

Offprint from

Studia Chaburensia

Edited by Hartmut Kühne

Editorial Board:

Peter M.M.G. Akkermans, Eva Cancik-Kirschbaum,
Florian Janoscha Kreppner, Karen Radner

Volume 1

2010

Harrassowitz Verlag · Wiesbaden

Dūr-Katlimmu 2008 and Beyond

Edited by Hartmut Kühne

2010

Harrassowitz Verlag · Wiesbaden

Scientific Committee:

Dominik Bonatz, Dominique Charpin, John Curtis, Jean-Marie Durand, Jesper Eidem, Frederiq Mario Fales, Jörg Klinger, Maria Grazia Masetti-Rouault, Stefania Mazzoni, Peter Miglus, Adelheid Otto, Simo Parpola, Peter Pfälzner, Nicolas Postgate, Michael Roaf, Stefan Seidlmayer, Daisuke Shibata, Chikako E. Watanabe.

The series will consider contributions in the following fields:

- History, with an emphasis on regional, local, and micro-historical approaches.
- Archaeology, with an emphasis on studies on material-cultural phenomena from excavation contexts and on functional analysis.
- Environmental studies, with an emphasis on the reconstruction of rural and urban landscapes and their development in relation to the natural conditions.
- Settlement history, with an emphasis on the development of settlement patterns and systems.
- Social studies, with an emphasis on rural communities, their organization and relationship to the central government; every day life and social systems.
- Publication of dissertations and other theses dealing with topics concerning these subjects.
- Publication of international and interdisciplinary conferences on topics concerning these subjects.

Manuscripts are to be submitted to the editor as word-documents, with figures as single jpg-documents with a resolution of at least 800 dpi. Languages: English, French, German (for other languages please contact the editor).

Address of the editor: Hartmut Kühne, Institut für Vorderasiatische Archäologie, Hüttenweg 7, 14195 Berlin, Germany.

Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the internet at <http://dnb.d-nb.de>.

For further information about our publishing program consult our website <http://www.harrassowitz-verlag.de>

© Otto Harrassowitz GmbH & Co. KG, Wiesbaden 2010
This work, including all of its parts, is protected by copyright.
Any use beyond the limits of copyright law without the permission of the publisher is forbidden and subject to penalty. This applies particularly to reproductions, translations, microfilms and storage and processing in electronic systems.

Printed on permanent/durable paper.

Typesetting: Tobias Schmidt, Berlin

Printing and binding: Memminger MedienCentrum AG

Printed in Germany

ISSN 1869-845X

ISBN 978-3-447-06209-1

Contents

Editorial Foreword.....	VII
Foreword	IX
Annie CAUBET, François POPLIN	
Réflexions sur la question de l'éléphant syrien	1
Grégory CHAMBON, Florian Janoscha KREPPNER	
Hohlmaßsysteme und deren „Standardisierung“ in Assyrien und Volumina von Gefäßkeramik aus Dūr-Katlimmu	11
Dominique CHARPIN	
An Old Babylonian Itinerary along the Ḫābūr.....	33
Jean-Marie DURAND	
Dūr Katlim(m)u/Šēḫ-Ḫamad, how and why?.....	49
Frederick Mario FALES	
Production and Consumption at Dūr-Katlimmu: A Survey of the Evidence	67
Helmut FREYDANK	
Betrachtungen zur Weidewirtschaft in Dūr-Katlimmu.....	87
Anja FÜGERT	
Ein Pazuzu-Kopf und ein Tonverschluss mit Abdrücken eines Pazuzu-Kopfes aus Tall Šēḫ Ḫamad	101
Florian Janoscha KREPPNER, Heide HORNIG	
A Neo-Assyrian Chamber Tomb in Dūr-Katlimmu	107
Hartmut KÜHNE	
The Rural Hinterland of Dūr-Katlimmu.....	115
Maria Grazia MASETTI-ROUAULT	
Rural Economy and Steppe Management in an Assyrian Colony in the West.....	129
Christa MÜLLER-KESSLER	
Die aramäischen Verkaufsklauseln in den Beischriften.....	151
Marina PUCCI	
The Discovery of the City-Canal of Dūr-Katlimmu	163
Karen RADNER	
Neue neuassyrische Texte aus Dūr-Katlimmu	175
Hervé RECULEAU	
The Lower Ḫābūr before the Assyrians	187
Daisuke SHIBATA	
Continuity of Local Tradition in the Middle Habur Region in the 2 nd millennium B.C.....	217
Francelin TOURTET	
“Demons at home”	241

Editorial Foreword

This volume initiates a new series *Studia Chaburensia*. It will be devoted to the study of provincial regions with an emphasis on the development, change, and collapse of settlements, environment, economy, administration, and every day life in rural areas dependent on urban centres or not. Chronologically unlimited, the series will focus on the Assyrian and contemporary civilisations of the second and first millennia BCE. Geographically it will encompass Upper Mesopotamia as well as neighbouring regions.

