

**Conceptual Issues  
In Environmental Archaeology**

EDITED BY  
JOHN L. BINTLIFF  
DONALD A. DAVIDSON  
ERIC G. GRANT

Peter J. Ergenzinger, Wolfgang Frey,  
Hartmut Kühne, Harald Kürschner

The reconstruction of environment,  
irrigation and development of  
settlement on the Habur in NE-Syria

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## The Reconstruction of Environment, Irrigation and Development of Settlement on the Ḥābūr in North-East Syria

Peter J. Ergenzinger, Wolfgang Frey, Hartmut Kühne and  
Harald Kürschner, Berlin

Geographically, this paper will focus on the Lower Ḥābūr between the modern provincial capital of Hassaka in the north and the junction with the Euphrates east of Der az Zor and near modern Buseira — Roman Circesium — in the south.

The history of archaeological research in the Ḥābūr area may be briefly summarized as follows: apart from the early excavations at Tell Halaf (1) and Tell Fecheriya (2) near Ras el <sup>ʿ</sup>Ain on the Upper Ḥābūr, the mounds along the Upper Ḥābūr are unexplored and have never been systematically surveyed. This is important in view of recent construction activities here for irrigation purposes by the Syrian Government. In the fertile area of the so-called Ḥābūr triangle archaeological activity is being carried out at a number of sites: Tell Brak (3) and Tell Barri (4) on the Ġāgġāġ, Tell Leilan (5) in the north-east and very recently at Tell Hamidi (6) on the Ġāgġāġ and Tell Mozan (7); a number of systematic surveys along the Ġāgġāġ and mainly in the eastern part of the triangle have been undertaken in recent years. In the past excavations have been carried out at Tell Chagar Bazar (8), Tell Ailun (9) and Tell Aqab (10).

In contrast to this fairly active picture, the Lower Ḥābūr has seen only a brief excavation at Tell <sup>ʿ</sup>Aġāġā (11) in the middle of the last century by H. A. Layard and a survey (12) at the beginning of this century. A number of scholars like E. Sachau, M. v. Oppenheim, A. Musil, A. Poidebard and M. E. L. Mallowan travelled through the area but no lasting projects were initiated. This changed only in 1975 when a systematic survey was begun by the *Tübinger Atlas des Vorderen Orients* which was completed in 1977 (13). As a result, excavation was undertaken at Tell Šēḥ Ḥamad on the eastern bank of the Ḥābūr in 1978 and continued annually since 1980 (14). This has been the first systematic excavation in the area; under the direction of the present writer it is sponsored by the Free University of Berlin, and carried out in cooperation with the University of Tübingen and the National Museum of Der az Zor. Under the direction of A. Mahmoud the excavation in Tell <sup>ʿ</sup>Aġāġā/Šadikanni was taken up again in 1982 and continued in 1984 (15). Most recently

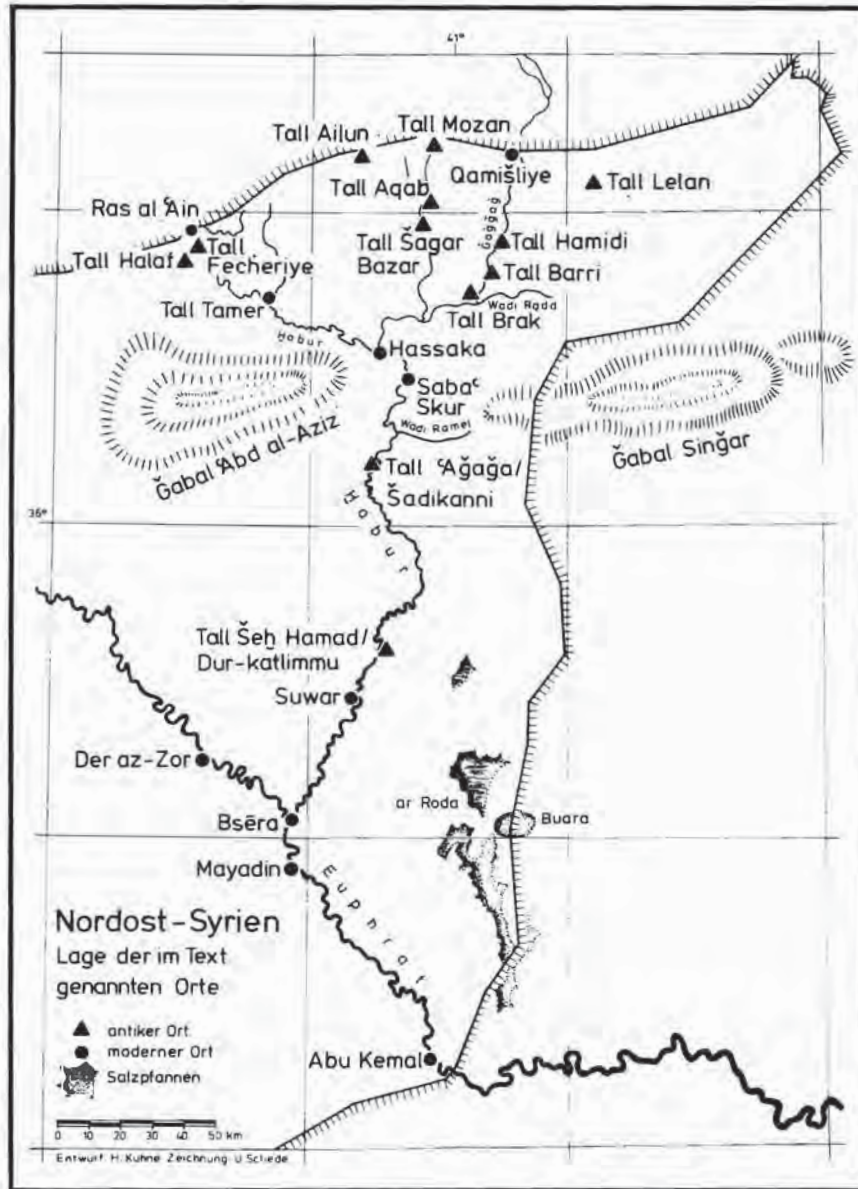


Figure 1. Map of the Hābūr-area in Northeast-Syria with the sites mentioned in the text; drawn by U. Schede.

a number of excavations have been started in the area of the Ḥābūr dam area, between Hassaka and the mouth of Wadi Ramel, about 30 km south of the city. One of the aims of the *Tübinger Atlas* survey had been to reconstruct the development of settlement, especially during the historical periods of the second and first millennia B.C., with respect to the relatively substantial amount of information provided by the archives of Mari and the Assyrian campaign-reports (16). It now appears, especially in the light of the most recent results of the interdisciplinary research at and around Tell Šēḥ Ḥamad, that this original aim may be very satisfactorily fulfilled.

