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EVIDENCE FOR LATE THIRD MILLENNIUM WEATHER EVENTS FROM A SIXTH DYNASTY TOMB AT SAQQARA

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Abstract

During excavations in 1996 on a tomb in the Teti Cemetery at Saqqara by the Australian Centre for Egyptology (Macquarie University, Sydney, Australia), evidence of ancient weather events was revealed. The tomb belonged to the high official Inumin, who late in his career served as vizier of King Pepy I of the Sixth Dynasty. Over a metre of eolian sand sealed by extensive laminated silt deposits in the subterranean burial chamber was the result of a sustained dry windy period, followed by a short period of intense rainfall. These events are dated on stratigraphic grounds to the Late Old Kingdom – early First Intermediate Period. Evidence of the same weather event was recorded near the enclosure of Netjerykhet Djoser at Saqqara, which was dated by the excavators to the 23rd century BC.

Key words: Teti Cemetery, Saqqara, Sixth Dynasty, 4200 cal BP event, rainfall

INTRODUCTION

The Teti Cemetery at Saqqara is a multi-phase site featuring built tombs, the remains of other monuments and many minor burials spanning over two millennia. From 1994 to 2010, the Australian Centre for Egyptology (Macquarie University, Sydney, Australia) worked at the cemetery, with a particular focus on Old Kingdom built mastabas, and funerary remains from the New Kingdom and later. Over two seasons in 1995 and 1996, excavations uncovered a Sixth Dynasty mastaba belonging to Inumin, built of stone and mudbrick, with subterranean burial apartments.

During excavation of the burial apartments, evidence for weather events was discovered. This paper argues that this evidence is associated with climatic activity that took place toward the end of the third millennium BC. The results presented in this paper are based on the stratigraphy, the study of the finds, and observations of the author, who was responsible for excavating the burial chamber.

DESCRIPTION OF THE STRATIGRAPHY

Inumin was a Sixth Dynasty high official who served Kings Teti, Userkare and Pepy I. He held a number of roles including that of vizier, before his death early in the reign of the latter (Kanawati et al. 2006). The reign of Pepy I is conventionally placed from c. 2321–2287 BC (Shaw 2000: 480), but could date slightly earlier, around c. 2350 BC based on modeled radiocarbon dates (Bronk Ramsay and Dee 2010). Inumin's tomb belongs to the well-known cemetery of late Old Kingdom high officials buried to the north of Teti's Pyramid, which also includes the famous mastaba of Mereruka. Inumin's tomb is located nearly 28m NNE of the mastaba of Kagemni (Kanawati and Abder–Raziq 2005: Pl. 41), with the limestone superstructure built directly onto the virgin sand (Sowada in Kanawati, 2006: 57–63). This consisted of three decorated rooms (Rooms I–III), an undecorated room (Room IV), and an open courtyard (Room V) that was probably roofed at the northern end (Fig.1). The whole structure was surrounded by a mudbrick girdle wall on three sides (Context 1034). In November–December 1996, associated shafts and burial apartments were excavated and the whole complex was thus fully exposed.

Although Inumin's tomb was robbed in antiquity, the main shaft (Shaft 2) was sealed by a cemetery of minor burials dating to the mid-Eighteenth Dynasty (Sowada forthcoming). Beneath this phase was evidence of earlier re-use of the complex (Sowada in Kanawati et al., 2006, pl. 68–9). This included mudbrick structures on the flagstone floor of the courtyard (Contexts 1091/2) and additional shafts around the tomb perimeter (Contexts 1024, 1170A–E). The mouth of Shaft 2 had been re-configured with stone and mudbricks to create a new subsidiary shaft (Context 1128A) leading to a small burial chamber (1167) under the courtyard (Figs 2, 3). This re-use post-dated the interment of Inumin and pre-dated the Eighteenth Dynasty cemetery: joining statue fragments of Inumin were found in the shaft fill above these constructions (Sowada in Kanawati et al., 2006: 66–67, TNE96: 178a–b, Pl. 61).