January 2010-01-15

The Lower Ḥābūr before the Assyrians

Settlement and Land Use in the First Half of the Second Millenium BCE*

The ‘ruralization’ of the western part of the Assyrian empire was a long-term procedure, which began in the Middle-Assyrian period, especially from the 13th century on, when Dūr-Katlimmu was established as a provincial capital linked to a regional canal on the eastern bank of the Ḥābūr. It was then maintained by the local rulers of Assyrian origin during the so-called ‘Dark Ages’ of the 12th to 10th century, before reaching its climax in the Neo-Assyrian times, with the prolongation of the regional canal on the eastern bank of the Ḥābūr and its reduplication on the western one, as well as with the colonization of the Wādī ‘Aḡṡ region¹. Yet, all these achievements were not created *ex nihilo* by the Assyrians, but based upon previously existing devices, which can be traced at least to the Middle and early Late Bronze Age², the situation being that of a progressive development of sedentary land use and settlement along the Ḥābūr, prolegomenon to the massive one led by the Assyrians, who undoubtedly introduced a change in scale, especially in the Neo-Assyrian time.

The present study will focus on the Lower Ḥābūr between the 19th and 14th century, that is the part of the river valley after it has passed the basaltic area of the Ġabal Kaukab, down to its confluence with the Euphrates, as well as the steppe plateau of the Ġazīra westwards of the Ḥābūr, prior to its development by the Assyrians. A first step will be to establish whether or not the environmental conditions (climatic, hydrological and ecological) differed drastically during the Bronze Age from the present day ones, and whether or not changes can be tracked between the pre-Assyrian and Assyrian times. The way this environment was used and developed by the local communities will then be presented in details, beginning with the situation known from the Mari archives (19th-18th century BCE) and ending with that of the so-called “Ḥana” period (18th-14th century BCE) which directly preceded the Assyrian conquest.

* This paper is part of a study on environmental reconstructions based on textual material led by the author under the direction of the Pr. H. Kühne at the Freie Universität of Berlin, within the TOPOI Cluster of Excellence (<<http://www.topoi.org>>).

1 See Kühne 1995, as well as several papers of the present volume.

2 P. Pfälzner recently advocated the use of a ceramic-based periodisation in which the Lower Ḥābūr is linked to the regions of the Ġazīra, east of the Euphrates, and clearly distinguished from the Middle Euphrates. According to this terminology, the last part of the period studied here would belong to the “Middle Jazirah IA” (1550-1400/1350) and “Middle Jazirah IB” (1400/1350-1270) times (Pfälzner 2007:232). I nevertheless maintain here the traditional sequencing into metal ages, both for the sake of clarity and because the history of the Lower Ḥābūr prior to the Assyrian conquest cannot be distinguished from that of the Middle Euphrates, at least for the part of it around Terqa.

1. Environmental conditions, past and present

1.1. Present-day ecosystems of the Lower Ḥābūr region

The Lower Ḥābūr region lies southward of the Ġabals Sinġar and ʿAbd al-Azīz, whose ranges roughly correspond in present day situation with the limit of rain-fed agriculture: due to strong inter-annual variations in rainfall, the area where winter crops can be cultivated without the help of artificial irrigation vary from one year to the other, and even more from one group of years to another, since wet and dry years respectively tend to come in groups, following one another for two or three years³. Yet, in the long term, only a very restricted part of the region, including the two ranges of mountains and the piedmont of the Ġabal ʿAbd al-Azīz, falls within the range of a 300 mm mean annual rainfall, and even the 200 mm isohyet, which determines the absolute limit of (already rather uncertain) rain-fed agriculture in the area, lies northward of most of the area under study – and especially northward of Tall Šēḥ Ḥamad, which is nowadays definitively outside the zone of rain-fed cultivation⁴. In dry years, the whole region lies below the 200 mm isohyet, and the southern part of the Ḥābūr (including Tall Šēḥ Ḥamad) does not even receive 100 mm of rain per annum⁵. As a whole, only the northern part of the area under study (which does not include Tall Šēḥ Ḥamad) falls into the modern Zone of Marginal Cultivation of Northern Syria, as defined by H. Wachholtz⁶, the southern part of the Lower Ḥābūr and adjacent steppe being only tillable with the help of artificial irrigation.

The Lower Ḥābūr valley is subdivided into two hydrogeographical units⁷: the first one, ranging from circa Tall Bdēri down to the area of Tall Ġirmiz (some 45 km downstream), follows a rather steep slope, with an inundation plain from 4 to 6 km and a notable absence of terraces, the river being incised directly in the Ġazīra plateau and the lower level of terraces corresponding to the inundation plain. Downstream (which includes the area around Tall Šēḥ Ḥamad), the valley broadens, offering better irrigation possibilities and being characterized by the presence of two marked levels of terraces, established respectively ca. 5 and 15 m above the river's level⁸, out of reach of the river's flood.

Present-day ecosystems of the Lower Ḥābūr area are in a highly degraded state compared to what they were even decades ago, not to mention their climatic situation during the Holocene optimum. This degradation impacted both the biotic and abiotic factors, the changes having been especially important in the last decades. The first element of degradation, affecting the biotope, is the quasi-complete draining of the Ḥābūr and its tributaries due to overexploitation of surface and ground water resources for intensive mechanized agriculture, which has

3 Kerbé 1987:649-652.

4 Kühne 1991:27-28, to be completed with Fig. 3 in Kühne 1995:73. The long-term 200 mm isohyet encompasses the area south of the Ġabal ʿAbd al-Azīz for ca. 30 km, goes northeastward towards Tall Ṭābān and then southeastward towards the Ġabal Gebissa, its maximal extension southward being ca. 45 km south of the Ġabal Sinġar, in the steppe east of Tall Fadġamī.

