
環境変遷史国際シンポジウム
シリア・ユーフラテス河中流域
Geo-environmental Research in the Middle Euphrates, Syria
2009.11.26 THU 13:00~17:00
名古屋大学 理学部E館1階 127講義室
司会：吉田 英一
・本特定領域研究プロジェクトの意義
Prospect of the project in Syria
・ユーフラテス河段丘と地質環境
Geo-environmental changes viewed from Euphrates terraces
・遺跡の丘の放射線層序学的調査
Radio-stratigraphical survey for Tell Ghanem al-Ali
・シリア段丘の地下水と"ユーフラテス小僧"の形成環境
Formation of Syrian concretion in Euphrates flood plain, Syria
・ビシュリ山系の新生代火山活動
・Persian culture grown in Zagros geo-environment
・シリア前期青銅器時代の農耕活動
Agriculture in the Early Bronze Age, Syria
・History of Syria developed in the Middle Euphrates
・テル・ガーネム・アル・アリの炭素14年代と集落変遷の謎
・ユーフラテス河中流域の拠点集落 テル・ガーネム・アル・アリの発掘調査
Excavations at Tell Ghanem al-Ali, the Jabal Bishri, Syria
特定領域研究 計画班「環境地質学、環境化学、14C 年代測定 にもとづく ユーフラテス河中流域の環境変遷史」

Program November 26, 2009

Geo-environmental Research in the Middle Euphrates, Syria

司会：吉田英一 Hidekazu YOSHIDA, Chair

13:00-13:10 星野光雄（名古屋大学 環境学研究科） Mitsuo HOSHINO
本特定領域研究プロジェクトの意義
Prospect of the project in Syria

13:10-13:30 齊藤 毅（名城大学 理工学部） Takeshi SAITO
ユーフラテス河段丘と地質環境
Geo- environmental changes viewed from Euphrates terraces.

13:30-13:50 田中 剛（名古屋大学 環境学研究科） Tsuyoshi TANAKA
遺跡の丘の放射線層所学的調査
Radio-stratigraphical survey for Tell Ghanem al-Ali

13:50-14:10 吉田英一（名古屋大学 博物館） Hidekazu YOSHIDA
シリア段丘の地下水と“ユーフラテス小僧”の形成環境
Formation of Gypsum concretion in Euphrates flood plain, Syria

14:10-14:30 星野光雄（名古屋大学 環境学研究科） Mitsuo HOSHINO
ビシュリ山系の新生代火山活動
Young volcanoes along Euphrates; did ancient people enjoy hot spa?

14:30-15:00 Hossein Azizi (Mining Dept., Kurdistan Univ. Iran)
Persian culture grown in Zagros geo-environment

15:00-15:20 Tea break

15:20-15:50 赤司千恵（早稲田大学 文学研究科） Chie AKASHI
シリア前期青銅器時代の農耕活動
Agriculture in the Early-Bronze Age, Syria

15:50-16:20 Anas Al-Khabour (Directorate General of Antiquities and Museums, Syria)
Archaeological excavations at al-Bishri and tell Ghanem al-Ali

16:20-16:40 中村俊夫（名古屋大学 年代測定総合研究センター）Toshio NAKAMURA
テル・ガーネム・アル・アリの炭素14年代と集落変遷の謎
Carbon-14 dating along archaeological succession of Tell Ghanem al-Ali.

16:40-17:10 長谷川敦章（筑波大学人文社会科学研究科） Atsunori HASEGAWA
ユーフラテス河中流域の拠点集落 テル・ガーネム・アル．アリの発掘調査
The sounding at the Site of Tell Ghanem al-Ali

Prospect of the Project in Syria

Mitsuo Hoshino

Graduate School of Environmental Studies, Nagoya University, Japan

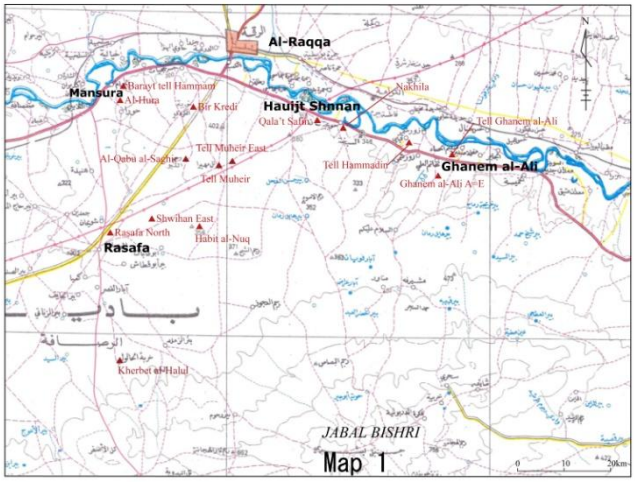
The Syria–Japan multidisciplinary archaeological joint research project titled ‘Formation of Tribal Communities in the Bishri Region, Middle Euphrates’ began in spring 2005. Since then, our geological and environmental research team has conducted detailed field survey in and around the Tell Ghanem al-Ali excavation site using geological, geochemical, geochronological and remote-sensing methods to understand the environmental changes in the area since prehistoric times.

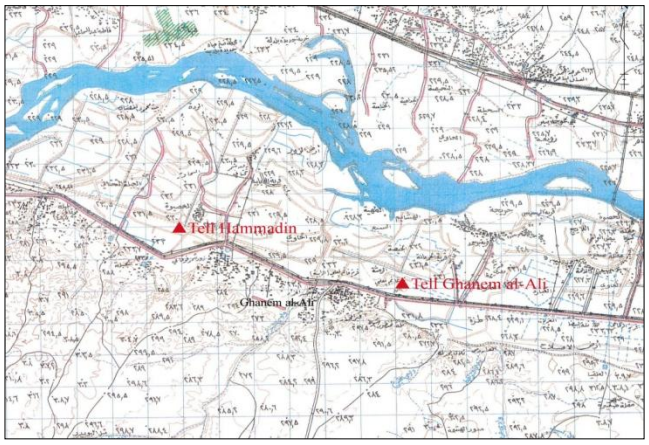
The Geological Research Team

Mitsuo Hoshino[1)], Tsuyoshi Tanaka[1)], Toshio Nakamura[2)], Hidekazu Yoshida[3)], Takeshi Saito[4)], Kazuhiro Tsukada[3)], Yusuke Katsurada[5)], Yoshiyuki Aoki[1)], Suguru Oho[1)]

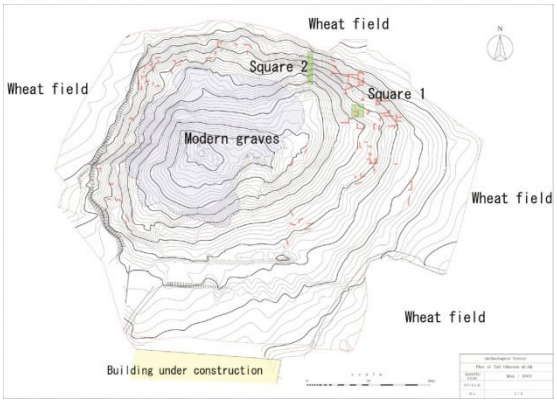
[1)] Graduate School of Environmental Studies, Nagoya University, Japan
[2)] Center for Chronological Research, Nagoya University, Japan
[3)] Nagoya University Museum, Japan
[4)] Faculty of Science and Technology, Meijo University, Japan
[5)] Center for Student Counseling, Nagoya University, Japan

Major geological structure in the Arabian Peninsula.





Locations of the sites of Tell Ghanem al-Ali and Tell Hammadin, and related sites.



Tell Ghanem al-Ali excavation site. The contour map was newly surveyed and drawn by Hasegawa et al. (2007).