Shaft 2, excavated to a depth of 12.8m to the flagstone floor of the chamber (1164), revealed the remains of a mudbrick wall (1163) inside the shaft, 5m from the mouth (Fig. 2, Section C–C). This wall, part of the original tomb construction, narrowed the shaft to half its width and originally extended all the way to the surface. The upper shaft deposits (1138, 1142) contained nothing more recent than the

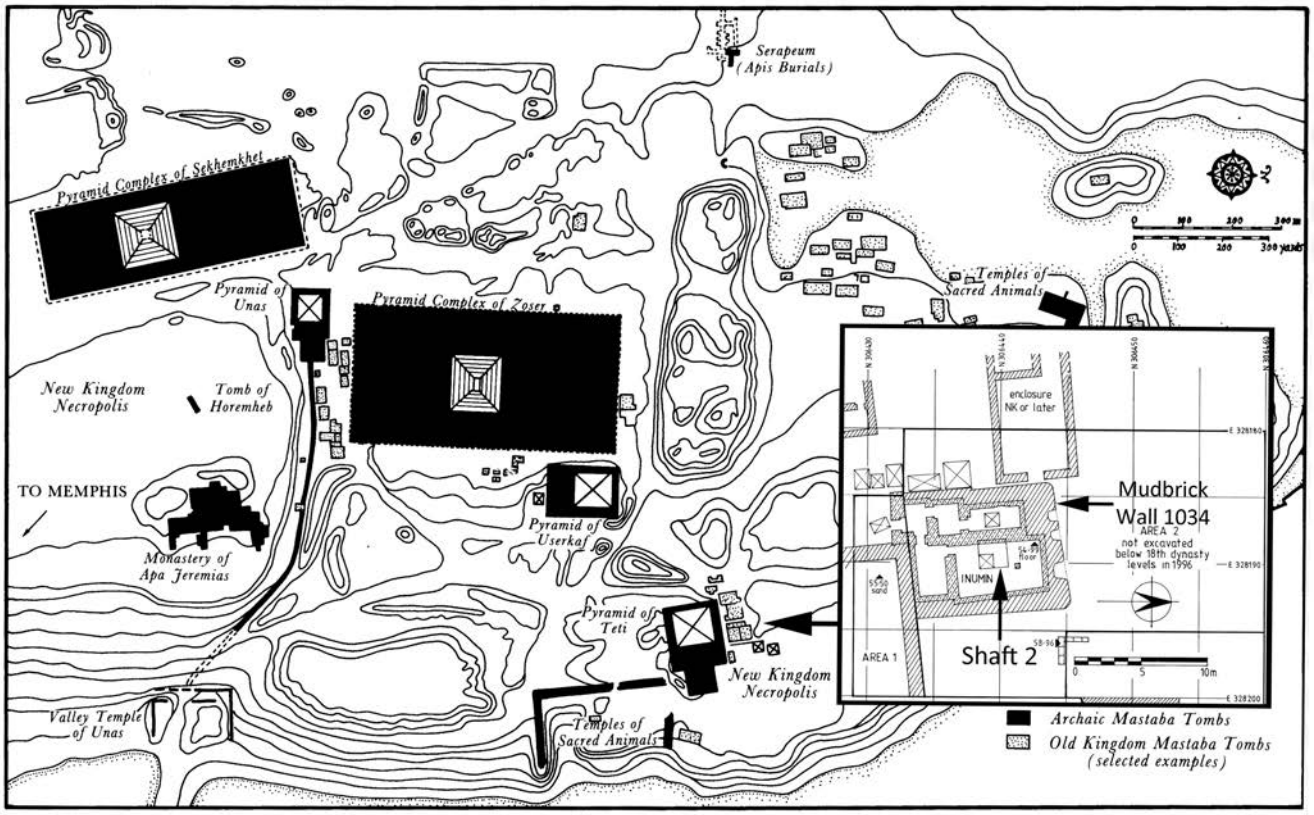

Fig. 1. Map of Saqqara showing the location of Inumin's tomb in the Teti Cemetery (after Martin 1991, fig. 5 and Kanawati et al. 2006, pl. 69).