5 Kühne 1991:28.

6 Wachholtz 1996. For a map connecting this Zone with several (mostly early) Bronze Age sites, see Wilkinson 2004:42.

7 Kerbé 1987:651.

8 Ergenzinger 1991:36.

been effective since around the mid-1980's⁹, even if in some exceptionally moist years (like 1987) the flood plain can still be inundated¹⁰. Prior to its draining, the Ḥābūr had a regime influenced by yearly rainfall in its drainage basin, but in a less drastic way than the Euphrates, making it more easily predictable and suitable for human activities. Its rate of flow varied from 40 m³/sec. in low water season to 200 m³/sec. at the peak of the flood, and was sustained throughout the year by karstic sources, which tended to lessen the discrepancy between high and low waters, especially when compared to the situation of the nearby Euphrates – a feature which is also accountable for the attenuated interannual variability of its flow. The hydro-graphic year was marked by two seasons: one of low waters, with constant flowrates around 40 m³/sec., and one of high waters, which was more sensitive to atmospheric humidity. In moist years, three peaks of flood followed one another from January to April, the main one (consecutive to snow melting in the higher parts of the drainage basin) being the last one, roughly concomitant with the main flood of the Euphrates. In dry years, a single peak was recorded in the heart of winter, around the end of December and the beginning of January, followed by a progressive decrease in flowrates, sometimes accompanied by a small peak between March and May¹¹.

The degradation process also affected the biocenosis, both in its animal and vegetal forms. Eight vegetation zones have been defined in present-day Lower Ḥābūr, ranging from remains of open forests on the mountain ridges to humid areas of the valley floor with fragmentary evidence of past riverine gallery-forests, and including several forms of *Artemisia* steppe in a degraded form, be it because of agriculture (both rain-fed in the northern part of the area, following a line corresponding to the 200 mm isohyet, and irrigated along the river systems, in the area where artificial irrigation through the use of diesel pumps is possible) or of overgrazing. Some saline areas (sabkhas), whose size might be consequent (as in er-Rāda and Buara, in the Southern part of the steppe east of the Ḥābūr) only allow the growth of hallophytes. All of these vegetation zones are marked by the strong influence of anthropogenic activities¹². Animal species also suffered from man-induced overexploitation, even if its impact is more effective on terrestrial fauna than on limnetic fauna¹³. If the presence of amphibians and reptiles in the area prior to recent inquiries remains too poorly known to estimate its potential recent degradation¹⁴, the phenomenon is clearly attested for wild fauna, especially for bigger animals nowadays absent in the area, but whose presence was recorded by travelers and scholars in the late 19th and early 20th centuries. Among these species that have recently become extinct in the Lower Ḥābūr region are ostriches (*Struthio camelus syriacus*)¹⁵ and

9 Several dams and dam projects have been elaborated on the Ḥābūr and its main tributaries (Wādī er-Radd and Ġaḡḡaḡ) from the 1960's on, but all have not been completed. The actual critical situation is mostly due to overpumping in the groundwater with the help of diesel-pumps for industrial crops, especially cotton, which led to the lowering of the water table, making it unable to feed most of the karstic sources from which the river's water is derived. See Hopfinger 1991:52-55 and fig. 36.

10 Kühne 1991:27.

11 Kerbé 1987:1100, fig. XIV_93 and XIV_94.

12 Frey & Kürschner 1991:90-99 and fig. 49.

13 Krupp & Schneider 1991, 2008. Yet, these studies are based on material gathered between the end of the 1970's and the beginning of the 1980's, and an analysis of the more recent situation would probably reflect a strong deterioration of freshwater fauna, as a consequence of the above-mentioned draining of the river.

14 Martens 2008:56-57.

15 Krupp & Schneider 1991:75.

several mammals, like the brown bear (*Ursus actos*), the leopard (*Panthera pardus*), the lion (*P. leo*), the cheetah (*Acinonyx jubatus*), the onager (*Equus hemionus*), the goitered gazelle (*Gazella subgutturosa*) and the wild boar (*Sus scrofa*)¹⁶.

Studies of plant and animal remains from the Bronze Age have shown that this degradation processes, which were accelerated in the last centuries, is actually part of a long-term trend underwent since the beginning of human settlement in the area. In the Middle-Assyrian times, it has been established that the original riverine gallery-forests of poplars (*Populus euphratica*), tamarisks (*Tamarix* sp.), elms (*Ulmus* spec.) and planes (*Planus* sp.) were still predominant in the valley-floor, man-induced deforestation occurring only in Neo-Assyrian times¹⁷. This is also echoed by animal remains¹⁸, which testify for the existence during the Bronze and Iron Ages of species now extinct, be it those that were still attested one hundred years ago (bears, onager, wild boar, ostriches, gazelles, lions, beavers) or even species that were already extinct by that time, like asiatic elephants (*Elephas maximus*, probably extinct since the 8th century BCE¹⁹), fallow deers and deers (*Cervus elaphus*, *Dama mesopotamica*, whose precise date of extinction is debated²⁰).

