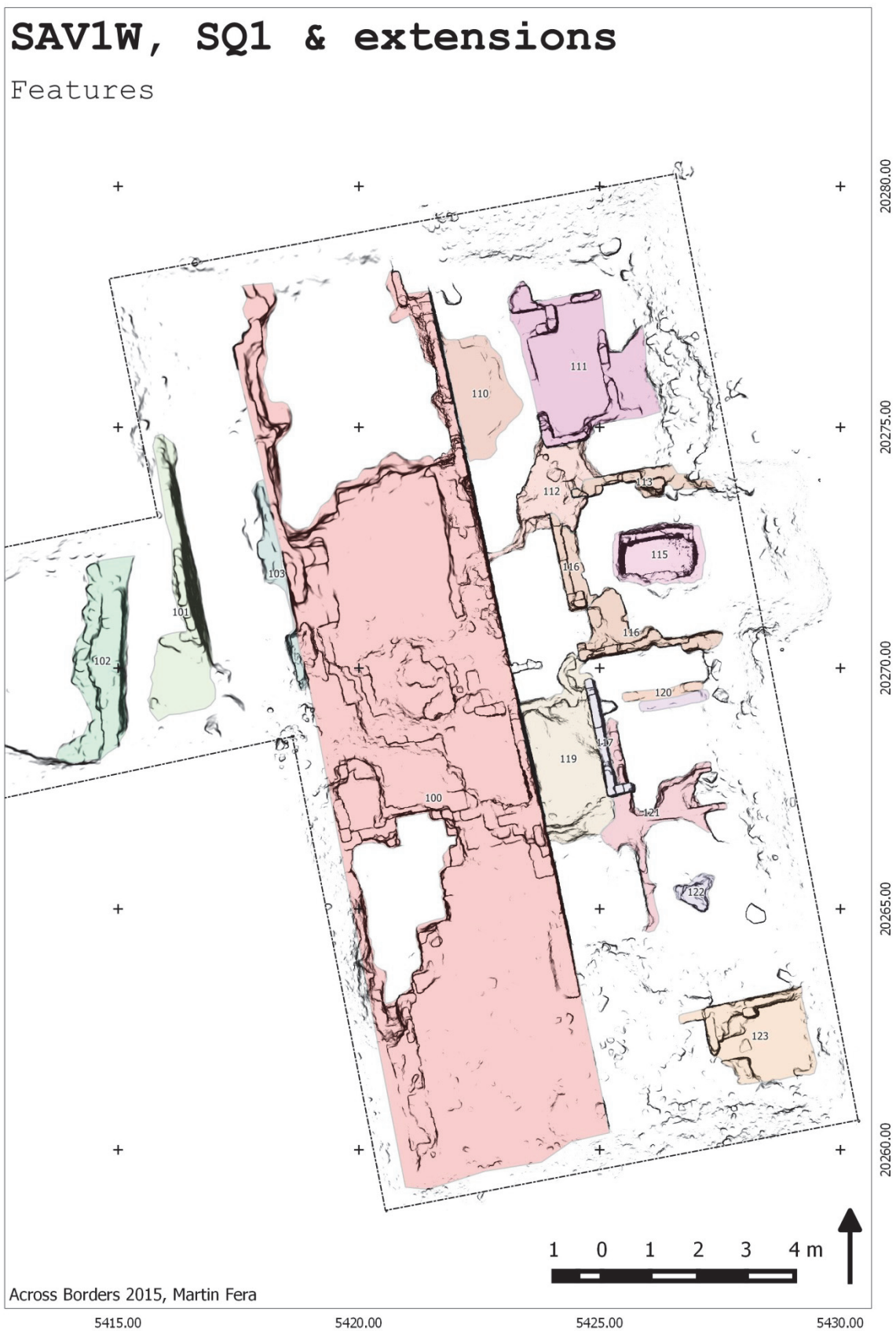


Fig. 5: Documented features at SAV1 West, end of 2015 season (M. Fera).

4. Processing finds and pottery from the New Kingdom town (by Julia Budka)

Registration of objects from SAV1 East and SAV1 West

The registration of the objects and finds from the ongoing excavations in SAV1 West and SAV1 East was carried out in 2015.³ Over 2000 finds have been registered, photographed, and entered into the FileMaker database, which now comprises 4194 entries. The objects range in date from the Palaeolithic Period to Ottoman times. The most abundant genre of objects needing to be registered is stone tool: grindstones, hand mills, hammers, pounders, and whetstones.

Both sectors, SAV 1 East and SAV1 West, are unearthing tools in unusually large quantities. Due to both the long history of use and the frequent employment of naturally shaped pebbles, these tools are extremely difficult to date. While they are common within clear Eighteenth Dynasty contexts, they also appear until Christian and maybe Ottoman times.