First Intermediate Period, including a small false door of Ikeri dated to this era (Sowada in Kanawati et al. 2006: 68, pl. 82, TNE96:FD2). The bottom of the shaft opened onto the decorated main burial chamber and contained the limestone sarcophagus. The entrance to the chamber was completely unblocked and several large limestone blocks were found at differing heights in the sand. Inumin's body was absent and no other human remains were found, indicating that his body was lifted to the surface for robbing and the chamber was not used for later interments. There were, however, a great many objects which could be attributed to the burial equipment of the deceased, including complete ceramic vessels, canopic jars, a metal ewer and basin, a travertine offering tablet bearing Inumin's name, copper tools, and a butchered cattle bone (Sowada in Kanawati et al., 2006: 55–76) (Figs 4, 7).

The burial chamber contained two main deposits: yellow sand (Contexts 1156 and 1159) and grey mud/silt (Context 1157). The sand had spilled into the chamber from the entrance and sloped down towards the opposite wall (Fig. 2, Section B–B; Fig. 5). This fine loose sand also contained Old Kingdom sherds. Some objects were still located on the flagstone floor, but others were located at different heights in the sand (Figs 4, 7), and it is notable that two ceramic digging tools were also found here (Sowada in Kanawati et al., 2006: 72, TNE96: 242a–b).

Directly above the sand was a compact laminated deposit (Context 1157) consisting of many alternating layers of grey and dark grey silt varying in thickness of between 1–10cm (Fig. 5). The precise number of laminae was not counted during excavation, but has been estimated at around 200 (Welc and Marks in press). The deposit filled the chamber to the ceiling and contained small white angular stone fragments <20cm in length, but no objects or pottery (Fig. 6). The wet, humid environment of the burial chamber had also caused some of the ceiling plaster to loosen and settle onto the top of the silt. Water-borne silt had also flowed into, and completely filled, the limestone sarcophagus through a robber's hole (Context 1160). The silt also dried onto the painted walls and after excavation of the burial chamber, this 'tide mark' was clearly visible all the way around the chamber (Fig. 7). This made for a difficult conservation job as silt was caked onto the surface.

ARCHAEOLOGICAL INTERPRETATION

During the excavation in 1996, I noted that silt deposit 1157 was a startling and singular occurrence. At the time I interpreted it as evidence of major rainstorms of the kind that occurs rarely yet does enormous damage in Egypt (Sowada in Kanawati et al. 2006: 62). I have since seen similar water-borne deposits in burial chambers of later date but nothing on this scale. However, no formal geological analysis was undertaken. No similar deposits from other Old Kingdom Saqqara tombs were recorded by ACE missions, as work has mostly focused on epigraphic and architectural recording of previously excavated tombs. The epigraphic, architectural and archaeological results from the tomb of Inumin were fully published in Kanawati et al., 2006.

The depositional history of the burial chamber can be interpreted in the following way. After interment of the de-