#### PRESENT ECOLOGICAL SITUATION

The Ḥābūr is the largest tributary of the Euphrates; it carries water provided by the karst springs throughout the year. According to an investigation by the Food and Agriculture Organization of the United Nations Syria should be divided into five agricultural zones, 'based on intensity and reliability of rainfall' (17). The Ḥābūr region, between the Turkish border and the Euphrates, falls within zones 1b through zone 5, thus indicating the strong shift of conditions taking place in a fairly small area about 350 km in a north-south direction. Zone 1b is characterized by 'rainfall of over 300 to 600 mm where two good wheat crops can be obtained each three seasons and a summer crops of pulses can be grown in rotation with winter cereals'. This applies only to a small area in the north around Qamishli.

Agricultural zone 4 consists of 'marginal lands with rainfall of 200 to 250 mm and does not drop below 200 mm in 50 percent of the seasons; lands in this zone are utilized for growing barley or grazing'. The southern limit of this zone corresponds roughly with the 200 mm isohyet, which crosses the Ḥābūr not far north of Šaddada. South of this line we find agricultural zone 5 which is 'the desert region . . . which has very low rainfall and supports no crops at all. The only use of this region is grazing'. The line demarcates what is known as 'dry land border'. Any agriculture south of this line has to be supported by irrigation. This is the region in which Tell Šēḥ Ḥamad is situated, about 60 km south of this *agronomische Trockengrenze*.

But even north of this line crops depend not only on the amount of rainfall but more so on its timing. In agricultural zone 3 rainfall remains around 250 mm in only about 50% of the seasons; in agricultural zone 2 the rainfall ranges between 250 and 300 mm in 66% of the seasons. In other words, it remains fairly risky to grow crops since the schedule of the rainfall is not reliable even in areas with 250 to 300 mm precipitation (18). This applies to the rest of the area between Qamishli in the north and the region north of Šaddada. It was dramatically demonstrated in the winter of 1983/84 when the

rain fell not in December through to February but in April and May (19). The logical conclusion is, that it is in any case safer to rely on irrigation for the whole region; risks can be diminished and more crops can be cultivated. This is also apparently the conclusion the Syrian Government has arrived at. The latter is planning and already constructing an irrigation system along the whole length of the Ḥābūr, including some water reservoirs north-west of Hassaka and a barrage about 30 km south of Hassaka (20). Any irrigation system for the Ġāgġāg is useless because the Turks have already built a dam and cut off the water from the Syrians.

A brief comment should be made on soils. Most of the area is characterized by gypsiferous soils. According to detailed studies in the neighbouring Baliḥ Valley, 'the soil fertility decreases with the increase of gypsum content and the decrease of clay and other colloids' (21). The capability of the soil to retain water depends on the clay composition; 'good' soil means that it is capable of retaining water, crops can be grown in zones of unreliable rainfall. In the steppe area south of the *agronomische Trockengrenze* there are only patches of soils of such quality; the Bedouin grow crops there although it is illegal. For the area around Tell Šēḥ Ḥamad/Durkatlimmu this means that there is no compensation for the low precipitation so that the area is completely dependent on irrigation (22).

The above remarks show that it is more profitable for the whole region of the Habur, not only for the remote southern or lower part, to rely on an irrigation system wherever possible rather than just on rain-fed agriculture.

#### RESULTS OF RECENT RESEARCH IN AND AROUND THE TELL ŠĒḤ ḤAMAD

*Archaeology.* (Fig. 2) A survey of the settlement area prior to excavation and during the first two seasons showed that the settlement covers more than 120 ha. It is divided into five parts: the Citadel, Lower City I in the east, Lower City II in the north, Suburban Area I north of the Lower City II and Suburban Area II east of Lower City II. According to surface sherds this large area was occupied during the Iron Age II or Neo-Assyrian period (roughly between 900 and 600 B.C.) (23).

Previously, in the Middle and Late Bronze Age, and after this period in Parthian-Roman times the settlement appears to have been restricted to the Citadel and Lower City I. In the Early Bronze Age the settlement seems to have been concentrated on the Citadel mound itself and the same applies to the Late Chalcolithic period. The older levels, i.e. prior to the Late Bronze Age, have not yet been excavated but are known from pottery of the surface and of the destruction fill.