SAV1 West

In general, the material from the 2014 season at SAV1 West mirrors the 2014 season; especially in the large sandy pits the material is very mixed, comprising many medieval finds. Among the objects safely attributable to the 18th Dynasty there are fragments of Nun bowls, female figurines and animal figurines.



Fig. 6: Cowroid bead SAV1W 723.

One of the highlights of this season's excavation within the town area at Sai was the discovery of a beautiful cowroid bead (SAV1W 723) containing an image of the Egyptian goddess Taweret. The object was uncovered in the foundations of the New Kingdom enclosure wall. It measures 17 x 9 x 5mm, is made of a glazed composite material, and is longitudinally pierced to enable suspension. While the

³ By Kenneth Griffin, Meg Gundlach and Silvia Prell.

object was found in a mixed area, it is likely that it dates to the New Kingdom—and specifically to the Eighteenth Dynasty—based on examples known from elsewhere.

Another remarkable piece from this year is a small clay figurine of a dog (SAV1W 764, 58 x 35 x 15mm), found in Square 1 South. Dog figurines are not very common as small objects, but there are parallels from different periods and various sites.⁴ For SAV1W 764, an interpretation as a vessel application seems more likely—especially because of the small width of the figurine and the broken legs despite the otherwise very good state of preservation. Furthermore, the back side of the figurine is less carefully made and not painted, suggesting a front side and thus not a use as an object. Large pottery bowls with animal figurines (no clear dogs, but because of the broken state of preservation rather just “quadrupeds”) attached to the rim were found at Amarna.⁵

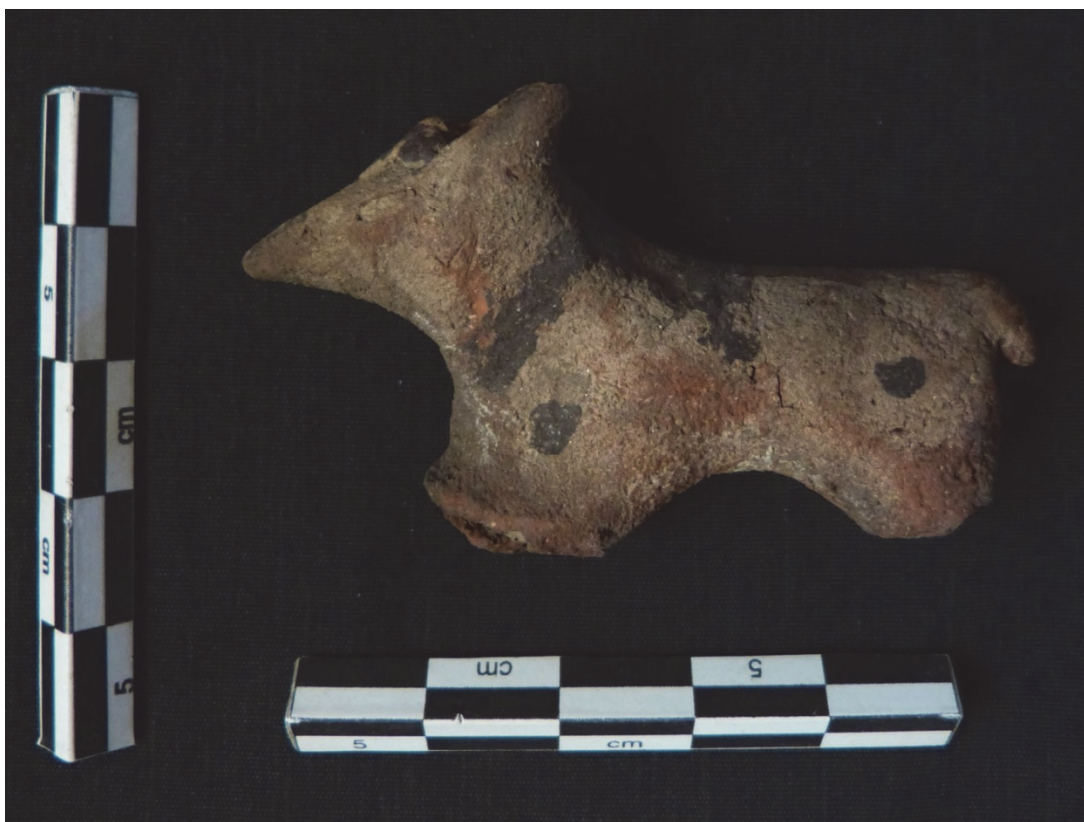


Fig. 7: Dog figurine SAV1W 764.