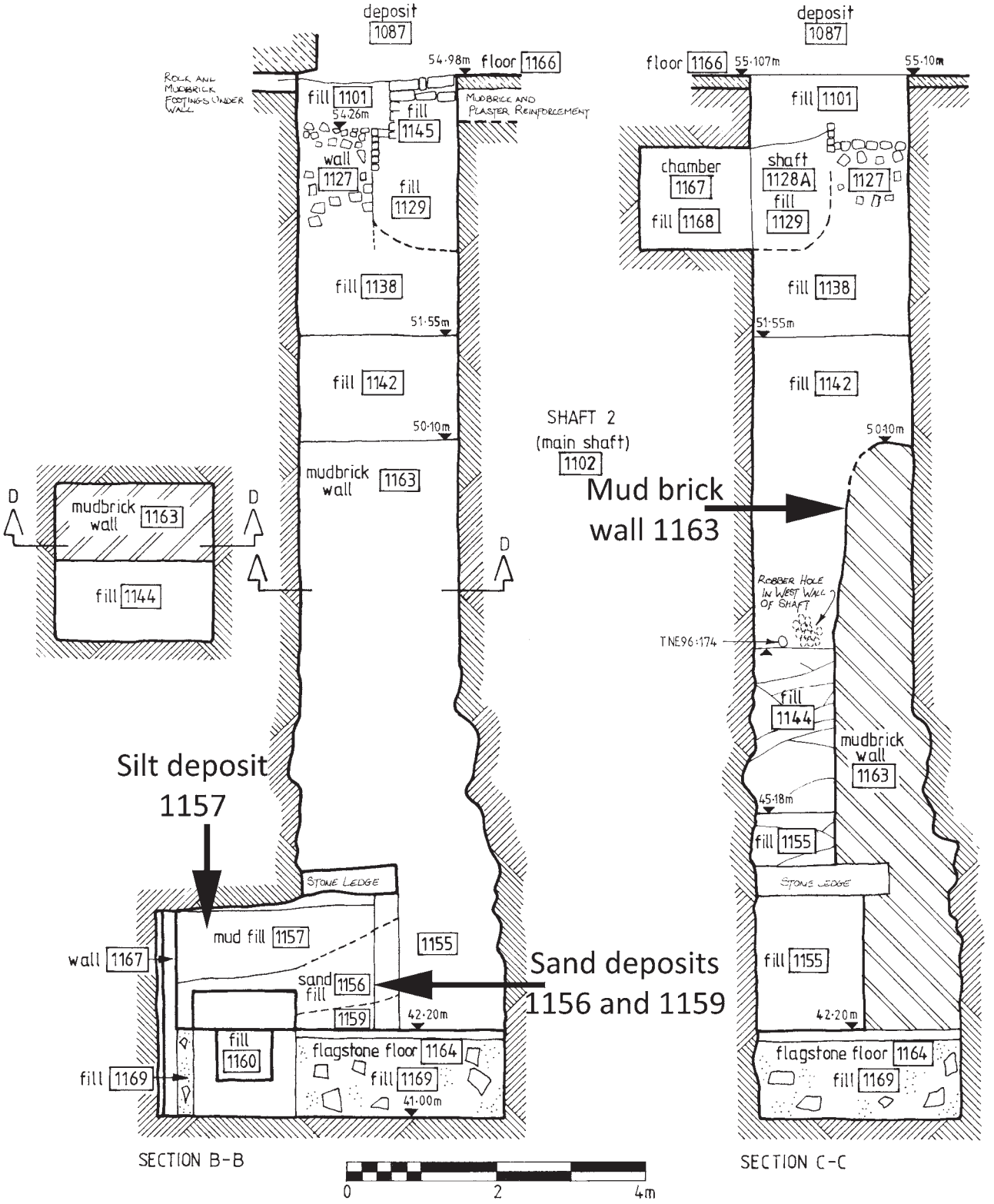

Fig. 2. Sections through Shaft 2 and the main burial chamber: note silt deposit 1157 and sand deposits 1156 and 1159 (from Kanawati et al. 2006, pl. 71).

ceased, the sarcophagus was broken in to and the body of Inumin removed, along with other precious items. In all likelihood there was more than one robbing at this time. Subsequently (but still relatively early in the tomb's history), the shaft mouth was open to the elements and wind-blown sand (1156 and 1159) entered the chamber from above, spilling down the shaft into the burial chamber from the entrance at the bottom of the shaft, which was now unblocked (Fig. 5). The eolian sand was not mixed with other limey or clayey material. The sand included loose Old Kingdom pottery