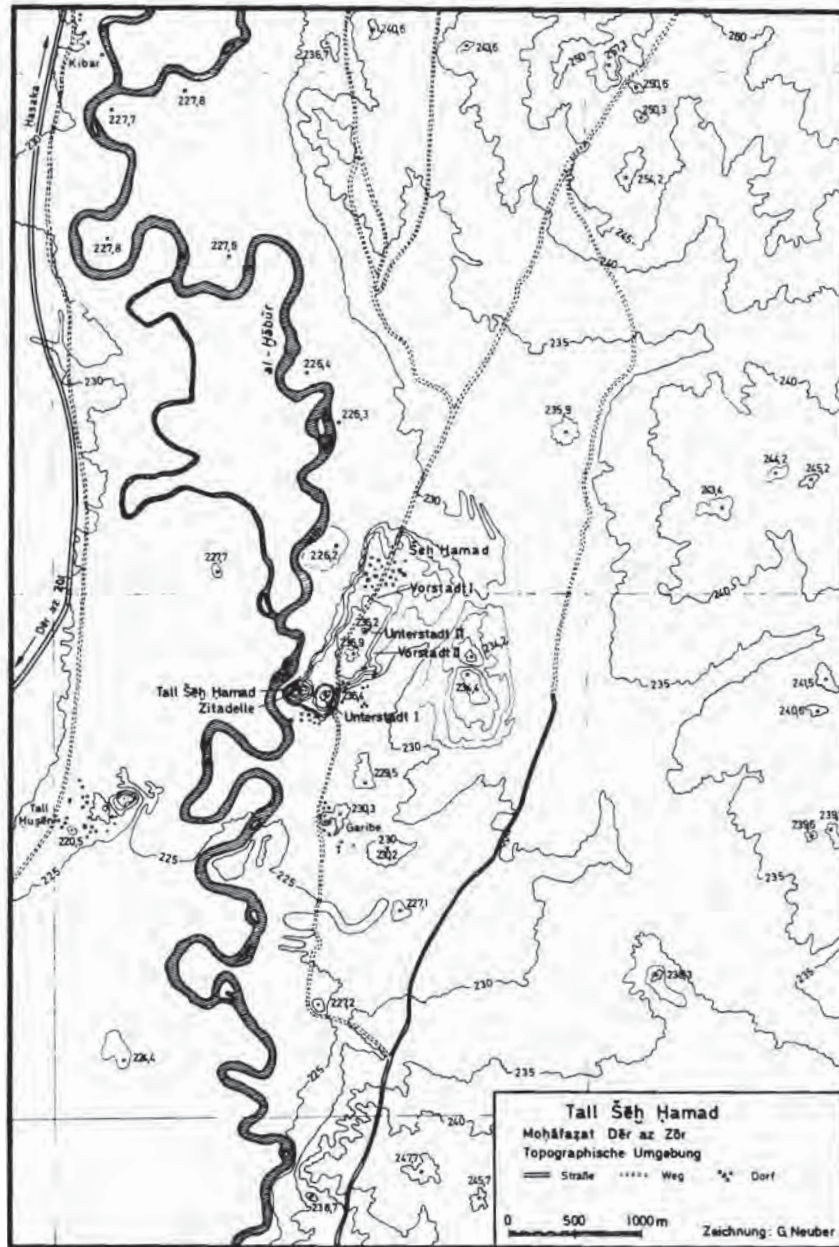


Figure 2. Tell Šeh Hamad, topographical divisions of the settlement ground and surroundings; drawn after the map 1:25.000 of the Khabour Region by the Arab Republic of Syria 1960, Major Projects Administration, by G. Neuber.

On the Citadel mound a Middle Assyrian archive of 550 texts and fragments was discovered which provided the Assyrian name of the town, Dur-katlimmu (24). The archive consists mainly of administrative and economic texts, but includes also a number of royal letters of the kings Salmanassar I and Tukulti Minurta I (25). The archive was found in what appears to be the administrative and economic wing of a large building, most probably the palace of the governor mentioned in the texts (26). Far-reaching trade connections are also indicated by the archive. These prove that the city of Dur-katlimmu had become an important administrative and economic centre in the Middle Assyrian period of the 13th century B.C.

In the north-east corner of Lower City II a large building (27) was unearthed which seems to be a fortress or the like. Next to it and in the area around it, vaulted constructions have been excavated which appear to have served as storage and distribution devices for water (28). Both can clearly be dated by pottery and small finds to the eighth century B.C.

In 1984 a freshwater canal (29) with a descent to the west was discovered next to the town wall indicating that fresh water was supplied from outside the city, but from the land not the river side. This points to the existence of an irrigation canal at that time, a branch of which was probably led to and along the town wall of Dur-katlimmu (30). In the central part of Lower City II a new excavation area was opened in 1984. Here a building was found, the walls of which are decorated with paintings depicting a garden; a painted inscription reads 'garden house', perhaps indicating the function of the building as a summer residence of the Neo-Assyrian governor (31). The style of the paintings can be dated to the late eighth or seventh century B.C. For the time being, it appears that the importance of the settlement grew in the Middle Assyrian period when Dur-katlimmu became the seat of a governor, guarding the south-western flank of the empire.

In the Neo-Assyrian period the settlement was considerably enlarged by the foundation of the Lower City II. Dur-katlimmu then became a military base in the hinterland. We have to assume that, as a consequence, the population rose considerably. According to conventional standards one would have to estimate at least 10,000 people, given a settlement area of nearly 100 ha within the walls. This implies that the Assyrians must have had the necessary supplies to feed this rising population. As was shown above, the geographical position of Tell Šēḫ Ḥamad is not very favourable for a centre of this size, and the often quoted crossing point of trade routes does not apply either. The modern population amounts to about 3,500 inhabitants in villages north and south of the ancient settlement area, and according to a socioeconomic study by Hans Hopfinger from

the University of Erlangen this population has already reached the limits of the available resources for its subsistence. What then were the means by which the Assyrians were able to maintain Durkatlimmu as a provincial centre?

*Botany.* The investigation of the vegetation around Tell Šēḥ Ḥamad has shown that owing to abiotic factors xerophytic formations are dominant, which, due to the composition of their stands and their diffuse distribution, can only be interpreted as remnants of a former naturally existing vegetation. This natural steppe vegetation, dominated by *Artemisia herba-alba*, is almost completely degraded but must have existed at least in the hill zone between the Ḥābūr valley and the Wadi ʿAḡiḡ. The remnants of this formation show that there is sufficient rainfall in this hill zone for dwarf shrubs. The substitute communities of the *Poa sinaica*-‘Kurzrasen’ on the hills east of the Ḥābūr and the *Chenopodiaceae*-rich steppe formations in more humid depressions and wadis present today are indicators of a heavily overgrazed former *Artemisia herba-alba* steppe.