Geo-environmental changes viewed from Euphrates terraces

Takeshi Saito

Dept. Environmental Science & Technology, Meijo University, 468-8502 Japan

Five levels of river terrace, I, II, III, IV and V in descending order, and a floodplain in the narrow sense of the Euphrates are recognisable on the basis of available topographic maps and field observation (Figs. 1, 2). These terraces are well developed from Zor Shammar to the Wadi el-Kharar area. Tell Ghanem al-Ali is located on the lowermost terrace, V, which has an elevation around 230 m a.s.l. and is 1–2 m higher than the floodplain.

The sediments of terrace V could be observed at several localities, especially along the Euphrates. They chiefly consist of sand and occasionally of gravel and sandy mud. The formation age of terrace V is inferred from ^{14}C dating. The ^{14}C ages of three charcoal specimens collected from terrace V sediments are 899 ± 26, 949 ± 27 and 927 ± 25 y. B.P. The ^{14}C ages of two other specimens of carbonaceous fraction from the fluvial muddy fine sand are 4494 ± 37 and 3245 ± 29 y. B.P. These age data indicate the formation of terrace V during ca. 4500–900 y. B.P.

The terrace V sediments were also observed on the site of a factory under construction, which is adjacent to the tell (Saito and Tsukada, 2008). The sediments consist of sand with intercalations of two fluvial gravel layers. The lowest part of the sediments belonging to the tell were also observable and include some artefacts, several charcoal layers and many charcoal fragments. Seven ^{14}C age data ranging from 4001 ± 30 to 4093 ± 36 y. B.P. were obtained. These age data suggest that the settlement of Tell Ghanem al-Ali began during the early stage of terrace V formation.

The elevations of the higher terraces, I, II, III and IV are 250 m, 242–245 m, 237–240 m and 233–234 m a.s.l., respectively (Fig. 1). However, our survey team found very few fluvial “terrace sediments” in terraces I, II, III and IV, which suggests that they are basically erosional in origin.

The basement of the erosional terraces consists of fluvial sediments of paleo-Euphrates in Pliocene or Pleistocene (?) (Unit 1, Fig. 3) and fluvial and debris flow sediments with gypsum breccia (Unit 2, Fig. 3) The terrace surfaces are generally covered with young sandy sediments, presumably of aeolian origin.

I infer that tectonic phase after Miocene of the area comprises at least two stages. Earlier stage is depositional phase of Unit 1 and Unit 2. Later stage is erosional phase when erosional terraces were formed.

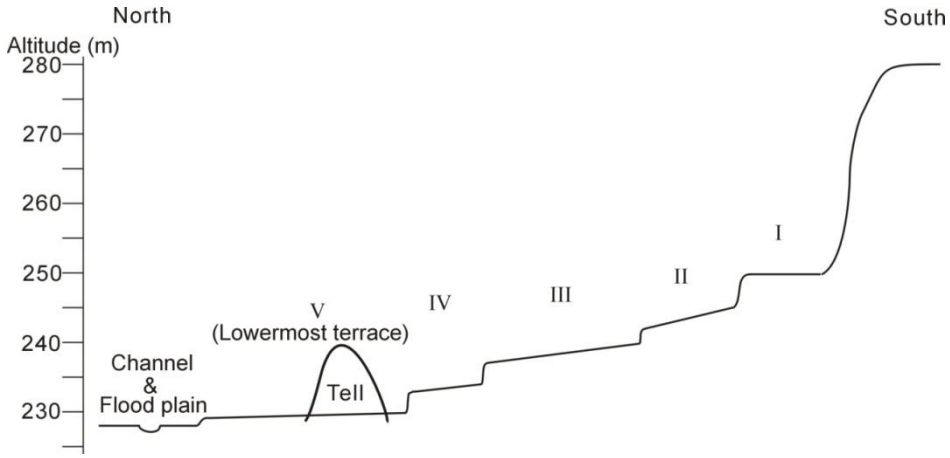


Fig. 1. Schematic diagram showing the topography around Tell Ghanem al-Ali. Roman numerals indicate terraces.

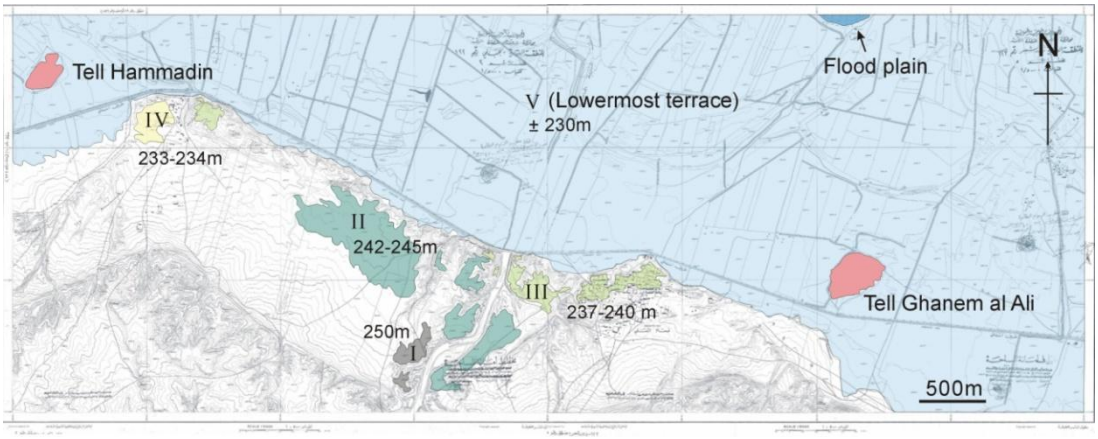


Fig. 2. Map showing topography and terraces.

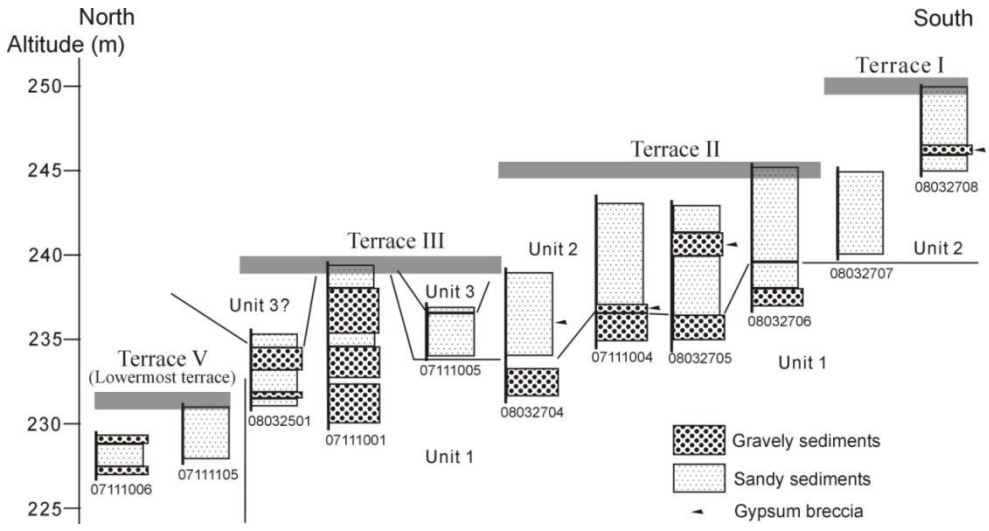


Fig. 3. Simplified geologic columns of the studied area.