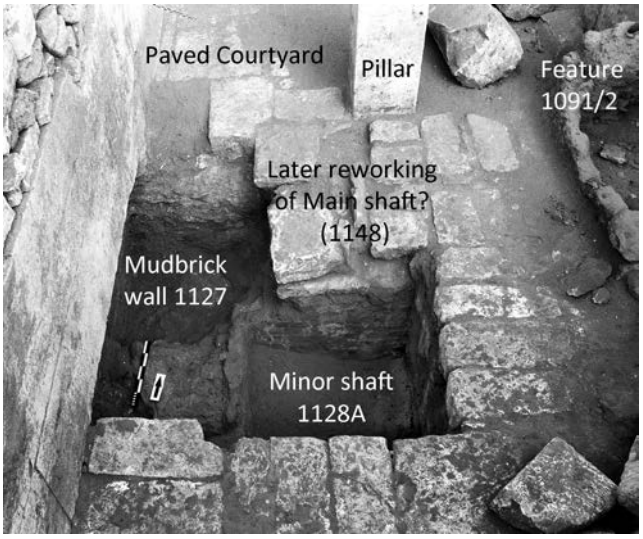

Fig. 3. Post-Old Kingdom features at the mouth of Shaft 2.

Fig. 4. A broken canopic jar (TNE96:209) from the original burial equipment *in situ*, on sand deposit 1159 in the NW corner of the burial chamber.

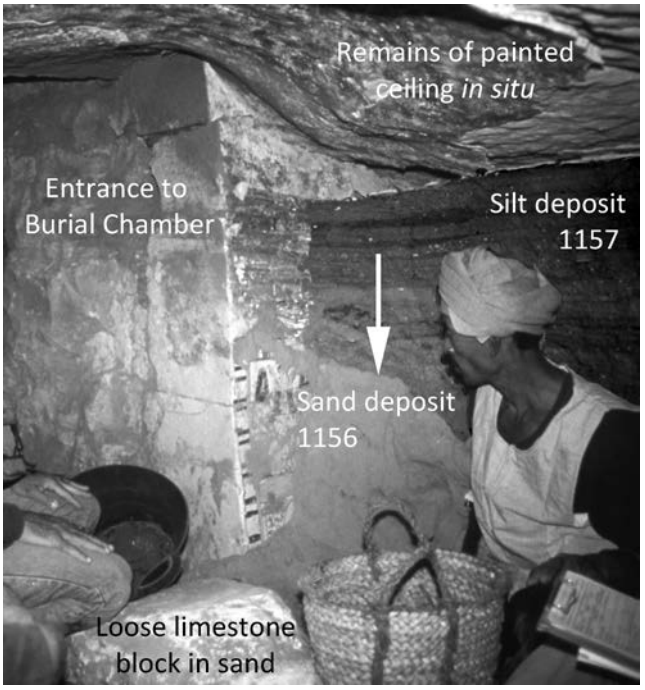

Fig. 5. Burial chamber during excavation, with interface (arrowed) between water-borne silt (1157) and eolian sand deposit (1156).

sherds which did not belong to the remaining burial chamber assem- blage (Sowada in Kanawati et al., 2006: pl. 80), as they could not be mended into any of the vessels found there. During this time there were further robbing episodes, as indicated by the uneven deposit heights of the remaining objects as material was moved about by robbers, and presence of digging tools in the sand. All this activity probably occurred little more than several generations after Inumin's burial, once he had passed out of living memory, and official supervision of the necropolis had weakened at the end of the Sixth Dynasty.

While the shaft was still open, water-borne silt (Context 1157) was deposited by a series of intense rainstorms, between which no other material was deposited. The silt did not fully dry out between inflows: there was no evidence of dry crusts having formed on individual laminae, which suggests a closely-spaced wet weather pattern. The rain 'melted' the missing upper section of the shaft mudbrick wall 1163 (Fig. 2, Section C-C), and dissolved other mudbrick features from the surface, including possibly the upper reaches of mudbrick wall 1034 which surrounded the superstructure, and any mudbrick features built within the courtyard. The silt settled on the sand and slowly sedimented in the wet, humid environment of the burial chamber (F. Welc, pers. comm.).