Large areas in the vicinity of Tell Šēḥ Ḥamad are characterized by *Prosopis farcta* (*Prosipedeia farctae halo-segetalia*, Zohary 1973) and indicate that in these areas agriculture based on irrigation existed in the past. The extension of this formation proves that an older irrigation system must have existed as the present one does not reach the outlying parts.

Remnants of *Populus euphratica*, *Tamarix jordanis* and *Salix safsaf* along the Ḥābūr river indicate that in the Ḥābūr valley alluvial forests (*Populetea euphratica*, Zohary 1973)<sup>32</sup> must have existed which are completely devastated today and either bushlike or absent altogether. These alluvial forests with their quickly growing trees were used for building and construction activities. Remnants of woodlands and open stands of trees which need more precipitation therefore and are indicators of a more humid climate have only been found on the slopes of the Ġabal ʿAbd al-Azīz. They consist of *Pistacia khinjuk* and seem to reach their southernmost distribution in these mountains. *Pistacia atlantica*, which is found in the Taurus area (north of Ġabal ʿAb al-Azīz) and *Quercus* species, reported from the Ġabal Singār (east of Ġabal ʿAb al-Azīz) are completely missing here.

The remnants of vegetation in the Ġazīra can be explained as the result of a regressive succession which is released by direct and indirect anthropozoogenetic influences (Fig. 3) (33). No indications were found that the character of the vegetation may have been different in the Late Holocene (within the last 4,000 years). This is in accordance with the results of van Zeist and Bottema<sup>34</sup>, which were obtained by pollen analysis in north-west Syria (Ghab). The analysis of macroscopic wood-remains from the excavation has shown that there is some evidence of coniferous wood. It is interesting





Figure 3. Area of Saba' Sukur in the northern part of the Lower Hābūr with the presumable head region of the Neo-Assyrian canal near the junction of Hadī 'Amar and the Hābūr at Tell Kerma. Topographical map drawn after the map 'Khabour Region' 1:25.000 of the Syrian Arab Republic, 1960, by A. Neuber.

to note that the majority of these remains were discovered in the Neo-Assyrian building in the north-east corner of Lower City II; on the other hand, a similar concentration of wood remains of deciduous species was collected in the Middle Assyrian building on the citadel mound. While the first evidence clearly points to imported building material from the Taurus, the latter may prove the existence of fairly rich alluvial forests at the bottom of the Hābūr valley and their exploitation for local building activities.

Taking into account the actual remnants of vegetation, our knowledge of the regressive succession and the preliminary results of archaeology and geomorphology the following conclusion can be given. Remnants of forests or woodlands which might indicate a previously greater distribution of xero-euxinian steppe forests were not found, except in the Ġabal 'Ab al-Azīz. The analyzed remains

of wood from the excavation are mostly from species dominating the alluvial forests, as they still exist in a devastated stage along the Ḥābūr. The remnants of an *Artemisia herba-alba* steppe on the hills east of Tell Šeḥ Ḥamad show that there could also have been sufficient rainfall for non-irrigated arable land, but the area of Tell Šeḥ Ḥamad lies in a border region, allowing only sporadically non-irrigated cultivation in a sequence of ca. 3-5 years.

At present all available data suggests that there have been no major changes of climate since Assyrian times, i.e. since the middle of the second millennium B.C., and that therefore there have been no fundamental changes in the vegetation. That is why there was no essential and long-term move of the *agronomische Trockengrenze* to the south and we may assume that in the area of Dur-katlimmu rain-fed, large-scale agriculture could not be carried out. Whether this proves to be correct or whether one might expect some minor changes of climate which will be revealed by pollen analysis carried out in cooperation with scientists from the University of Groningen in 1985, is still to be seen.

*Geomorphology.* Rivers are changeable; channel pattern, bed form and sediments respond to changes in water and sediment discharge. River metamorphosis is also, therefore, a function of environmental conditions in the river basin.

The Ḥābūr river between Hasseke and Buseira shows all the patterns of meander development. The low-water channel is entrenched 1.2 to 3 m below the floodplain. The high-water deposits are mainly silts, the bar deposits are sands and pebbles, the typical channel sediments are pebbles, sands and cobbles. The older meander generations, the flat ox-bow lakes and swampy areas on the floodplain have a similar geometry to the active meander belts. This is a strong indication that there has been no important change in the river regime during the past century.

Close to Šeḥ Ḥamad there is a 'tannur' — an oven for baking flat bread — which is identical with the present-day tannurs in the upper part of the floodplain accumulations. Since there is no possibility of permanent settlement on the floodplain, this former habitat was visited by Bedouins periodically over a period of time. The age of the upper 1.3 m of flood silts above the tannur is estimated at 800 years (14C analyses are underway).

At many locations there is a sandy loamy layer with some pebbles eroded into the meander banks at the base of the river sediments. Associated with these sediments are ceramics from Assyrian and Roman times. Thus, present dating relies on archaeological material, but there are many results indicating the accumulation of almost 2 m of silty sediments across the entire floodplain of the Ḥābūr during the last 2,000 years. The state of the Ḥābūr during Assyrian times is

still unknown, as the bank erosion of the Ḥābūr is not deep enough. More special investigations are necessary. However, all preliminary results indicate that the Ḥābūr has had stable environmental conditions and no channel metamorphosis during the last two millennia.

*Hydrology.* During the geomorphological investigations ancient irrigation canals were discovered on both banks of the Ḥābūr. The main canals in the area of Šeḥ Ḥamad (35) have astonishing dimensions; the tops of the side walls are almost 6 metres apart and the total depth is normally 1 to 2 m. The canals were cut through all sediments of the so-called Fars series, through Quaternary terraces and, locally, even through low escarpments. Constructional problems always arose when tributary wadis had to be crossed. Since we discovered no other traces we suspect that dams of local sediments were piled up.