1.2. Fluvial dynamics of the Ḥābūr in the Bronze Age

Recent geomorphological studies of the the Lower Ḥābūr have shown that the decisive change in fluvial dynamics occurred about 6000 years BP, when the Ḥābūr evolved from a braided to a meandering river, with no noticeable significant change in discharge from that date on²¹. In spite of doubts which have been raised regarding this datation²², it shall in the actual state of documentation be maintained, especially since it is based on ¹⁴C datations of mollusks found in sediments predating this change in dynamics, which have been estimated respectively from 7500 ± 115 BP and 5990 ± 100 BP²³. This implies that, during the Bronze Age, the river's dynamics were roughly comparable to those of present-day (that is, prior to its draining), building large meanders with sand islands and wet spots comprising of dead meanders, even if the shape and size of older meanders attest an evolution from broader to smaller meanders, to be correlated with a slightly higher streamflow of the river in the time when it shaped the presently highly sedimented dead meanders – whose precise dating cannot be given, even if it surely counts in centuries²⁴.

Textual evidence of the Ḥābūr's dynamics are limited, but several documents from Mari in the 18th century BCE attest the dangers that the flood represented for the winter crops, which

16 Kock 2008.

17 Frey, Jagiella & Kürschner 1991; Kürschner 2008. The situation was the same on the Middle Euphrates, where similar species of the riverine gallery-forests have been found at Emār, in layers dating from the Early to the Late Bronze Age; cf. Deckers 2005.

18 Becker 1991, 2008a & 2008b.

19 Krupp & Schneider 1991:76.

20 *id.*

21 Ergenzinger 1991:49-50.

22 Geyer 1992:153; Besançon & Geyer 2003:44. These authors want to date the change in the river's dynamics around 3000 BP, in order to have it coincide with their own estimate of the change in fluvial dynamics of the Euphrates. Yet, this last date is probably underestimated. See Reculeau, forth. (a).

23 Ergenzinger 1991:49.

24 Ergenzinger 1991:49-50.

could be inundated if not harvested in time²⁵. This situation fits well with the present-day picture, when the spring peak of the Ḫābūr's flood, like the main flood of the Euphrates, occurs in April-May, at the time of the harvest of winter cereals. Another feature of the Ḫābūr's dynamics mentioned in cuneiform documents is the possibility of rather sudden floodpeaks, caused by abundant rains in its drainage basin: these could be rather remote from the main urban centers, but had an impact on their administration, since a brutal flood could have disastrous effects. This is the reason why the governor of Saggarātum, at the junction between the Ḫābūr and the Euphrates, complains to the king that his colleague from Qaṭṭunān, upstream on the Ḫābūr (presumably Tall Fadgāmī²⁶), did not warn him from distant rains which, apparently, caused an unexpected floodpeak (the text is unfortunately broken after the mention of rain)²⁷:

“Already twice in the past, he [= the governor of Qaṭṭunān] has not annunced the (flood of the) Ḫābūr! Now, here [= in Saggarātum], the rain did not fall: the place where the rain fell is far away. And the Ḫābūr [...].”

Other mentions of the Ḫābūr's flood in Mari letters regard its impact on irrigation devices who fed on it in its very lower part, in order to irrigate lands located in the floodplain of the Euphrates, which were part of the heartland of the Mari kingdom²⁸. Unfortunately, they give little information regarding its amount or place within the hydrological year. Textual informations are almost non-existent for the Late Bronze Age, but two mentions of a “great Ḫābūr” (id *Ḫubur gal*) might suggest that, at the level of Qaṭṭunā(n), the river was divided into (at least) two branches²⁹.

1.3. The limit of rain-fed agriculture in the Bronze Age

Estimating the limit of rain-fed agriculture in Antiquity is a fairly complex task, due to the evasive and fragmentary nature of available evidence, which can lead to opposite conclusions according to the scholars³⁰. Concerning the Bronze Age prior to the assyrian conquest, the ar-

25 ARM XXVII 101 & 102. See the comments in Birot 1993:9-10. Note that such indications imply that at least part of the cereal fields around Qaṭṭunān were located on the valley floor, not on the higher terrace, a situation which can still be recognized in the Late Bronze Age. See here, under 3.1.

26 P. Pfälzner as argued that the lack of “Middle-Assyrian official ceramic” at Tall Fadgāmī invalidated the equivalence of the assyrian Qaṭni with the site, and suggested that it shall be identified with Tall Ašamšānī, on the opposite bank of the river (Pfälzner 1995:221; 2007:250). Yet, this seems hardly plausible, since there is no reason to doubt that the assyrian Qaṭnu'ī was one and the same city as the one known in the “Ḫana” documents as Qaṭṭunā, and in the Mari ones as Qaṭṭunān (see here, under 2.2. and 3.1.), which was clearly located on the east bank of the Ḫābūr, since it was the point where tree trunks, floated upstream to the city, left the river and were put on carts to be sent by road to Šubat-Enlil (Tall Leilān); see ARM I 7 (= LAPO 16 187) and I 98 (= LAPO 16 188), with the commentary of Durand 1997:323.