SAV1 East

The focus of registration of objects from SAV1 East in 2015 was on one hand on stone tools (see below), on the other hand on objects coming from feature 15. Among the later, 212 seal impressions have been recorded. This amount is itself remarkable; scarab impressions of the following kings were found: Amenhotep I, Hatshepsut, Thutmose III and Amenhotep III. Several institutions and titles are named as well. This material will allow a closer understanding of the administrative role of Building A within the town of Sai.

⁴ See A. STEVENS, *Private Religion at Amarna*, BAR International Series 1587, Oxford 2006, 52.

⁵ A. STEVENS, *Private Religion at Amarna*, 177-178, fig. II.8.12.

Detailed studies of various object groups

From January 01 until January 18 2015, the **macrolithics** from SAV1 West found in the field campaign of 2014 were inspected by Silvia Prell. 89 stone tools deriving from this area were newly registered, while about 270 objects, already registered in 2014, were revised and newly described. All in all, the variety of tools and material they consist of is limited: mainly pounders and hammers, grindstones and hand mills as well as whet- and abrasive stones were found. As most common materials natural quartz boulders, sandstone and quartzite (silicified sandstone) can be noted. Many pieces show traces of burning on the surface. From SAV1 East, 191 objects were newly registered; the range of forms and materials is comparable with the objects deriving from SAV1 West.

Nun bowls from all sectors in the Pharaonic town (SAV1, SAV1 North, SAV1 East and SAV1 West) were studied by Sabine Tschorn (February 14 to March 12)—41 drawings were realized and 22 entries in the database were revised. Most Nun bowl fragments come from SAV1, the French excavations in the southern part of the town. A considerable number (13 diagnostic pieces) was also unearthed in SAV1 West. One fragment of the base of a Nun bowl is SAV1W 738. The interior contains a representation of a pool in the center. Roughly rectangular in shape, the pond is divided into four segments by a black cross-like motif. This is surrounded by a brick-like path, which surrounds the entire pool. A series of squiggles, representing water surround the pool. On the exterior side, several petals of the lotus plant are located around the base platform.

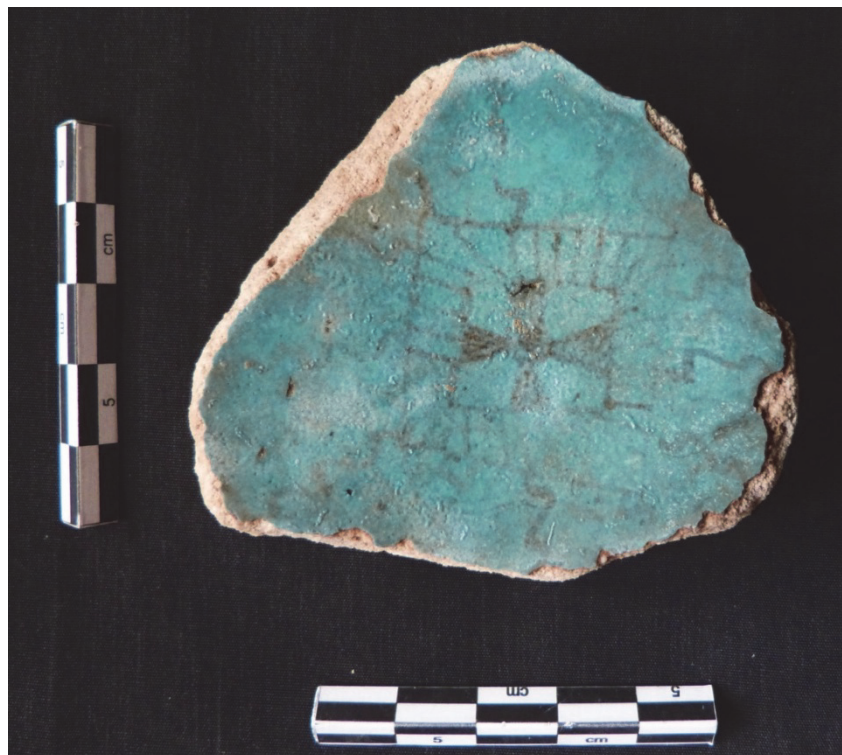


Fig. 8: Interior of faience Nun bowl from SAV1 West (SAV1W 738).

The study of the ceramics (conducted by Julia Budka, assisted by Oliver Frank Stephan) was focusing on two main working steps this season: 1) documenting the statistics & establishing the dating for newly excavated material from SAV1 East and SAV1 West; 2) detailed documentation of diagnostic pieces excavated in feature 15. A total of 86 pottery drawings were produced in 2015 by Oliver Frank Stephan. 77 complete pots or complete profiles from feature 15 form the basic corpus of types coming from this important, sealed context of the early-mid 18th Dynasty. They find very close parallels in Thutmoside sites in Egypt, especially at Elephantine.