By mapping it was possible to link the canals on both sides of the river with the canals mapped by van Liere (36) 1955 in the region of Šaddade — Tell Kerma. The diversion dam or dams of the canals must have been situated in the area of Tell Kerma or Sab a Skur, Fig. 3 about 30 km south of Hassaka and about 100 km north of Tell Šeḥ Ḥamad. In this area the Ḥābūr has to cross the layers of volcanic material of the ancient volcano of Kaukab. There are several rapids and these are favourable natural conditions for the construction of a diversion dam. Below these rapids the Ḥābūr never erodes hard rocks. However, no traces of diversion dams have been found. Traces of the canals can be mapped all the way down from Tell Kerma to the mouth of the Ḥābūr, a distance of over 170 km. In the neighbourhood of Tell Ḥāgāgā there is a larger branch of the main canal; a complete system of secondary and tertiary canals exists only in a wadi east of Šaddada. At Tell Šeḥ Ḥamad a trench was dug through the canal in 1984. The sherds collected on the surface provide the time range for the existence of the canals; from the Late Bronze Age (Middle Assyrian) to Early Islamic times. Admittedly the dating evidence of this material is not very strong, but it is the only material available, and we know of no written tradition on the canal. Among the Bedouin there is an oral tradition: the eastern canal is called Daurin, the western canal is called Ḥ<sup>c</sup>ma. In fact, it was the local farmers who led us to the tunnelled part of the canal near Tell Bouderi. Other farmers told us a two-line verse roughly translatable as: 'Which is better, the Ḥ<sup>c</sup>ma or the Daurin? My heart is with the good Daurin'.

#### THE DEVELOPMENT OF SETTLEMENT IN RELATION TO THE IRRIGATION CANAL

Once the canal had been built it must have had a strong influence on the development of settlement, on the economic and political

situation, and on social life. Mapping the settlements of the different periods in combination with the canal reveals the following situations:

The distribution of settlements in the Early Bronze Age, (Fig. 4) is concentrated in the northern part of the Lower Ḥābūr. Centres lie in the steppe as well as along the river, but south of the line Tell Matiaha — Tell Ahmar only villages are found. In the head region of the canal a number of smaller settlements are lined up which are almost exclusively settled during the Early Bronze Age (Rad Saqra, Tell Kerma, Tell Ragat, Tell Gabi on the east bank and Tell Mulla-matar, Tell Ġudēde on the west bank). This linear arrangement only becomes intelligible if one assumes that a canal had built been already. But it certainly did not exceed the above mentioned line, otherwise centres like Tell Knēdiġ and Tell Mašnaqa would have to be expected farther south as well. This points strongly to one or more local irrigation systems; it may not be accidental that such a local system was found in the area of the volcanic ridges which favour diversion dams (see above).

In contrast to this fairly clear picture the Middle Bronze Age (Fig. 5) does not lend itself to an easy interpretation. The archaeological material and situation does not indicate any true centre anywhere, but rather suggests rural communities along the river. The linear arrangement of Early Bronze Age settlements beginning with Tell Rad Saqra has disappeared and with it a possible local irrigation system. It remains hypothetical to see if such a system could have started with Tell Tnēnir and connected all the settlements on the east bank down to Tell Maqbara <sup>c</sup>Aġāgā. If one takes the cuneiform sources into account, Tabatum and Qattunan (Tell Tāban and Tell Fadġami or Tell Ašamsāni) should be considered centres, and the archaeological evidence could be interpreted in favour of this hypothesis. In the case of Saggartum, though, if it is to be identified with Tell Abu Ha'yit it is definitely not a centre but a military fortress. The Mari-texts frequently mention canals but those seem to be situated along the Euphrates, opposite Terqua, and in the area of the junction of the Ḥābūr with the Euphrates. Without going into details, it seems that the political situation at the time was not very favourable for the construction of a regional canal system along the Ḥābūr.

The picture changes completely in the Late Bronze Age (Fig. 6). There is only one place which might be called a Mitannian centre: Tell Bderi. The others, Tell Hassaka, Tell Tāban, Tell Fadġami, Tell Ašamsani and Tell Šēḥ Ḥamad are Middle Assyrian centres (37). Not a single settlement is found south of Tell Šēḥ Ḥamad/Durkatlimmu. Considering the new political significance of Durkatlimmu, its ecological situation, and the scanty dating evidence of the canal, one has to postulate that the canal had then been construc-