27 A.2175 (unpubl.): 12-18: (12) 2-šu-[ma], (13) *i-na pa-né-tim ḫa-bu-ur*, (14) *ú-ul ú-ba'-ar-r[i]*, (15) *i-na-an-na an-ni-ke-e-[em]*, (16) *ša-mu-um ú-ul iz-[nu-ur]*, (17) *ú a-šar ša-mu-um i[z-nu-nu]*, (18) *ru-uq ú ḫa'-bu'-[ur]*, [...]
Except otherwise explicited, unpublished material from Mari quoted in this study is to be published by myself in a forthcoming volume of the *Florilegium Marianum* series.

28 See the details in Durand 1998:617-621.

29 LH 15 & 17. See here, 3.1. for the details.

30 The most debated case regards the Lower Ḫābūr in the Middle Assyrian time, which have been seen either as an area of rain-fed agriculture (Wiggermann 2000) or of irrigated one (Ergenzinger & Kühne 1991), or even as a mixture of both forms (Röllig 2008). This question is central to the research programme undergone within the TOPOI Project, but will not be debated here, since its results are still in a preliminary state, and because this paper focuses on the pre-Assyrian situation.

chaeobotanical evidence on the Lower Ḥābūr comes exclusively from the area which would nowadays be within the Zone of Marginal Cultivation, and more precisely from two sites located in modern times on the eastern side of the river, Tall al-Raqa'i and Tall Bdēri³¹, at a distance of 8 km one from the other and presently flooded by a dam established on the river 28 km downstream of Hasseke³². Both sites have mainly yielded evidence from the Early Bronze Age period, but some Late Bronze Age plant remains from the time of the Mitanni overlordship have also been excavated in Tall Bdēri³³. In Tall al-Raqa'i³⁴, samples from occupational fills dating from ca. 2900 BCE to ca. 2500 BCE have revealed the massive presence of cereals, both emmer and wheat, with a marked predominance of the latter, especially in the last two centuries of the site's occupation, as well as several remains of weeds belonging to the segetal flora³⁵. Species specific to irrigation agriculture are absent, which is taken as a mark that cereal production, especially of barley, was practiced within the frame of rain-fed agriculture on the plateau, more than in irrigated fields on the valley floor – even if it might be that available evidence simply does not reflect ancient irrigation practices³⁶. The EBA samples from Tall Bdēri³⁷ also reveal the presence of cereals, (wheat and barley with predominance of the latter). On both sites, leguminous crops seem to have played a limited role³⁸. Here again, irrigation is posited on the valley floor, with a possible extension of cultures under rain-fed conditions on the plateau, in order to meet the needs of a growing population³⁹. In present-day conditions, a rain-fed based agriculture would indeed prove very risky, especially since these crops were the basis of subsistence for the local population. Yet, we undoubtedly lack any positive indication of irrigation for this area at this date, and if such an argument *a silentio* should be handled with care, predominantly rain-fed agriculture remains the most plausible explanation of the available data. This suggests, for the Early Bronze Age, a wetter situation than that of present day: this would fit the picture proposed, for the Middle Euphratean site of Tall Sweyhat, where a rain-fed agriculture based subsistence⁴⁰ has been established for the Early Bronze Age in an area nowadays part of the Zone of Marginal Cultivation, also around the present 250 mm isohyet⁴¹. It is remarkable that the three sites coincided in having their occupational climax in the late centuries of the 3rd millennium BCE⁴², and collapsed soon after,

31 Note that, in the case of Tall Bdēri, the situation differed in Antiquity, since it was then located on the western bank of a meander of the river; cf. Ergenzinger 1991:42-46.

32 van Zeist 2003:7.

33 van Zeist 2008:141.

34 For a detailed analysis of the al-Raqa'i finds, see van Zeist 2003.

35 That is, wild plants that are found in cereal fields and harvested together with the crops.

36 van Zeist 2003:18-19.

37 For the details, see van Zeist 1994 & 2008.

38 van Zeist 2003:10 & 2008:140.

39 van Zeist 2008:140.

40 Wilkinson 2004:141.

41 Wilkinson 2004:42-43.

42 The date of abandonment of Tall Sweyhat is debated: I here follow Wilkinson, but Cooper (2006: 264-267) suggested an earlier date, which would link the abandonment of Sweyhat and other Middle Euphratean sites with the posited „4,2 ka year“ drying phase, often considered as responsible for settlement decrease in Upper Mesopotamia. This is not the place to discuss such matters, for which see the different contributions in the proceedings of a recent symposium dedicated to them (Kuzucuoğlu & Marro 2007, especially that of Peltenburg for the Middle Euphrates area).

leaving no or almost no trace of occupation during the Middle Bronze Age⁴³. This, correlated to palaeo-climatic studies⁴⁴, suggests wetter conditions than today for the Early Bronze Age, followed by a drier period in the Middle and Late Bronze Age – which also has to be coined to present day situation, but this appears to be a more complicated task.