Radio-stratigraphical survey for Tell Ghanem al-Ali

Tsuyoshi TANAKA, Nagoya University, Nagoya 464-8601 JAPAN

An important aspect regarding the geological setting of the tell is in verifying whether Tell Ghanem al-Ali was built on a remnant edge of the old terrace or on the lowest Euphrates terrace. Stratigraphic survey of the area, however, is very difficult, because the terrace sediments do not contain any remarkable key beds like tuff. Thus, we performed on-site radioactivity measurements of gamma rays of ^{40}K, ^{214}Bi and ^{208}Tl using an InSpector 1000 portable gamma-ray spectrometer from CANBERRA Co., equipped with an IPRON-3 3x3-inch NaI detector. The measurements are actually performed for 1461 keV gamma rays of ^{40}K, 1764 keV gamma rays of ^{214}Bi and 2614 keV gamma rays of ^{208}Tl. ^{214}Bi and ^{208}Tl are the daughter nuclides appearing in the decay series of ^{238}U to ^{206}Pb and ^{232}Th to ^{208}Pb, respectively. Subsequently, we obtained the relative elemental abundances of potassium, uranium and thorium by these measurements. (Fig.1)

Thirty points covering Squares 1 and 2 of the excavation sites of the tell were selected. Radioactivity was also measured in the surrounding wheat field and the river terrace along Wadi el-Kharar for comparison. The detector was held 1 m high and the radioactivity within a 3-m radius of the detector can be measured. It takes 600 s to complete the measurement for each measuring point.

Fig. 1 Measurement of radioactivity at Tell Ghanem al-Ali, Syria

Activities for potassium range from 1000 to 4200 counts (Fig. 2). These are common activities in natural environments in Syria as well as in Japan. Activities for potassium at the tell, more than 3000 counts, are higher than those at the wheat field and Wadi el-Kharar, which were mostly below 3000 counts. There is no significant difference between the tell and other places in uranium and thorium activity. Potassium is mostly contained in K-feldspar and mica minerals, and uranium and thorium are contained in accessory minerals such as zircon and monazite. The K-feldspar and mica minerals tend to weather easily, though the zircon and monazite resist weathering. K-feldspar is sparse in the river sediment because it is consumed (fragmented and dissolved) during transportation. On the other hand, zircon increases in river sediments because of its resistance to weathering. Thus, we conclude that the sediments in the wheat field and the river terrace along Wadi el-Kharar exhibit the characteristics of river sediment, whereas the tell sediments do not. A large part of the tell sediments must be soils transported from non-river terrain, probably from the hills behind the Ghanem al-Ali village.

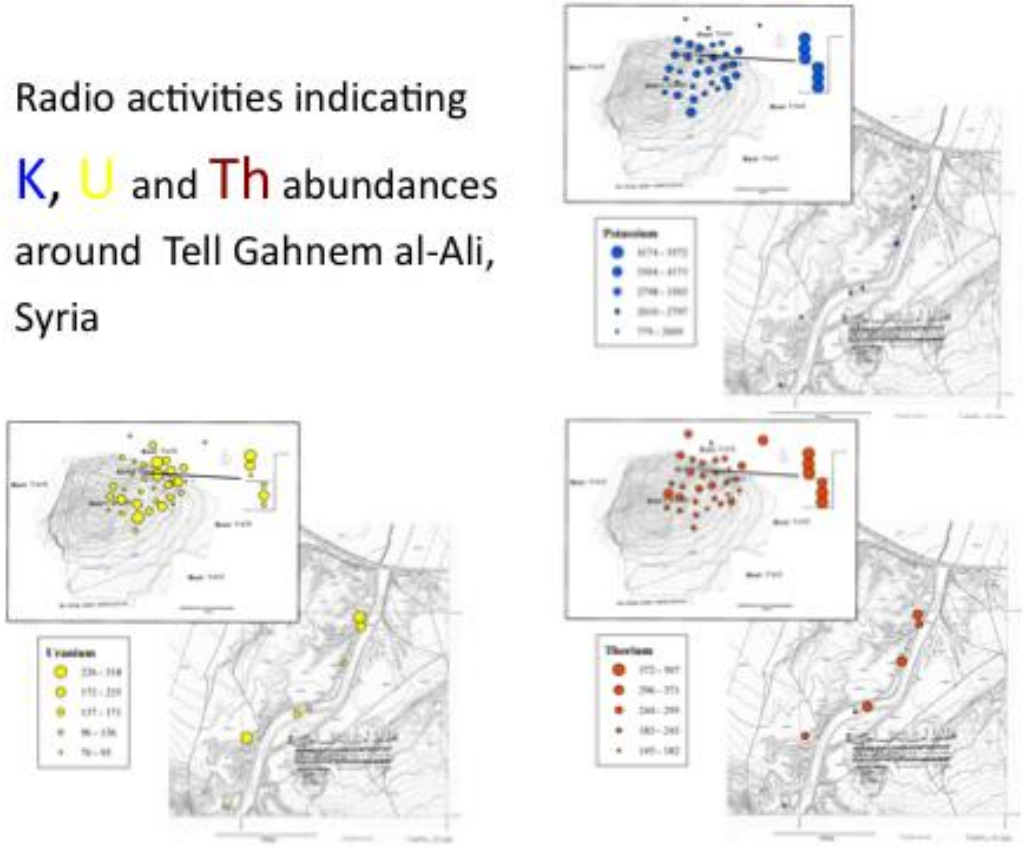


Fig. 2 Radioactivity of ^{40}K, ^{214}Bi and ^{208}Tl at Tell Ghanem al-Ali (in the square) and the river terrace along Wadi el-Kharar.

Formation of Gypsum concretion in Euphrates flood plain, Syria

Hidekazu Yoshida, *Nagoya University (Japan)*

Euphrates flood plain includes modern channels, oxbow lakes, banks and marshes, and contains five levels of river terraces. These sedimentary phases of terraces are mainly unconsolidated dry silty to fine sand materials with poorly sorted gravels provided from the Bishri Mountains. The study of sedimentary features is therefore enabling us to know the environment of Tell Ghanem al-Ali had built.

From the last field survey of terraces, we found many types of gypsum concretions in the soft terrace sediments. The size of concretion is about 1~2 cm diameter with several cm long (Fig.1). Sometimes, it has several tens cm grown vertically to the sedimentary layer and cross the bedding plane. The occurrence suggests that the concretion has been formed after the deposition of terrace sediments as following steps. First of all, the sediments deposited about several Ka ago. The age of sedimentation is estimated by the structural relation with Tell Ghanem al-Ali and building processes. Of course with the isotope carbon data, if available, would be shown more precise time of the building and sedimentation periods. After the deposition, sediments still has certain about of pore-water (wet) and the composition is presumably becoming very high contents of Ca. This is estimated by the present river water contents of Euphrates, and also the dissolution of gypsum that has provided from the basement rocks (Fig.2).

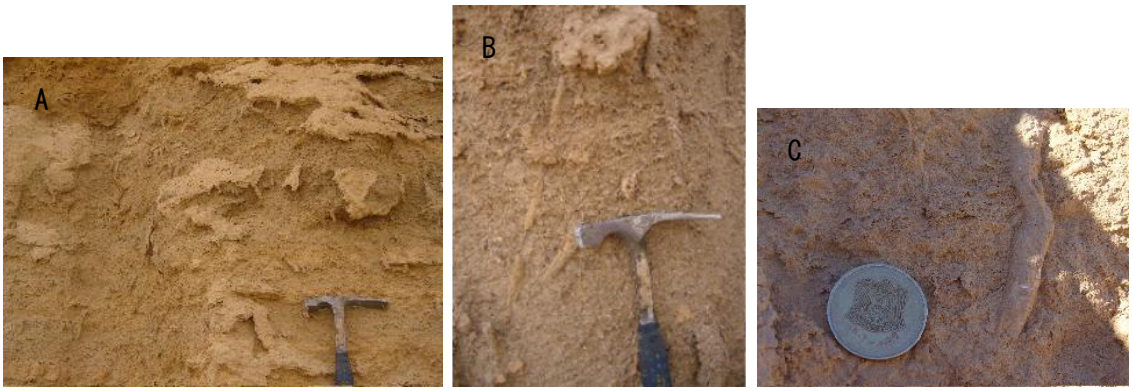


Figure 1; Photographs showing the occurrence of gypsum concretion formed in river terraces. A,B; Correlation of sedimentary layer and C;gypsum nodules.