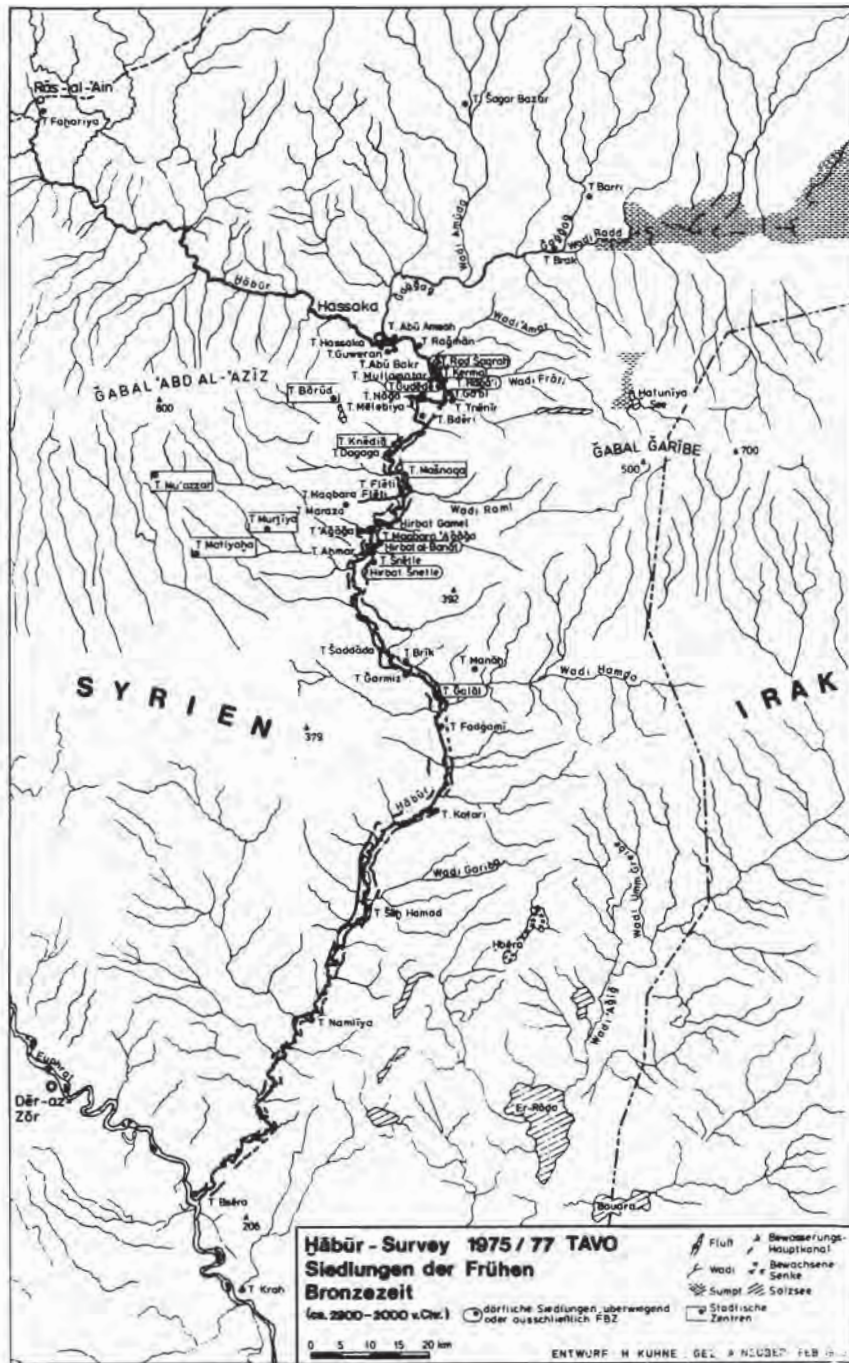


Figure 4. Settlements of the Early Bronze Age on the Lower Häbür in relation to the irrigation canals; Survey of the 'Tübinger Atlas des Vorderen Orients' in 1975 and 1977.

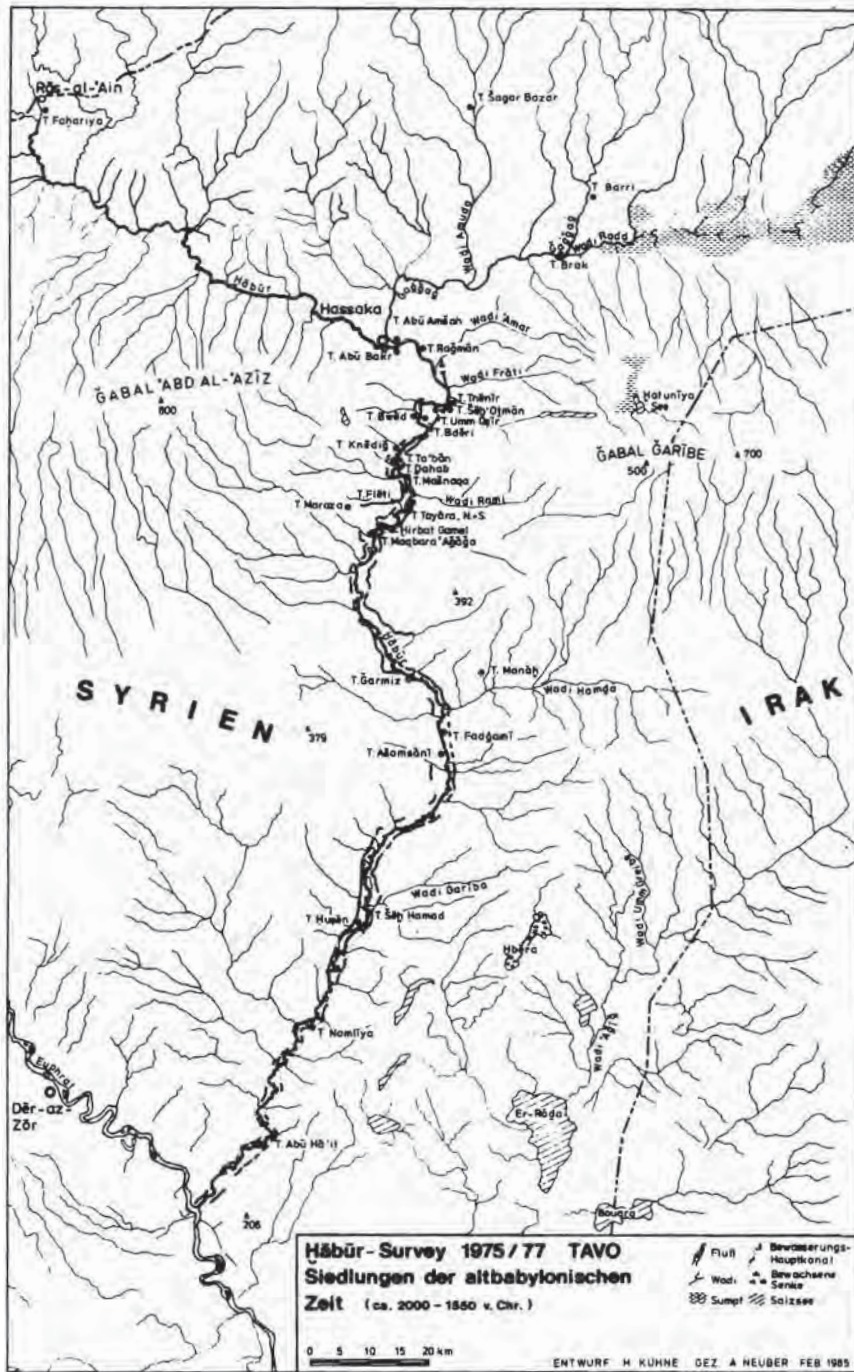


Figure 5. Settlements of the Middle Bronze Age on the Lower Hábūr in relation to the irrigation canals; Survey of the 'Tübinger Atlas des Vorderen Orients' in 1975 and 1977.