As far as I am aware of it, no Middle Bronze Age plant remains have been found, or at least published, for the Lower Ḥābūr area; we are thus entirely dependant on textual material when trying to establish the zone of rain-fed agriculture for that time. The Mari archives, covering the end of the 19th and the first decades of the 18th century BCE, very poorly document rain-fed agriculture, especially when compared to the numerous mentions of irrigation one⁴⁵: this can be explained by the fact that the heart of the Mari kingdom lied then, as it does nowadays, in an area of exclusive irrigation agriculture⁴⁶. This implies that the climatic conditions were not drastically different then than what they are today, but tells us little regarding variations of smaller amplitude – the more pertinent for our study – since it lies far below the present-day limit of rain-fed agriculture. Focusing on the Zone of Marginal Cultivation along the Ḥābūr, we are left with two letters, written to the King of Mari by the governor of Qaṭṭunān (Tall Fadgamī), nowadays outside of the Zone. Both letters⁴⁷ clearly indicate the growing of barley after the rain fell in the area of Dūr-Zabīm, which should thus be considered as located inside the zone of rain-fed agriculture. This, nevertheless, does not imply that the area around Qaṭṭunān was: contrary to what was first thought⁴⁸, there is no place bearing this name in the district of Qaṭṭunān, all the attestations pointing to a more distant locality of the Upper Ḥābūr, close to Zilḥān and Dêr-of-the-Bālīḥ, mentioned here as «Dêr» in the second letter⁴⁹. This area is, nowadays, part of the Zone of Marginal Cultivation, where rain-fed agriculture is possible but remains uncertain, due to a strong interannual variability in rainfall of ca. 50%⁵⁰ – a situation which fits well the relief expressed by the governor when indicating that rain had, finally, come.

All textual evidence mentioning located in the district of Qaṭṭunān itself, on the other hand, refers to the practice of (small-scale) irrigation agriculture: canals are attested close to the district capital⁵¹, but also upstream around the city of Terḥān⁵² (whose precise location

43 van Zeist 2003:8 & 2008:140; Wilkinson 2004:143.

44 See Wilkinson 2004:40-47 & 191-196.

45 See Durand 1998:573-653.

46 Most of it is located below the 150 mm/year isohyet, with potential evapotranspiration over 2000 mm/year, which forbids the possibility of any culture without the use of artificial irrigation, even if in particular moist years some catch crop may be cultivated in addition to the main irrigated ones. They have, however, always been a marginal practice. Cf D'Hont 1994:54.

47 ARM XXVII 105, 5-12: (5) *iš-tu pa-na zu-un-nu*, (6) *i-na bād-za-bi-im^{ki} u-u[l i-b]a-aš-šu-u*, (7) *iš-tu u₄-mu iti-ka[m]*, (8) *zu-un-nu ib-ba-[š]u-ma*, (9) *še-um ú-še-em*, (10) *i-na-an-na še-um [š]u-ú*, (11) *it-ti še-im ša di-ir^{ki}*, (12) *ra-ḥi-iš* = «It hadn't rain for long at Dūr-Zabīm, (but yet) the rain has been falling for a month, which made the barley grow out (of the soil). Now, this barley, as well as that of Dêr, is soaked.»

ARM XXVII 106, 3-6: (3) *i-na pa-ni-tim-ma aš-šum še-im ša bād^{ki}-za-bi-im*, (4) *[š]a^{IM} ir-ḥi-šú a-na še-er be-lí-ia*, (6) *[aš-pu-r]a-am i-nu-ma še-em še-ti^{IM} ir-ḥi-šú*, [o o o]-*ma ù zi-in-nu x x x x x* = «I previously wrote to my Lord regarding the barley in Dūr-Zabīm, that the Storm-God has soaked. When the god soaked this barley ... the rain ...»

48 Birot 1993:84.

49 Durand 1999-2000:195.

50 Sanlaville 1990:17, fig. 4.

51 Birot 1993:10, and here, under 2.3.

52 A.338 (unpubl.)

remains unfortunately unknown, if it was the northern border of the district⁵³), as well as downstream, at Raḥātum, which marked its southern border⁵⁴. Ṭabātum (Tall Ṭabān), which lies nowadays at the very edge of the 200 mm isohyet, was famed for its barley-production⁵⁵, but the conditions of its culture (rain-fed or irrigated) are not specified.

The Late Bronze Age situation prior to the Assyrian conquest is even less documented than the Middle Bronze Age one: the archaeobotanical remains are restricted to the scanty evidence from Tall Bdēri dated to the time of the Mitanni dominion⁵⁶, which testifies for the culture of barley but also, apparently, from wine. Irrigated wine cultivation is well-documented by cuneiform texts for Late Bronze Age Emār⁵⁷ and Middle Bronze Age Mari⁵⁸, and its presence on the Ḥābūr would not be surprising – yet, it implies, in the absence of drastic climatic change, the use of artificial irrigation, maybe via the *Ḥābūr-ibāl-bugaš-canal*⁵⁹.

All in all, evidence is limited but suggests that, after a wetter phase during the third millennium BCE, the Lower Ḥābūr area (and the Near East in general) experienced a dry phase, which apparently resembled in many aspects the present-day conditions. Minor differences in a sense or the other (which could have had an important impact on land use and settlement) cannot be ruled out, but the available data does not give any positive indication of what they might have been. Yet, a major difference with the modern situation is to be found in the better preserved natural fauna and flora, which testifies for a lesser environmental stress by human communities. In fact, textual evidence suggests that this stress increased throughout the 2nd millennium BCE (if it remained by far less drastic than the one imposed by the Assyrians), and an evolution in settlement and land use can be identified from the time of Mari on, when it began inside a mostly preserved environment.