During the compaction of continuing the terrace deposition, pore-water has been isolated and concentrated beyond the solubility limit of calcium. On the other hand, sediments contain also sulfate from the organic matters. Due to the

diagenetic alteration such geochemical setting had formed, finally hydrous calcium sulfate has been precipitated and the concretion has been formed. It is however, the shape of concretion is quite unique, i.e. similar to the root plaque of plant growing in the flood plane, and that the precise formation is still necessary to analyze.

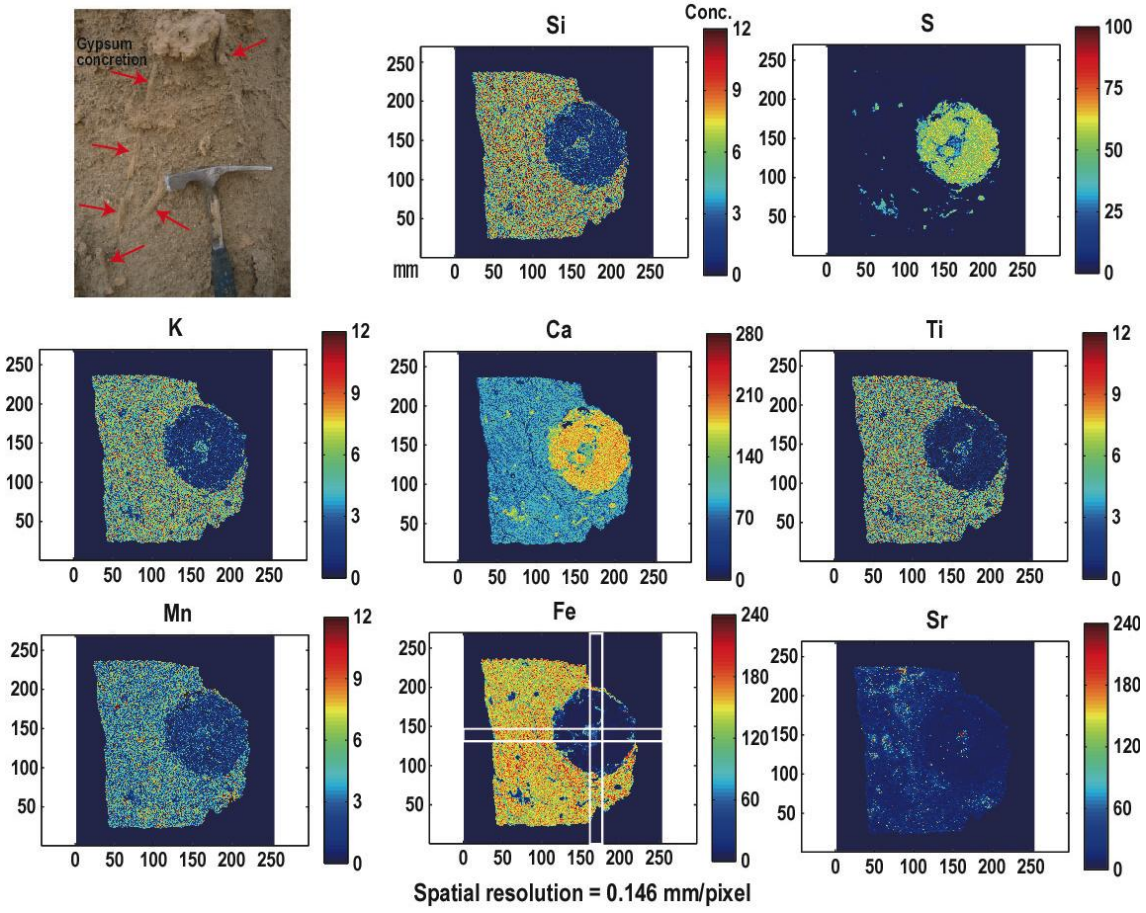


Figure 2; Elemental map and its profiles cross the gypsum nodule analyzed with SXAM system.

Young volcanoes along Euphrates; did ancient people enjoy hot spa?

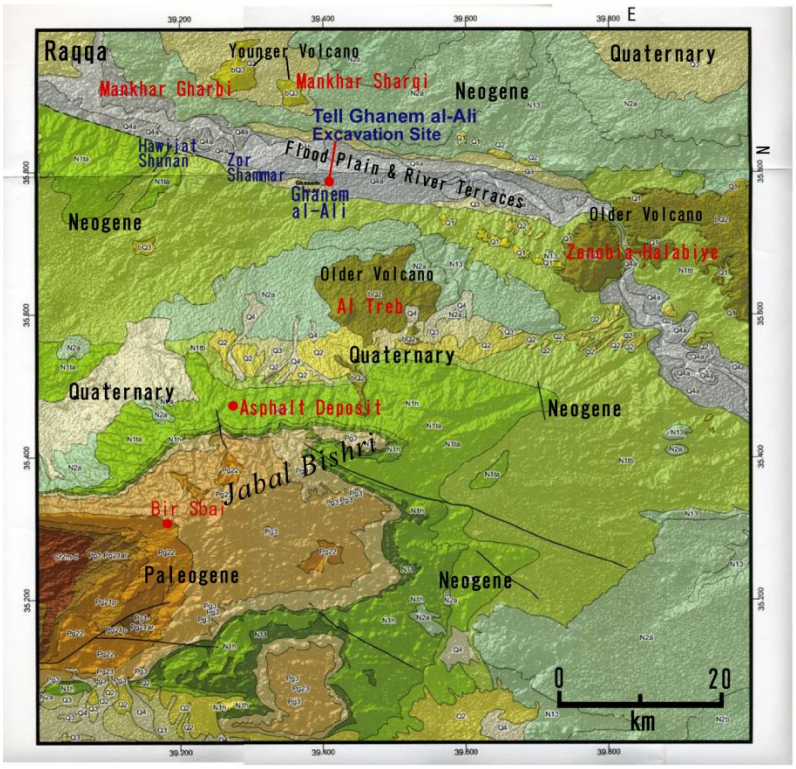
Mitsuo Hoshino

Graduate School of Environmental Studies, Nagoya University, Japan

In Quaternary times, volcanic eruptions took place in the area; the resulting lava flow and pyroclastics covered the basement rocks in four places: the Al Treb, Zenobia-Halabye, Mankhar Gharbi and Mankhar Sharqi volcanoes (Fig. 1). The following ages were obtained from K-Ar dating performed on three rock specimens: 2.72 ± 0.09 Ma B.P. for Al Treb, 2.60 ± 0.08 Ma B.P. for Zenobia-Halabye and 1.38 ± 0.08 Ma B.P. for Mankhar Gharbi (Table 1). In addition, XRF chemical analyses were performed on eleven rock specimens. It is noteworthy that the rocks from the older volcanoes were identified as basanite of the per-alkaline variety, whereas those of the younger volcano were identified as foidite of the hyper-alkaline variety (Table 1, Fig. 2). Foidite, terrestrially very rare in occurrence, characteristically contains phenocrystic nepheline crystals in which groundmass crystals of augite and opaque minerals are embedded poikilitically (Fig. 3). Chemical and isotopic compositions of the Euphrates volcanic rocks reflect strong affinity to the hotspot basalt group. According to the archaeological evidence in Levant, *Homo erectus* probably lived there around 1.5 Ma ago. They might have seen the eruption of Mankhar Gharbi and enjoyed hot spa.