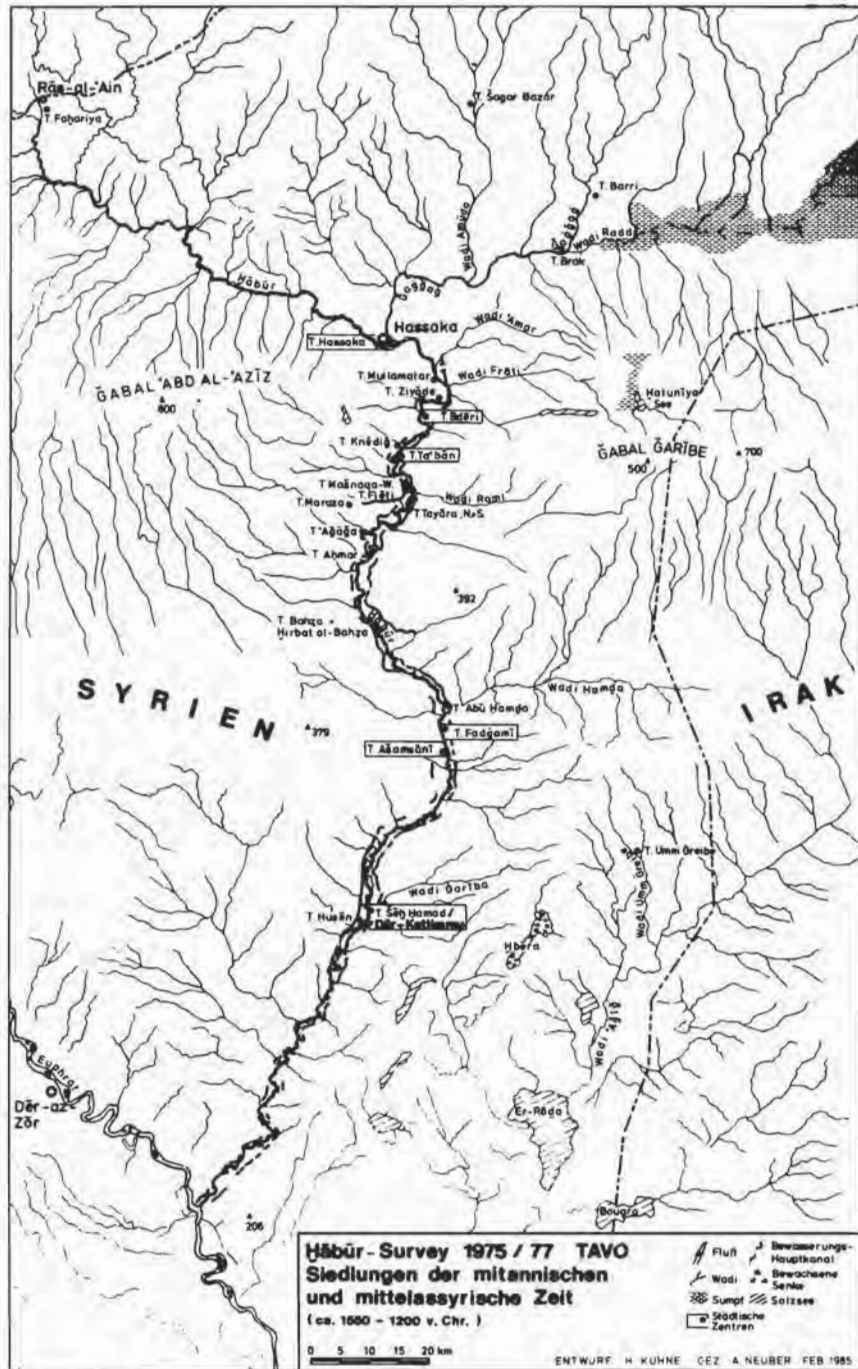


Figure 6. Settlements of the Late Bronze on the Lower Häbūr in relation to the irrigation canals; Survey of the 'Tübinger Atlas des Vorderen Orients' in 1975 and 1977.

ted down to Dur-katlimmu. This, in turn, strengthened the centre mentioned above. There is a technical reason why the construction of the canal should have stopped at Dur-katlimmu: just south of that city there is a Pliocene ridge which is difficult to cross. The fact that there are no settlements south of Dur-katlimmu underlines this conclusion as well as the military significance of the place: it was the last bastion protecting the south-west corner of the Middle Assyrian empire, and this may have been the initial reason for the Assyrians to choose this place for a stronghold. It remains somewhat enigmatic why there should be so few villages or smaller settlements; on the other hand there seems to be a good reason for this. The time to establish agriculture on the basis of irrigation was too short since the political power of the Middle Assyrian empire dwindled with the death of Tukulti-Ninurta I.

In the Iron Age, there can be no doubt that the canal must have existed over the full length. It gave rise to the most important centres, lined up with distances of about 40 km, starting with Tell Hassaka/Margarisi in the north, followed by Tell <sup>c</sup>Ağāgā/Sadikanni and Tell Fadgami/Qatni and ending with Tell Šēḫ Ḥamad/Dur-katlimmu (Fig. 7). This corresponds well with the written evidence that the Assyrians built a 'harran šarri', a royal road, probably along the eastern bank of the Ḥābūr, at least down to Dur-katlimmu (38). Along with the centres, the villages and the population increased mainly in the south where there had been none before; it also appears that some fortresses were founded in between them (Tell Adla and Tell Abu Hamda).

The network of centres became closer in the Parthian-Roman and Early Byzantine period (Fig. 8), followed, almost on the same basis, by the Islamic period (Fig. 9). Most probably the Mongols destroyed both long distance canals, and there was no political power afterwards to restore them. The canals were used thereafter only locally and periodically, and the nomads were able to take over most of the area. Travel reports of the last two centuries show that all urban life on the Ḥābūr had vanished, despite its former prosperity.