2. The Lower Ḥābūr in the time of the Mari Archives (19th-18th century BCE)

2.1. Settlement and Land Use along the Lower Ḥābūr

I will not discuss here the debated question of the nature of 3rd millennium settlements along the Ḥābūr⁶⁰, since no new evidence can be brought to light on this matter, and will rather focus on the situation from the Middle Bronze Age, hence the period which followed the assumed drying phase of the late 3rd millennium (whatever its precise date might have been), seen from the Mari texts⁶¹. One important point shall be noted, although it does not directly concern the Lower Ḥābūr: it is the fact that, in contradiction with what has long been posited, several elements suggest that the main administrative center on the left bank of the Euphrates, Saggārātum, was

53 Birot 1993:8. Cf also Charpin 1995.

54 *Id.* Its precise location is, also, unknown.

55 Birot 1993:8.

56 van Zeist 2008:141.

57 Mori 2003:140-141.

58 Lion 1991.

59 See here, under 3.2.

60 See Lyonnet 2004:29-31, with previous literature.

61 A partially similar approach, with globally concurring conclusions although with slight differences also, can be found in Durand, *forth.*, which will not be discussed in details here.

not located along the Ḥābūr, but at the very confluence of the Ḥābūr and the Euphrates, inside the Euphrates' valley⁶². In that perspective, one wonders how far along the Ḥābūr the district of Saggarātum extended, and what the zone comprised between the mouth of the Ḥābūr and the area around Qaṭṭunān, almost 100 km northwards, actually was. One important fact, although it remains an argument *a silentio*, is that very little of that part of the valley is known from the numerous letters written by the governors of Saggarātum, which given the size of the sample suggests that it was of little interest to their every day administration. Moreover, the few that is said always regards the transfer of people or goods from or to the upper Ḥābūr area, and the Lower Ḥābūr downstream from Qaṭṭunān is never mentioned by itself. On several occasions, the place of Bīt-Kapān is mentioned in such contexts, as the stage between Saggarātum and Qaṭṭunān⁶³. Of interest is the fact that this place appears sometimes under the control of the governor of Saggarātum Yaqqim-Addu⁶⁴ and sometimes under that of the governor of Qaṭṭunān Zakira-Ḥammū⁶⁵, two officials whose governorates were strictly contemporaneous⁶⁶. There remains the possibility that, at a given time, the control of the place changed from one district to the other, but it seems to me highly probable that the place was under a mixed authority, given its role between the two cities. Its location should be sought at mid-distance between the mouth of the Ḥābūr and Tall Fadgamī, but there exists neither a major tell nor a group of tells which could be identified with it. It looks like the place was an obligatory stage given the distance, but in no case a big city (which also explains why it is not mentioned more than a few times in the Mari letters). This is confirmed by a letter written by Yaqqim-Addu⁶⁷, where the governor indicates having sent patrols (*bazaḥātum*) to watch possibly troubled zones along the Ḥābūr, including the lower valley (*ḥamqum*), the terraces (*qerbātum*), the openings of the wādīs (*batarum*)⁶⁸ and Bīt-Kapān, thus equated with wild and natural places. This also explains the disdain in which the *šandabakkum* Yaśim-Sumū describes the place (*ašrānum*, “there, that place”) when donkeys are blocked at Bīt-Kapān due to the neglectfulness of the people of Qaṭṭunān⁶⁹.

All in all, the informations regarding the roughly 100 km long banks of the Lower Ḥābūr between its junction with the Euphrates up to Qaṭṭunān picture it as a place of little sedentary occupation (if ever), and it was more a zone devoted to pasture on the upper terraces: in the above-mentioned text, Yaśim-Sumū precisely describes it as a land of pasture (*ritum*)⁷⁰. On the valley-floor, the climacic gallery-forests were the predominant landscape, only sporadically affected by human activities⁷¹. The sedentary zone, restricted to the central, Euphratean, part of the kingdom under the direct control of Mari, Terqa and Saggarātum, must not have

62 Durand, forth., as well as Reculeau 2008:346. J.-M. Durand suggests a location on the right bank of the Ḥābūr, in which case Buseire could be a possible candidate (although no MBA ceramic was found on its surface, cf Geyer & Monchambert 2003:89), whereas I'd rather stick to a location on the left bank of the Ḥābūr, perhaps the MBA settlement of Safāt ez-Zerr 2 (Geyer & Monchambert 2003:81-82).

63 Durand 1998:467.

64 ARM XIV 44 (= LAPO 16 245) & 75 (= LAPO 17 570).

65 ARM II 82 (=ARM XXVII 75 = LAPO 16 269).

66 Lion 2001:199-200.

67 ARM XIV 75 (= LAPO 17 570)

68 See Durand 1998:191-192.

69 ARM XIII 37 (= LAPO 17 755)

70 See Durand 1998:467. This also explains the role of the Beduins in the administration of Qaṭṭunān, cf Durand 2004:149-153.

71 This was, actually, the case down to the middle-assyrian times, the deforestation of the valley floor occurring only during the early neo-assyrian era; cf Frey, Jagiella & Kürschner 1991.

extended much higher along the Ḫābūr than the zone where the two valleys join, which was also the zone put under cultivation by the Ḫābūr-canal, which derived its waters from the Ḫābūr but irrigated lands located in the Euphrates valley⁷².