Table 1. Major element chemistry, K-Ar radiometric age and Sr isotopic ratio of the volcanic rocks.

Sample No.	B−1	B−2	B−3	B−4	B−5	B−6	B−7	B−8	B−9	B−10	B−11
Rock name	Porous basanite lava	Massive basanite lava	Massive basanite lava	Massive basanite lava	Porous basanite lava	Massive basanite lava	Massive foidite lava	Porous foidite lava	Foidite scoria	Porous basanite lava	Porous foidite lava
Locality	Al Treb	Al Treb	Al Treb	Zenobia − Halabiye	Zenobia− Halabiye	Zenobia− Halabiye	Mankhar Gharbi	Mankhar Gharbi	Mankhar Gharbi	Mankhar Gharbi	Mankhar Sharqi
SiO_2 (wt. %)	43.41	43.32	43.45	42.90	41.44	42.62	39.40	40.02	39.33	41.58	39.46
TiO_2	3.17	3.12	3.13	3.52	3.45	3.18	3.18	3.06	3.28	2.92	3.53
Al_2O_3	11.71	11.93	12.07	11.79	11.58	11.71	9.80	10.13	10.13	10.93	10.63
Fe_2O_3*	13.60	14.34	14.31	14.59	14.36	15.11	13.09	13.85	14.17	13.59	15.13
MnO	0.17	0.17	0.17	0.18	0.17	0.18	0.17	0.18	0.19	0.18	0.18
MgO	10.56	10.86	10.60	10.69	9.72	10.05	14.76	13.67	13.88	13.12	11.78
CaO	10.31	10.14	10.23	9.77	12.28	10.17	10.99	11.56	11.19	10.86	10.90
Na_2O	2.83	3.36	3.46	3.17	3.05	3.51	4.09	3.25	3.93	3.82	4.98
K_2O	1.44	1.14	1.18	1.30	1.17	1.04	1.46	1.07	1.77	1.45	1.39
P_2O_5	0.53	0.56	0.58	0.58	0.55	0.72	0.99	1.00	1.03	0.78	1.07
Total	97.73	98.94	99.18	98.49	97.77	98.29	97.93	97.79	98.90	99.23	99.05
K−Ar年代(Ma)		2.72±0.09		2.60±0.08			1.38±0.08				
$^{87}Sr/^{86}Sr \pm 2\sigma m$	0.70579±3	0.70348±2	0.70348±2	0.70387±2	0.70401±3	0.70380±3	0.70314±2	0.70333±2	0.70311±2	0.70322±2	0.70313±2
* Total Fe as Fe_2O_3											



KEY Quaternary (Q_1-Q_4): gravel, sand and silt. Neogene (N_1, N_2): conglomerate, sandstone, siltstone, tuff, marl, limestone, gypsum stone and asphalt. Paleogene (Pg_1-Pg_3): sandstone, siltstone, mudstone, tuff, marl, flint and limestone. Older Basalt (β Q_2-). Younger Basalt (β Q_3).

Fig. 1. Geological map of Syria 1-37-XXII, 1:200,000 (Ministry of Industry, S.A.R., 1964) is overlaid on SRTM-3 DEM (Data processing: Katsurada, 2007).

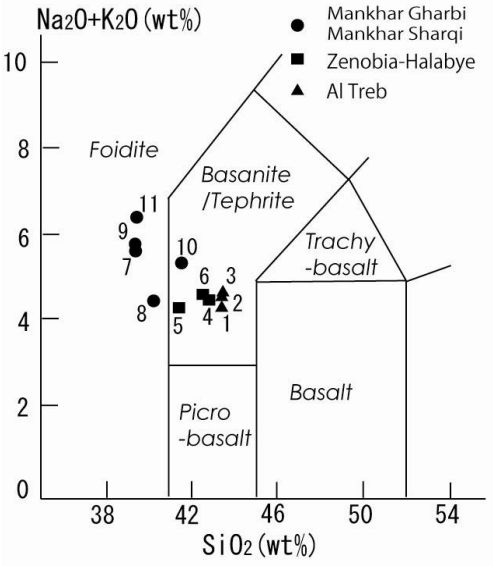


Fig.2. Classification of the Bishri basaltic rocks using total alkali – silica diagram (Le Bas et al., 1986).

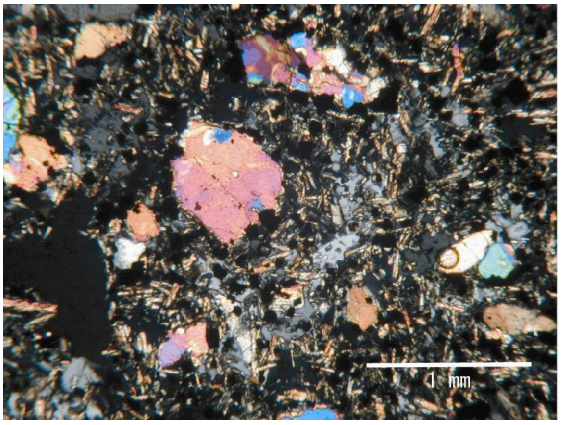


Fig. 3. Photomicrograph of the B-11 foidite (crossed nicols). Vibrant coloured phenocrystic minerals are olivine, and irregular formed greyish minerals are nepheline.

Persian culture grown in Zagros geo-environment

AZIZI, Hossein
Mining Department, Faculty of Eng. University of Kurdistan, Sanandaj; Iran

The Zagros Mountains are the largest mountain range in Iran and Iraq, with a total length of 1,500 km , from northwestern Iran, and roughly correlating with Iran's western border, the Zagros range spans the whole length of the western and southwestern Iranian plateau and ends at the Straits of Hormuz. The highest points in the Zagros Mountains are Zard Kuh (4,548m) and Mt. Dena (4,359m,Wikipedia). Because of good climatology and geography Zagros Mountain was a good place for developing of Persian culture and architecture from ancient to new Iran. Some city in the range such as Hamedan, Shiraz, Esfahan, in some periods was the centre of Persian government from ancient and Islamic periods.

Iran has been inhabited by humans since prehistoric times. Ancient Iranian culture existed centuries before the earliest civilizations arose in nearby Mesopotamia. The written history of Persia (Iran) begins in about 3200 BC with the *Proto-Elamite* civilization, and followed by the Elamites. The arrival of the Aryans (Indo-Iranians), and the establishing of the Median dynasty, culminated in the first Persian Empire, the Achaemenid Empire. Cyrus (Kuroush in Persian language) the Great founded the Persian Empire in 550 BC by conquering the Median Empire. Cyrus the Great created the Cyrus Cylinder, considered to be the first declaration of human rights. Cyrus' seminal ideas greatly influenced later human civilizations; based on this documentary, Cyrus'principles of ruling – advocating "*Love" rather than "Fear*"

After Cyrus' death in 530 BC, his son Cambyses ruled for eight years (530- 522 BC) and continued his father's work of conquest, making significant gains in Egypt. After Cambyses', Darius was declared king (ruled 522-486 BC). He was to be arguably the greatest of the ancient Persian rulers. Darius started the building programme at Persepolis Darius built a canal between the Nile and the Red Sea, a forerunner of the modern Suez Canal. He improved the extensive *road system*, and it is during his reign that mention is first made of the Royal Road, a great highway stretching all the way from Susa to Sardis with posting stations at regular intervals.