The sand and silt deposits pre-date later constructions at the mouth of the shaft which sealed the shaft contents (Figs 1–3). These constructions showed no evidence of water damage. There was no debris inside the upper shaft later than the First Intermediate Period. One of the lower shaft deposits (Context 1144) contained late Old Kingdom pottery in a grey rubbly deposit; the laminated silt deposits and wind-blown sand pre-date this as well. No finds in sand deposits 1157 and 1159 dated later than the late Old Kingdom.

A robber hole in the west wall of the shaft (Fig. 2, Section C-C) was cut from a later burial chamber to the west. The latest deposits in the second chamber dated to the Saite or Persian Period and there was no earlier material present. While it is possible that this second burial chamber has an earlier history, no evidence of this could be detected and thus the conclusion is that the robber hole dates to the Saite Period or later (Sowada in Kanawati et al., 2006: 58–61). There was no evidence that this later robbing penetrated the burial chamber of Inumin and further disturbed its contents.

DISCUSSION AND CONCLUSION

In the absence of scientific dating evidence, it remains my opinion that the burial chamber was sealed by deposits well before the end of the third millennium BC. Several factors support this conclusion: the burial chamber and shaft deposits are relatively homogenous in date and nothing can be placed later than the late Old Kingdom (burial chamber) and early First Intermediate Period (Shaft 2); the very complete

Fig. 6. Laminated silt deposit (Context 1157) inside the burial chamber. Note the plaster which has fallen off the ceiling and settled on top of the silt (arrowed).

state of many objects in the burial chamber suggest limited robbing; and similar re-use of the shaft mouth (which bears no water damage) is attested during the First Intermediate Period at Saqqara (Firth and Gunn, 1926: 1, 3, 36–7).

Secondly, both the sand and the silt deposits point to a general state of neglect of the tomb. During the eolian sand deposit phase, the shaft was evidently open to the elements for an extended period, and subjected to repeated robbing. After about three generations, Inumin would have passed out of living memory, thus family care of the tomb had probably declined some time in the 23rd century BC. In addition to family neglect, an open shaft and continued robbing is consistent with a breakdown of wider official control of the cemetery, the result of a more chaotic political situation in Egypt at the very end of the Old Kingdom (Shaw 2000: 113– 117). Again this would suggest a 23rd century BC date, possibly during Pepy II's long reign.

The sand deposits (1155, 1156 and 1159) point to a period of dry, windy weather of uncertain duration. Little in the way of specific conclusions can be drawn from this, as an open shaft in a desert cemetery will invariably fill up with sand if unhindered by human activity (see for example Saite Period/Persian era Shaft 1, Sowada in Kanawati et al., 2006: 58–59, 64–66, pl. 70).

On the other hand, parallel sedimentation and geological evidence for the weather events illustrated by silt deposit 1157 have been observed at Saqqara near the Netjerykhet Djoser complex. This period of humid weather and high rainfall is dated to the late Old Kingdom–early First Intermediate Period (Trzciński et al., 2010; Myśliwiec et al., 2012). Burial shafts were also 'robbed and left open' during this phase. It is proposed that the laminated silt deposit 1157 from the burial chamber of Inumin belongs to the same weather events and should be placed in the 23rd century BC.

Fig. 7. SE wall of the burial chamber prior to restoration, showing the differing effects of sand and silt on the decorated walls. Note the copper basin and ewer still *in situ* (bottom right).

As such, it may pre-date the c. 4200 cal BP aridification event recorded in Egypt and across much of Western Asia

(Arz et al., 2006; Bernhardt et al., 2012). However, the unsettled weather caused by the sustained rain storms would have created havoc with local economic and agricultural activity, usually dependent on stable climatic and environmental systems, thus adding to an already unsteady political situation for the king and his administration in the late Sixth Dynasty.

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