5. Sampling of New Kingdom pottery from the Pharaonic town (by Giulia d’Ercole)

The sampling of ceramic sherds for laboratory analyses (OM and INAA)⁶ was enlarged during the 2015 season (January, 18th to February, 13th). A total number of 95 pieces was selected (7 from SAV1 North, 24 from SAV1 East and 65 from SAV1 West). The 2015 samples consist of: 16 Nubian handmade ware, 70 Egyptian wheel-made Nile clay ware, 3 Marl clays (Marl A4 and D of the Vienna System) and 1 Oasis sherd. In addition, 5 unfired pieces and kiln fragments were included in the sample.

All the samples have been photographed—both the surfaces and the fracture—and registered according to their finding position and pottery number. A macroscopic characterization of the diverse fabrics was realized using a lens with 20x magnification (TM Eschenbach).

Of special interest are examples of Egyptian cooking pots, manufactured in a distinctive, sandy Nile clay (Nile clay E var. and sandy Nile clay B2 var. according to Budka 2011). These vessels display a characteristic fabric containing numerous mineral inclusions with a grain size ranging from fine- to medium-grained sand (0.125 to 0.5 mm), abundant mica particles and occasionally micritic calcite aggregates. Both the sand and the calcareous components⁷ might be intentionally added by the potters to the paste in order to maximize the pottery resistance to thermal shock (Bronitsky and Hamer 1986; Sillar and Tite 2000; Tite *et al.* 2001).

The main focus of the upcoming laboratory analyses will be to complete the geo-chemical characterization of our group of Nile clay ware including Nubian specimens, Egyptian-style locally produced vessels and Nile clay vessels, which were instead likely to be imported on the island from Egypt. Enlarging the number of samples appears extremely important in order to better define, in statistical terms, the chemical clusters recognized so far and to add more information to the petrographic set of data.

⁶ The laboratories of the Department of Lithospheric Research and the Department of Geodynamics and Sedimentology of the University of Vienna hosted the petrographic analyses (OM); Instrumental Neutron Activation analyses (INAA) are ongoing at the Institute of Atomic and Subatomic Physics (AI) of Vienna.

⁷ It has to be noted that both sand-grained quartz particles and micritic aggregates can be natural inclusions of unsorted or poorly sorted clay. Calcareous aggregates, possibly originating from calcareous mud, are commonly attested in alluvial weathered deposits in arid or semi-arid regions (Eramo *et al.* 2014) and are observed as well in many Nile alluvial soils.

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6. Anthropological report of human remains from the Pharaonic town (sectors SAV1 North, SAV1 East and SAV1 West) (by Anna Sonnberger, Andrea Stadlmayr, Marlies Wohlschlager)

The aim for the first season of human remains analysis within the framework of AcrossBorders was to anthropologically investigate the human bones excavated within the Pharaonic town. First, human bones were separated from animal bones and identified. Biological age and sex were determined when possible. Furthermore, pathologies and degenerative diseases were documented and the minimum number of individuals within the sectors SAV1 East, SAV1 West and SAV1 North, as well as the total minimum number of all of these areas, was established.

Taking into account all age groups the total minimum number of individuals are the following: in SAV1 East: five; SAV1 West: five and SAV1 North: ten. Since all areas are relatively close to each other, we also tried to refit the fragments from these areas. No matches could be made, however, the bone fragments could still have been spread over more than one area. Therefore we determined the total minimum individual number for all three areas (MNI NEW). In the sub-adult group we were able to assign the present bone fragments to a minimum of six individuals based on age, size and morphology. Considering all age groups the total minimum number of individuals in all three areas is fourteen.

No *in situ* burials in the Pharaonic town area were found. The excavated commingled remains derive from different phases and have possibly been disturbed several times. The human remains show various stages of preservation. Some bones contained soft tissue residues, some were sun-bleached and a few were burnt.

Due to the poor state of preservation and fragmentation, information on age and sex was very limited. However, individuals from all age groups, except for the fetus/neonatus and distinct senile group, were represented in the overall sample. Sex could only be determined for 1 female and 4 male bones without doubt. 16 fragments were identified as "male?" and one fragment was classified ambiguous. The rest remained unclassified, since no distinguishing features were present on the respective fragments.

Two cases of trauma on the skull were found, one of which was a healed depression on a child's frontal bone. The inner surface of the skull appears to have remained intact at the time of impact. The second case was a depression fracture (Ø 2cm) on the cranial vault of an adult which probably led to the death of this individual, since no signs of healing were apparent.