The fall of Achaemenid Empire was followed shortly by two more vast and unified Persian empires that shaped the pre-Islamic identity of Iran and Central Asia: 1. The Parthian dynasty (250 BC – 226 AD), 2. The Sassanid dynasty (226 AD – 650 AD). These two dynasties defeated the Roman Empire at the height of its power on several occasions , then Iran was conquered by Arab Muslim, and Islam became the religion of most Iranians.

the Iranian history was divided in two major Pre- Islamic or ancient Iran and Islamic periods. in these two periods in the central and western part of Iran which named Zagros Mountains, unfortunately; the most of ancient and Islamic architect was destroyed by many wars between the

Iran with another empires such as Ottomanos and Mongolia and huge earthquakes but some of them Such as Persepolis in Shiraz (Zagros) , Tagh- Bostan (kermansha), Biston (kermansha,W-Iran) and Choga zanbil was remained in the zagros mountain.

The Islamic period, New mosques were built throughout the land, and in some cases former Sasanid temples were incorporated into mosques, as in the one at Yazd-e Khâst between Isfahan and Yazd. In the early period, mosques were fairly simple in design and functionality. As time went, Iranian architectural know-how and taste influenced the construction and aesthetics of the mosques. Palace designs also began to acquire Islamic character. Although not many structures remain from the first two centuries of Islamic rule, there was rapid construction and expansion of Islamic buildings after the third century. The most distinctive architectural features of the Islamic period are the extremely elegant calligraphy, stucco, tile, mirror, and mosaic work used for decoration; the construction of tall towers; and the use of domes for mosques.

Fig.1. Zagros Mountain between the Iran and Iraq (Inner map is ancient Iran).

Agriculture in the Early Bronze Age Syria

Chie Akashi
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Faculty of Letters, Arts and Sciences, Waseda University

Plant remains of Early Bronze (EB) Sites in Syria have been studied by many archaeobotanists over the past few decades. However, there is still room for argument about the relation between the subsistence and the social 'collapse' of the end of EB. This study attempts to reconstruct the change of agricultural practices and plant use through the interim result of archaeobotanical analysis of Tell Ghanem al-Ali.

Tell Ghanem al-Ali is located in southern bank of Euphrates, 50 km east of modern city Raqqa. Syro-Japanese mission has been excavating the site since 2007.

Archaeobotanical samples were taken mainly from Square 1 and Square 2. In total 29 samples were sorted till now and more than 22,000 seeds and fruits were identified. Twenty two samples (from Square 2) were from lower levels, and other seven belong to upper levels (five from Square 1: two from Square 2).

Table 1. Archaeobotanical Samples from TGA

	Lower Level	Upper Level
Num. of Samples	22	7
Soil Amount	173 L	56 L
Identifiable Items	＞12400	＞9800
Square	Sq.2	Sq.1 and Sq.2

In food plants, barley was dominant while wheat was scarce compared to barley. Some kinds of legumes and grape pips were also recovered. These food plants are common in the other contemporary sites along Euphrates.

Most abundant wild species was Chenopodiaceae : *Suaeda* sp., *Atriplex* sp. and cf. *Salsola* sp. Both *Suaeda* and *Atriplex* often grow barley fields, thus they may have been brought in with harvest. If so, because of the presence of *Suaeda*, the possibility of irrigation agriculture and salinity of field should not be entirely excluded. An alternative explanation is that there was a saline swamp near the tell and *Suaeda* growing there was eaten by domestic animals whose dungs were used as fuel by TGA people.

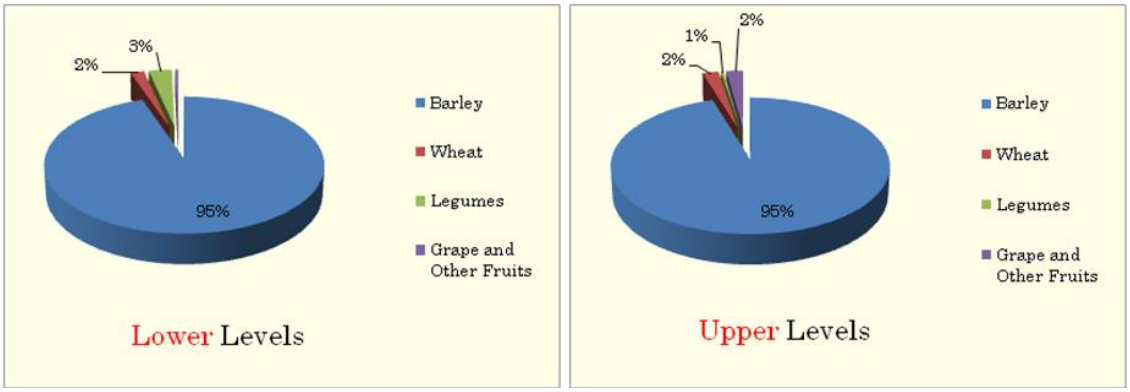


Figure 1. Food Plants from TGA

Table 2. Wild plants from TGA

		lower phase	upper phase
		Sq.2	Sq.1 and 2
Chenopodiaceae	Atriplex sp.	5289	381
	Suaeda sp. etc.		
Graminaceae	Aegilops sp.	1252	1003
	Lolium sp.		
	Bromus sp. etc.		
Leguminosae	Astragalus sp.	688	628
	Trigonella sp.		
	Prosopis sp. etc.		
Aizoaceae	Aizoon sp.	307	257
Boraginaceae	Heliutropium sp.	352	200
	Lithospermum sp.		
Polygonaceae	cf. Rumex sp.	46	452
Rubiaceae	Galium	138	335
	cf. Crucianella sp.		
Malvaceae	Malva sp.	124	49
Caryophillaceae	Silene sp.	22	133
	Gypsophylla sp.		
	Vaccaria sp. etc.		
Labiatae	cf. Ziziphora etc.	96	17
others	Androsace sp.	76	67
	Fumaria sp.		
	Plantago sp.		
	Compositae		
	Cruciferae etc.		

Archaeological excavations at al-bishri and tell ghanim al-ali

Anas Al-Khabour (Directorate General of Antiquities and Museums, Syria)

The archaeological and historical importance of the region

The region of Bishri mountain has a big importance, nowadays is a desert with small villages, but in the past it was a homeland of the Amorite tribes, which had a big importance in the history of the Fertile Crescent.

We have to remember that the history and the political development of the Bishri region is still not well known comparing with another sites from its territory like Mari and Tuttul..

In addition to the concept of the Semitism idea which loosed many efforts and time concentrating to provide that the home land of the builders of the ancient civilizations of west Asia such as Assyrian and Babylonians was the south of Arabic peninsula .

The region of Bishri (BSR) and its territory the home land of Amorite tribes since the 24 century BC in the texts of Ebla.

All that remember us about the suddenly expansion of the Amorites tribes to the center of Mesopotamia in the third millennium in the period of the third dynasty of UrK and the idea of the American archaeologist Weis appoint to hi excavation in (shubat enlil) that a big natural disaster took place in the south eastern of Syria and as a result the Amorite tribes went to Mesopotamia and destroyed the Akkadian Empire .

The archaeological research in Bishri and middle Euphrates region:

1- in 1976-1977: Holland's mission worked between Der Ezzor and Mayadyn
2- in 1978-1979: American mission worked in Tarqa (Al ishara)
3- in 1985: French mission worked between Der Ezzor and Abu Kamal
4- in 1983-1984: German mission between Halabya and Tabqa
5- 2004: Spanish mission from ACorona university
6- 2003-2005: Finland mission survey to Bishri Mountain.
7- And the Syrian-Japanese mission which worked in 2007 rour seasons the first one was in February march of this year.

The director of the Japanese mission is Professor Katsuhiko Ohnuma.