The traces of the canals mapped on Figs. 4 to 9 suggest the following conclusions: because of the uniformity of their appearance and technical data it seems that they were built all at one time, as part of one major project. The most probable period at which this was carried out seems to have been the Neo-Assyrian. It is quite possible that a part of the canals, mainly the section on the east bank connecting the centres of Tell Tāban, Tell Fadgami and Tell Šēḫ Ḥamad, had been already constructed along the same alignment in Middle Assyrian times, mainly to provide the newly established provincial centre of Dur-katlimmu with adequate water supplies for its growing population and agriculture.





Figure 7. Settlements of the Iron Age on the Lower Häbūr in relation to the irrigation canals; Survey of the 'Tübinger Atlas des Vorderen Orients' in 1975 and 1977.



Figure 8. Settlements of the Parthian-Roman and early Byzantine period on the Lower Häbūr in relation to the irrigation canals; Survey of the 'Tubinger Atlas des Vorderen Orients' in 1975 and 1977.

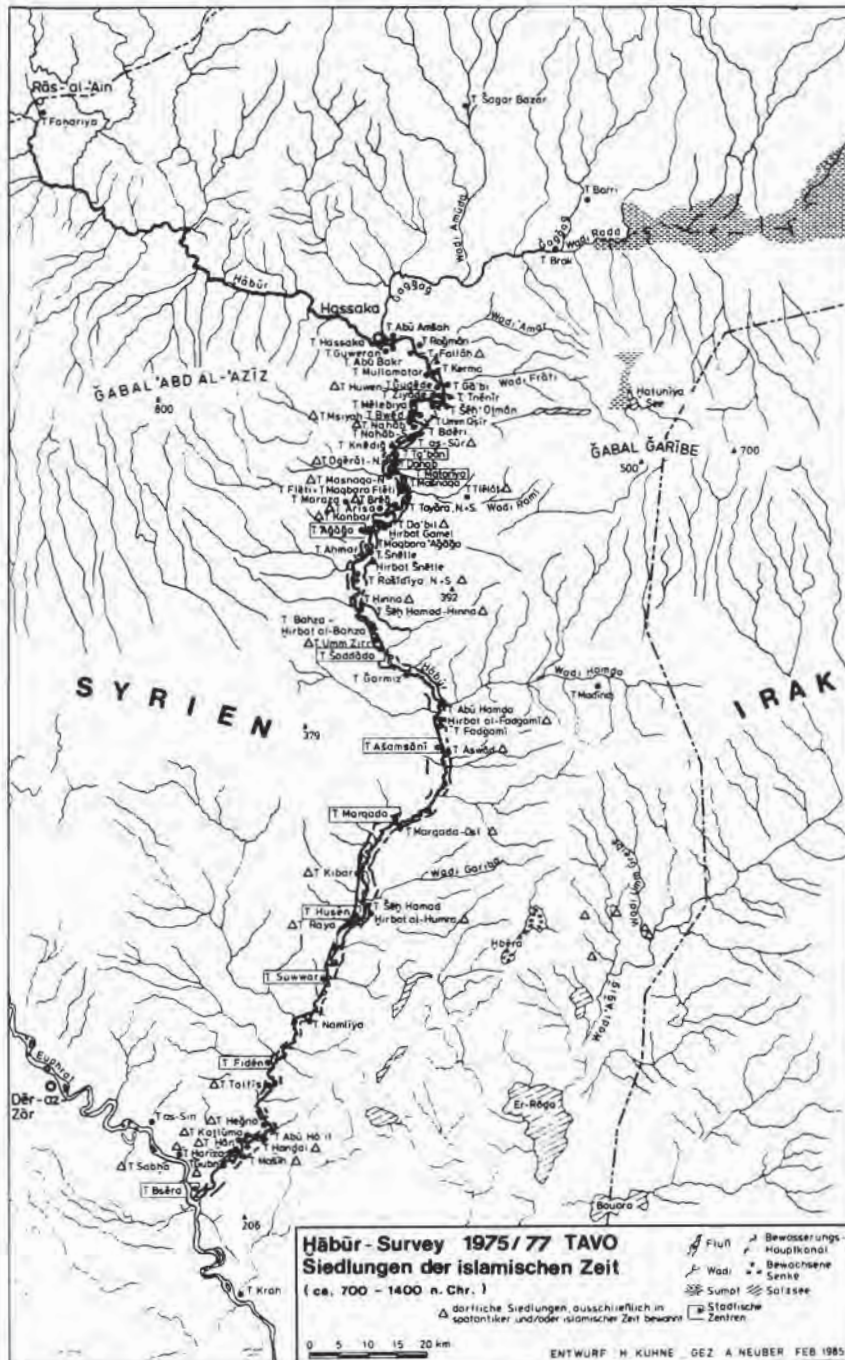


Figure 9. Settlements of the Islamic period on the Lower Hābūr in relation to the irrigation canals; Survey of the 'Tübinger Atlas des Vorderen Orients' in 1975 and 1977.

As mentioned above, the dating evidence is scanty so far. It is also surprising that a major activity like this should not have been mentioned either in the Middle Assyrian archive of Dur-katlimmu, in which one misses any mention of a vocabulary in connection with irrigation canals, or in the Neo-Assyrian annals or other documents, in which — as far as we can see — there is again no mention of a canal along the Hābūr.

It also seems possible that older local systems may have existed along a similar alignment, the traces of which have disappeared in the course of the construction of the Neo-Assyrian canals. The most plausible example may be the situation in the Early Bronze Age (see above). On the other hand, the conditions of the river are not favourable for an easy diversion of water and hence for several local systems.

A fuller account of our observations in relation to the settlements surveyed in 1975 and 1977 will be given in a forthcoming publication. Finally it may be of interest to note that the alignment of the newly planned irrigation system will be very similar to the Neo-Assyrian one so that the traces of it, now still visible, will disappear in the near future.

## NOTES

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