7. Micromorphology in the New Kingdom town (by Miranda Semple)

During the 2015 season a micromorphological sampling programme was implemented. For this season sampling in the New Kingdom Town focused on the 18th Dynasty occupation in SAV1W and SAV1E. The aim was to examine the formation processes of various cultural depositional sequences in selected contexts in order to investigate how daily life activities contributed to the creation and use of space in the town. A total of 18 profiles were taken within all areas of excavation by Miranda Semple and Sayantani Neogi (9 profiles in SAV1 West; 4 in SAV1 East; 5 in SAV1 North). A single sample of a distinctive mortar was taken in SAF 2 to analyse the mix and identify the source material.

The sampling methodology began with careful cleaning of the contexts to be sampled. Martin Fera photographed and sketched the context at 1:5. A micromorphological description was completed for each profile based on macroscopic visual examination of each deposit or sequence of deposits, including the colour (Munsell), texture and structure (Bullock *et al* 1985; Stoops 2003) of the sediments and the presence of anthropogenic inclusions, pottery, bone and organics (charcoal). All significant architectural associations with the sedimentary contexts were carefully identified and recorded in order to link occupation phases with the cultural chronology. Samples were taken using plaster bandages and occasionally Kubiena tins. A few well-compacted samples were carved as blocks and covered with plastic wrap and securely taped. Bulk samples were taken for each sample for geochemical testing e.g., EC, pH and P. Each sample was given a profile number and points were taken using a *Leica* Total Station to identify the precise location of each soil block within the contexts and the square.

In conclusion, the micromorphological sampling program implemented during the 2015 field season of the New Kingdom Town on Sai Island has provided an initial set of soil blocks for thin section manufacture and micromorphological analysis. The various contexts that were sampled should shed fresh light on the organisation and use of space while elucidating some aspects of social practice within the community.

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8. Excavation in the cemetery SAC5, Areas 1 and 2 (by Julia Budka)

For AcrossBorders' planned detailed comparison between the material found in the New Kingdom town and in the Pharaonic cemeteries of Sai Island, work was resumed in the large New Kingdom cemetery SAC 5 (February 14 to March 12). This pyramid cemetery is probably the most important Egyptian cemetery of the island and was discovered in the season 1972-73 by the French mission. It lies approximately 800m south of the Pharaonic town and was partly excavated by the French mission, recently published as a substantial monograph in two volumes (Minault-Gout/Thill 2012). As with other Egyptian sites in Nubia like Aniba, Amara West and Tombos, Pharaonic-style tombs have been built at

SAC5. This cemetery is of major importance because it was in use for a long period of time, covering the New Kingdom as well as the Pre-Napatan Period (the so called Third Intermediate Period in Egypt). Its rock-cut tombs with mud-brick chapels and mostly pyramidal superstructures find close parallels at Aniba, Soleb and Amara West but also in Egypt, e.g. in the Theban necropolis.

Two areas were opened in 2015 (Fig. 9): **Area 1** in the South where the aim was to check anomalies visible on the geophysical survey map. A complete surface cleaning of this area was conducted. Test excavations proved to be interesting: it is now evident that this large sector set between two small hill outcrops in the southern part of SAC5 was probably void of tombs. We did not locate any burial monument, but rather various topographical features. This fresh information will allow some new insights into the evolution and size of the New Kingdom cemetery SAC5.

Area 2 is located north of area 1, just next to various 18th Dynasty monuments, such as tomb 8. The surface material covers all the periods attested for the use of SAC5 as a burial site: mid-late 18th Dynasty, Late Ramesside, Pre-Napatan and Napatan (cf. Thill 2006-2007). Within a depression dug into the natural bed rock a new shaft tomb, christened Tomb 26, with very scarce remains of a superstructure (possibly a chapel? a pyramid?) was located between tombs 8 and 7 (see Minault-Gout/Thill 2012). In this south-eastern part of the cemetery, already 13 tombs have been excavated by the French mission.

The rectangular shaft is North-South aligned and measures c. 2.60 x 1.80m with a depth of more than 5.20m. A set of 8 foot-holes was noted on each of the lateral walls (eastern and western shaft facing).