The excavation team consists of different specialized such as geology, botanology , topography.

And after the survey of the region we choosed tell Ghani ali to excavate in it from the early bronze age

- Tell Ghanim AL Ali:

- Many of research teams specialized in natural and cultural sciences, to clarify, through harmonized cooperative field works in the Bishri region, social relationship and clarify how ancient pastoral nomadic tribes contributed to the formation of agriculture-based urban societies along the Middle Euphrates.

FROM: THE TIMES ATLAS OF THE WORLD 8th edition (Added by Tanaka)

Carbon-14 dating along archaeological succession of Tell Ghanem al-Ali

Toshio Nakamura (Center for Chronological Research, Nagoya University, Japan)

We have conducted a field survey on archeological sites along the middle Euphrates River, as well as geographical and geological environment in the Bishri region, southeast of Raqqa, Syria, in the Near and Middle East. The aim of this study is to conduct a chronological analysis of the archeological sites, in particular, to establish chronology of the Tell Ghanem al-Ali site, by radiocarbon (^{14}C) dating on carbonaceous remains at the site with the accelerator mass spectrometry facility of Nagoya University in Japan.

During the survey, we have visited the Tell Ghanem al-Ali site that is located on the lowest terrace of Euphrates River, where extensive archeological excavations have been performed at two trenches, Square-1 (9x9 m^2) and Square-2 (3x15 m^2 and separated into eight sedimentary layers), in the northeast side of the Tell. We have detected several fragments of pottery as well as black layers composed of charred soil and/or charcoal fragments. The layers were quite clear and we can believe that these layers have resulted from human activities at the site. We have collected totally 31charcoal samples such as charcoal and wood fragments from Square-1 and Square-2 trenches as well as adjacent outcrops to the site.

The calendar dates calibrated from ^{14}C ages obtained by the present study range from 3100-2900 cal BC at the oldest level to 2250-2050 cal BC at the youngest level of the Tell Ghanem al-Ali site, and concentrate to the period from 2650-2450 cal BC. Since the pottery fragments collected on the surface of the Tell before the excavation survey was started, as well as those collected from the sediments during the excavation were assigned based on their typological analysis to the periods of Early Bronze Age (EB)-IV and EB-III, the archeological chronology is almost consistent with the ^{14}C chronology that is established here. However, the calendar age of the oldest level (level-7 and -8) obtained by the present study dates back to 3100-2900 cal BC, and these figures are older than the oldest limit of the EB period that has been established so far. A new framework of absolute chronology based on ^{14}C dating will be required.

A numerous number of gravels in the form of cairn, existing in the desert area of the Bishri Mountains, located in the south of Middle Euphrates, have been surveyed, and during the survey of the cairns at Tor Rahum-1 from May 10th to June 2nd, 2009, Fujii and Adachi (2009) have collected several charcoal samples for ^{14}C dating from the cairn tombs Nos. 117, 130 and 131. The charcoal samples were sent to Nagoya University for ^{14}C dating with AMS. ^{14}C ages for charcoal samples collected from the cairn tombs in the desert area form a group at around 3410-3540 ^{14}C BC, coincide with a period of an early part of Middle Bronze age. The calendar dates for the cairn tombs are all younger than those for the Tell Ghanem al-Ali site, and both dates continue smoothly from the latter to the former. This suggests the possibility that human who had dwelled at the lowland area along Euphrates River, the Tell Ghanem al-Ali site, from 3100 cal BC to 2050 cal BC, migrated to the highland area at around 2000 cal BC.

To be compared to this result, we also have measured charcoal samples collected from the Wadi Shabout cemeteries adjacent to Tell Ghanem al-Ali. ^{14}C age of a charcoal sample from the Wadi Shabout tumulus-1 was obtained to be 3882±38 ^{14}C BP and its calibrated calendar age to be 2471-2278 cal BC (89.9% probability). This calendar date is older than those of samples collected from Cairn tombs in Mt. Bishri (1940-1670 cal BC), but consistent with the calendar dates of Uppermost layers (2400-2050 cal BC) and Levels-1 and -2 (2650-2350 cal BC) at Sqare-2 trench of Tell Ghanem al-Ali. This suggests that the Wadi Shabout cemeteries are more related with people who lived at Tell Ghanem al-Ali than those who lived on Mt. Bishri.

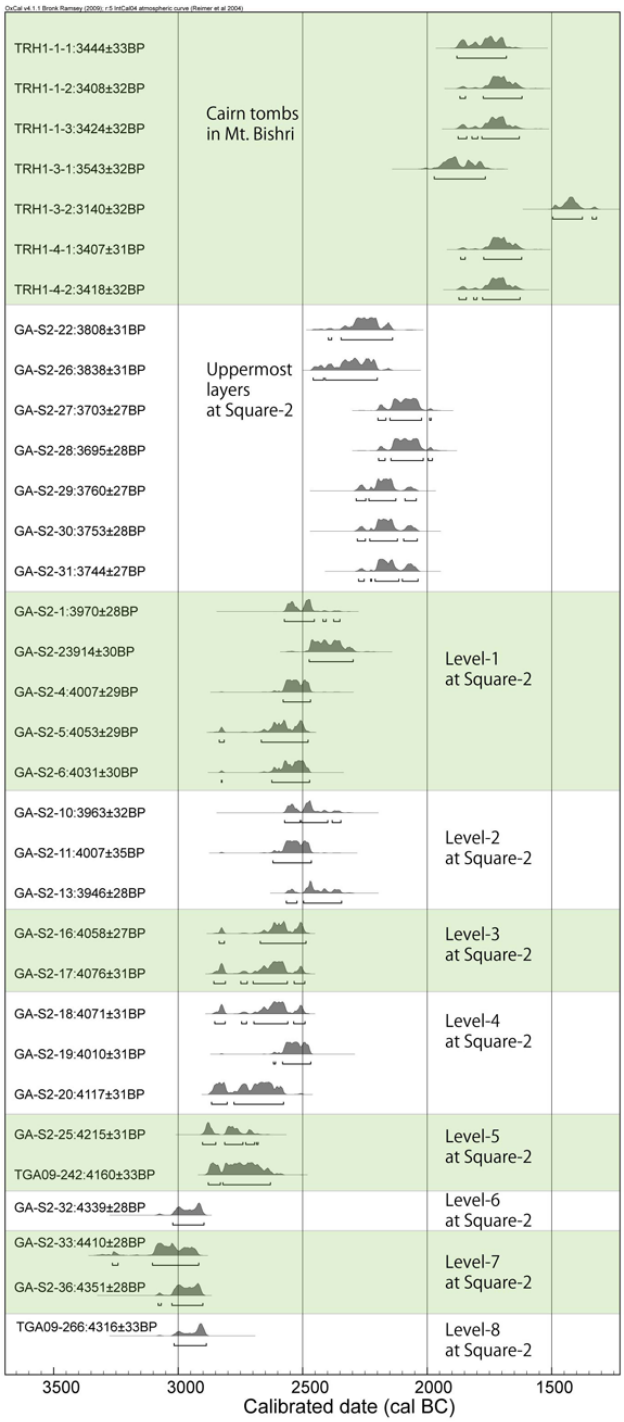


Figure1. Probability distribution on calibrated dates of ^{14}C ages measured for charcoal fragments collected from the Sqare-2 trench and cairn tombs on Mt. Bishri. Bars under the probability distributions of the samples indicate the possible calendar age ranges for 2σuncertainty

The sounding at the Site of Tell Ghanem al-Ali

Atsunori Hasegawa

PhD Student, Graduate school of Humanities and Social Sciences, University of Tsukuba

Tell Ghanem al-Ali is located 50 km east of the city of Raqqa and 2.5 km south from the Euphrates. The tell has an irregular oval plan with maximum width of ca. 400m (west-east) and ca. 300m (north-south). It measures ca.10m height. Associated with this tell are some sites that have cultural layers belonging to Early Bronze Age. Although the summit of the mound is covered with the modern graves of the local villagers, surface topography elsewhere on the tell revealed a considerable number of buildings.