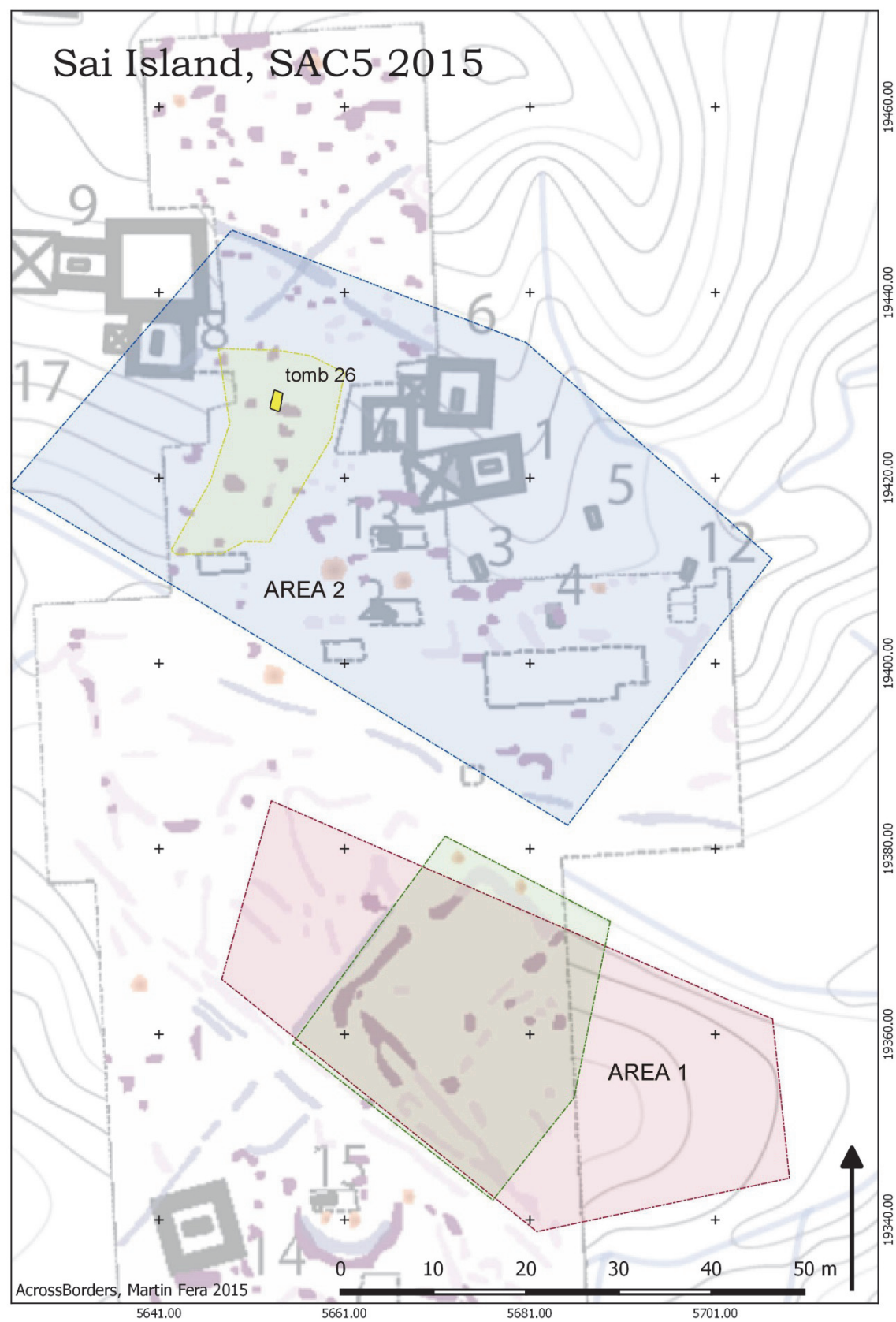
A level with a number of stone fragments was reached in 2.5m depth, together with many fragments of pottery vessels and a large quantity of bone pieces. The most dominant feature was a schist slab (130 x 76 x 10cm) set against the north-western corner, extending along the west wall of the shaft. Obviously it was one of the original closing stones of the shaft during the 18th Dynasty, but fell into the shaft at a later stage. The ceramics from this debris layer suggest a date after the 25th Dynasty – so possibly during the last phase of plundering before the shaft was left open for some time.

The filling material of the shaft just above the base was highly interesting: a number of complete vessels were found as well as some stones (pieces of architecture). Three complete Marl clay pilgrim flasks were found, together with other pottery vessels (especially storage vessels) and one complete stone vessel. Since these remains were clustering along the eastern wall of the shaft and in the south-eastern corner, the most likely explanation is that remains of a burial were removed from the chamber and left in the shaft during one of the phases of reuse (or possibly plundering?).

Both the inscribed stones discovered in the shaft and the ceramics indicate a burial dating back to the 19th Dynasty. Most important are two sandstone fragments giving the name and title of the *jdnw* of Kush Hornakht. He is already well attested from Sai Island and was active during the reign of Ramesses II.⁸

⁸ See K.A. Kitchen, *Ramesside Inscriptions. Historical and Biographical*, Vol. III, Oxford 1980, 117-118; J. Budka, *Der König an der Haustür*, Vienna 2001, 210-212.

Fig. 9: Working areas in SAC5 with location of tomb 26.



One of the blocks discovered in the shaft of tomb 26 is Hornakht's pyramidion, thus the clear proof that he was buried somewhere in SAC 5. A use of SAC 5 in the early 19th Dynasty is of great importance to understand the connection of Sai with Amara West during this period.

The burial chamber of tomb 26 opens to the north and seems to be in a stable condition (Fig. 10). It is almost square in outline, measuring 3.96 x 3.89 m. This rock-cut chamber was obviously looted and we only cleaned its uppermost debris before the complete subterranean system of tomb 26 was backfilled for future excavation in 2016. The further assessment of tomb 26, its phases of use and possible owners must therefore await the upcoming season.



Fig. 10: Side view of SFM Model of subterranean part of tomb 26; chamber in the North and shaft base in the South (Martin Fera).

One finding from the burial chamber indicates that the remains on the shaft bottom were originally deposited in the chamber: A small rim fragment of the almost complete stone vessel SAC5 212 found on the base of the shaft was discovered in the debris just inside the burial chamber.



Fig. 11: Stone vessel found on the shaft base, with a joining fragment from the burial chamber (SAC5 212).

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9. Geoarchaeological survey of the hinterland of the Pharaonic town

(by Sayantani Neogi)

A geoarchaeological survey in the vicinity of the New Kingdom town site was undertaken by the author from between January 18 to February 19 2015, assisted in the field by Miranda Semple, Martin Fera and Hassan Dawd. The objectives were specifically focused on the questions relating to the New Kingdom, especially the 18th Dynasty, occupation of the island. These were to place the archaeological site in its environmental context, to understand the nature of any surface preparation prior to the establishment of the settlement, provenance of sandstones found within the Pharaonic town, potential sandstone quarry locations and to shed light on any possible harbour/landing ground on the island during the period concerned. This site margin survey work took the form of judgmentally placed test pits and hand auger profiles, as well as opportunistic findings of exposed and available sections and quarry pits. At each profile *loci*, the stratigraphy was located, recorded and photographed and old land surfaces sampled as appropriate. Three types of samples were taken: intact soil block samples for micromorphological analysis (after Courty *et al.* 1989; Murphy 1986; Bullock *et al.* 1985; Stoops 2003), small bulk samples for physical characterization (pH, particle size analysis, organic content using loss-on-ignition, multi-element analysis) (after Milek and French 2007; Wilson *et al.* 2008) and sand-stone blocks for petrographic analysis (Hutchison 1974; Pettijohn 1987).

Six profiles were recorded from the landscape survey and seven sets of soil block and bulk samples were collected. In addition, from Profile 9 in SAV1 North, two soil block samples were collected from below the contact zone of the anthropogenic sediments and natural soil. Besides these, thirty-nine rock samples have been collected for further scientific analysis from different sandstone outcrops of the island and from on-site debris. These outcrops are mainly at Jebel Adou and the village of Adou, where at least 4-5 quarry places (date undetermined) have been marked. The rest of the sandstone outcrops in the island, particularly from the western side of the island, are coarse grained and friable and due to their inferior quality unlikely to be worked into dressed stones.

The aim behind collecting sandstones from on-site debris was to provenance their sources by characterising their mechanical and chemical properties. Preliminary observations, however, show that the sandstone types occurring on-site are mostly of local sources i.e., from Jebel Adou and Adou. A particularly high grade, fine-grained whitish sandstone found within the Pharaonic town could not be sourced in the island, but a potential source on the opposite bank of the river, near Jebel Abri is a possibility. A further detailed survey around this area and scientific analysis of this sandstone grade is required to confirm this suggestion.

In order to understand whether there was a harbour or not during the Pharaonic occupation, a thorough coring in transect was undertaken in the riverine alluvial platform adjacent to the town. This survey did not reveal the presence of any potential harbour. The nature of the soil and the adjacent cliff, however, suggest that this was perhaps a simple landing ground, sheltered by the steep sandstone cliff. Soil block samples have been collected to provide further insight into this suggestion.