In 2007, the Syrian-Japan Archaeological Joint Research in the Bishri region began fieldwork, and we carried out trench excavations in six squares at Tell Ghanem al-Ali. The current results of the excavations are discussed here.

The main objective of the excavation was two-fold. The first was to confirm the chronological sequence of Tell Ghanem al-Ali. The second was to investigate the architecture of the buildings visible from the surface of the tell, and to determine the chronological period from which they originate.

For the first objective, we selected the east slope of the mound where many ruins were located. Square 1 was set on the east slope containing structural remains which formed the shape of square, measuring 10(east-west)×10(north-south) m. For the second objective, we set a step trench, Square 2, on the north slope of mound, measuring 4(east-west) × 27(north-south) m.

In Square 1 of Tell Ghanem al-Ali, three main structures were found. They were constructed out of stones and mud-bricks. The architectural foundations of these structures were identified as basic walls running along the north-south and east-west axes. Some areas of the walls showed signs of reuse and reconstruction. Unearthed from within these structures were pits, door sockets, and hearths. Pottery recovered from the structures suggests that they date to the Early Bronze Age III period.

In Square 2, we have reached the virgin soil of mound and identified several building levels. Based on our analysis of features of these structures, it is possible to classify them into three phases.

The first phase consists of dwellings constructed out of stones. It is likely that the structures found here are contemporaneous with those uncovered in Square. They are rectangular and the orientation of the walls was mainly along a north-south axis. In some rooms, we found evidence of plaster floors. Some hearths, such as tannors, were unearthed. The potsherds found within the structures included Plain Simple Ware, as well as a few fragments of the Euphrates Fine Ware. In addition, several anthropomorphic and animal clay figurines and clay wheels were identified.

In second phase, one thick wall large stones was identified. The axis of the wall is oriented from the southeast to the northwest. Both the size and the orientation of wall are quite

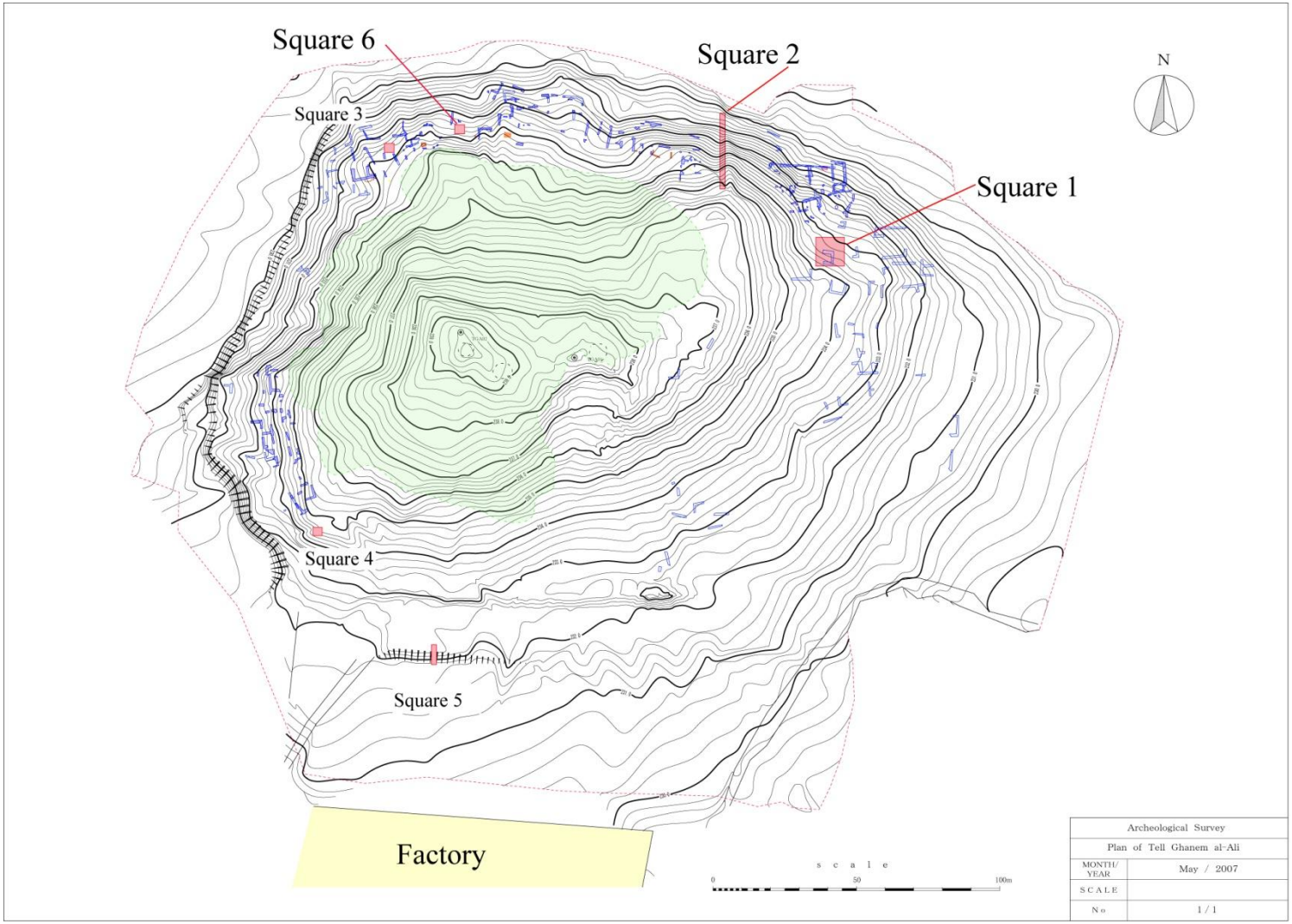
different from those of the first phase. Almost all of the potsherds recovered from the second phase were typical forms of Plain Simple Ware. In addition, many sherds of Cooking Pot Ware with everted rims were also discovered.

Concerning the third phase, three rooms divided by walls were identified. The walls were constructed using mud-bricks, measuring ca. 30 × 60cm. Each wall was ca. 60cm wide, and ran north-west and south-east. In contrast to the walls of upper phases, they did not have stone foundations. However, unlike most examples of Plain Simple Ware, which lack decoration, the pottery found here has circular or crescent designs incised on their bodies.

Below the third phase, we encountered the virgin soil of Tell Ghanem al-Ali. It is 3.4m deep from the mound surface at the north end of Square 2.

Interestingly, initial surface collection of the site produced a few potsherds dating to the Middle Bronze Age II period, leading us to expect the discovery of related cultural layers within our excavation areas. However, neither Squares 1 nor 2 contained evidence of MBA II habitation or activity. Rather, it was only during the investigation of a small pit grave located in the northwest part of the mound did we find potsherds dating to this later period, providing evidence of at least limited site use during the Middle Bronze Age.

The results of our excavations show that Tell Ghanem al-Ali was likely occupied during the Early Bronze Age III to Early Bronze Age Iva periods, after which it was abandoned as a habitation site. Later use appears to have been restricted to the deposition of human remains.



Archeological Survey	
Plan of Tell Ghanem al-Ali	
MONTH/ YEAR	May / 2007
SCALE	
No	1 / 1

特定領域研究 計画班「環境地質学、環境化学、^{14}C 年代測定にもとづく
ユーフラテス河中流域の環境変遷史」