Landscape survey and profile observations reveal that the underlying drift geology of the island is medium-grade metamorphic rocks (amphibolite, dolomite, quartzite, biotite gneiss, calcite marble), often overlain by medium to coarse-grained fluvial quartz sandstone, conglomerate, rare siltstone and occasional silicified wood (Draganits 2014). Desert condition weathering often led to the disintegration and decay of these rocky outcrops, often in *in situ* conditions. The central plateau of the island is either a *serir* or pavement with high amount of pebbles (Laity 2008) or characteristic *hamada* plain covered by angular gravels (Fairbridge 1968). Jebel Adou, an *inselberg*, is mainly comprised of different grades of Nubian Sandstone on the outer surface. Dry *wadis* of various sizes run towards the eastern and western banks of the island. The pre-Holocene and Holocene Nile sediments mainly comprise channel deposits and fine-grained floodplain sediments and commonly show soil formation processes, mostly identified near the eastern, western and northern banks of the island. A thin layer of comparably much younger Nile sediments mixed with windblown sand cover almost the whole island. Within the soil profiles, pale yellow calcitic silt and very fine sand with calcitic nodules marks drier environmental conditions. The stabilised 'B' horizons, observed within these soil profiles of the old Nile terraces (for example, Profile 5) may represent old palaeosol. These palaeosols and the alluviated narrow floodplain areas in the island would have provided a naturally and seasonally replenishing soil and groundwater system available for agricultural use with both nutrient and fine soil additions and a seasonally high groundwater table. This is probably the essence of the sustainability of the agricultural system in this region since at least the Neolithic times.

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10. Archaeobotanical investigations on Sai Island (by Frits B.J. Heinrich)

During the 2015 field season archaeobotanical investigations were carried out by F.B.J. Heinrich and J. van der Heul, both Groningen University, at Sai Island as part of the AcrossBorders Project. The primary aim was the collection of archaeobotanical material. This material will be microscopically analysed in the archaeobotanical laboratory at Groningen University. Another important goal was to survey and record the ecology and farming practices on Sai Island. In the light of the AcrossBorders Project's focus on New Kingdom Sai, archaeobotanical sampling was also focused on contexts from this period. Several Ottoman contexts and contexts not yet defined were sampled as well. The materials from within these samples (pottery fragments, certain crop species) may aid in better dating these contexts.

In the 2015 season, the primary focus in sampling was on mud bricks and their associated mud mortars and mud plasters. Mud bricks form an ideal archaeological context as they are self-contained and closed. Therefore there is hardly any risk of mixing or contamination. For archaeobotanists mud bricks are a particularly valuable context as humans often used plant materials to temper these. A total of 34 mud bricks, 14 mortars and 4 plasters were collected during the 2015 season. Mud bricks were collected at SAV1W, SAV1N, SAF2, SAV1N, from the so-called temenos wall of Temple A and at SAV1 (North and South magazines) and at the Ottoman Fortress.

The botanical team also conducted an ecological survey of the island. Understanding the ecology of the environment and its relationship with the landscape is important in reconstructing the past use of the landscape and its agricultural potential. The focus of the survey was on the areas north and south of the site, along the river, as naturally most vegetation occurred there. Also the western side of the island was explored. Plant species were recorded as they were encountered: always photographically and sometimes also by taking a physical sample. Aspects of crop-husbandry and wider food processing activities were also recorded.

Overall the season was a success and much high quality material was collected – putting the material to test in the laboratory will, without any doubt, provide important information.

11. Summary (by Julia Budka)

To conclude, the 2015 field season resulted in very important new insights, fresh sampling strategies and diverse observations about the landscape and the harbour situation. Most importantly, excavations in the town and cemetery added information about the evolution of Sai Island in Pharaonic times and here especially its development from the early 18th Dynasty to the Ramesside era.

The four most important results are as follows:

(1) The features unearthed in the southern part of SAV1 East pre-date Building A and probably belong to the early 18th Dynasty. With feature 57, a terrace wall, affinities to the building technique of the Kerma culture—dry-stone walls with *galus*/earth—can be noted. All in all, these southern remains mirror the findings in 2013 and are the northern extensions of the area excavated by Michel Azim around temple A.

(2) Building A at SAV1 East provides a close parallel to the so-called residence SAF2 in the southern part of the Pharaonic town, probably also regarding its function. For the first time, large sets of seal impressions were discovered, allowing reconstructing patterns of the Egyptian administration in Upper Nubia. The recent finds illustrate very well the importance of Sai as an administrative centre during the time of Hatshepsut and Thutmose III.

(3) The earliest phase of occupation within the town enclosure at SAV1 West is contemporaneous to the building of the town wall and dates to the mid-18th Dynasty. There is clear negative evidence for an early 18th Dynasty presence in this area of the site.

(4) More New Kingdom tombs are still unexcavated in the southern part of cemetery SAC5—this is clearly illustrated by tomb 26. The findings in tomb 26 testify to burials during the 19th Dynasty and this is of great importance for understanding the relationship between Sai and Amara West in this era and might be of historical significance for Upper Nubia in general.