2.2. A planned development of arable land around Qaṭṭunān

If the Mari texts contain no information regarding sedentary settlement and agriculture in the part of the valley between Qaṭṭunān and Saggarātum, such is not the case for the immediate vicinity of the northern city: undoubtedly, land around Qaṭṭunān was tilled for the culture of barley and sesame⁷³. Yet, it is also clear that this area was not as intensively cultivated as were the heartland districts of the kingdom, centered on the Euphrates: the clearest example can be found in the fact that the local palace⁷⁴ was always short of grain, up to the point that the governor once even had to ask the king to bring his own grain with him on his way to the city, since the local granaries were not sufficient to feed him and the court⁷⁵ – a very unusual request, since sustaining the king during his stay was one of the primary tasks required from a governor. In fact, it appears clearly that, when put in order, the letters from Qaṭṭunān dealing with agriculture document a specific episode, marked by an attempt, from the Mari administration, to develop institutional agriculture in the immediate vicinity of the city⁷⁶.

The most ancient quantified estimation of the Palace fields around Qaṭṭunān comes from a letter written at the very beginning of Zimrī-Līm's reign by his representative in the city, Akšak-māgir⁷⁷, where the sender explains that he has put under cultivation 100 acres of land, whereas the local palace was previously ruined⁷⁸:

“My Lord shall not count (me) among people of little value! There was nothing (here), and yet I managed to put 100 acres of land under cultivation! But I have to cope with a ruined palace...”

Little is known about the governance of Qaṭṭunān in the time of Yasmaḥ-Addu, and the few notations mostly deal with nomads⁷⁹. Yet, it seems doubtful that the palace fields there were totally abandoned at that time, and it is more probable that the ruins found by Akšak-māgir were the result of the military events that caused the end of the Kingdom of Upper Mesopotamia⁸⁰. It is in any case important to note that, in the first years of Zimrī-Līm, only 100 acres of palace land were available around Qaṭṭunān, since it can be connected to a group of texts showing its expansion over years – in spite of recurrent difficulties due to the insufficiency of

72 See Durand 1998:575-578.

73 See Birot 1993:9-13, as well as van Koppen 2001:496-501 for grain, and Reculeau 2009a:26-27 for sesame.

74 ARM XXVII 25 even shows that it was a simple administrative center, not even suitable to lodge the governor, who had to requisition a house in Qaṭṭunān in order to settle there.

75 FM II 50.

76 The following case study was first established for my Master thesis, in 2001, independantly from the partially similar analyses of F. van Koppen, published in *JESHO* 44 that same year (see van Koppen 2001:496-499). His study, nevertheless, focuses more on labour management than on planned development of arable land, and our respective understandings of the sequence of events differ sensibly.

77 Durand 1994:84-86 suggested that he was the governor of Qaṭṭunān at the beginning of the reign, but Lion 2001:171-173 sees him rather as an «intendant» (*abu bītim*).

78 FM II 50, 18-23: (18) *a-na la ta-ak-lu-ti*, (19) *be-lí la i-ša-ka-an*, (20) *i-na mi-im-ma la i-ba-aš-šu-ú*, (21) *1' me-at a-ša iš-tu ak-šu-da[m]*, (22) *'e¹-ri-iš ù é-kal^p-am sà-ap-ha-am* (23) *ú-[ka-aš]-ša-ar*.

79 See Durand forth.

80 Charpin & Ziegler 2003:175-176.

taskforce for agricultural work (and especially the harvest) and to attacks by locusts. Actually, it is even *because* of these difficulties that we know about this expansion, since they motivated the letters sent to the king by the administrators. The locusts invasions mentioned in the Mari letters have been studied in details⁸¹, C. Michel and B. Lion managing to establish their chronology for the reign of Zimrī-Līm⁸²:

- a first wave occurred before ZL 2 (= 1')
- two invasions followed one another in two years between ZL 3 (= 2') and ZL 6 (= 5')
- three consecutive invasions occurred in the Ida-maraṣ (Zalluḥān) between either ZL 8 (= 7') and ZL 10 (= 9') or ZL 9 (= 8') and ZL 11 (= 10').

The texts from Qaṭṭunān⁸³ allow us to refine this chronology, as well as to follow the development of Palace land in the area in the time of Zimrī-Līm. The key text is ARM XXVII 100, where Zimrī-Addu recalls the expansion of land under cultivation in the recent years, and the difficulties linked to the management of task-force for the harvest⁸⁴:

“Two years ago, the cultivated land of the Palace was 450 acres: (the soldiers from) Ilī-Maṭar’s section came. Of these 450 acres, the (personal of the) Palace and the commoners (*muškēnum*) had harvested 150 acres –including the carrying (of the grain) to the threshing-floor–, whereas Ilī-Maṭar had harvested 300 (acres) –including the carrying (of the grain) to the threshing-floor.

Last year, 600 acres were cultivated, and the reserve forces of the Mari, Terqa and Sagarātum districts came and harvested 400 (acres) –including the carrying (of the grain) to the threshing-floor–, whereas the personal of the Palace and the commoners harvested 200 acres –including the carrying (of the grain) to the threshing-floor.

This year, the cultivated land of the Palace amounts to 900 acres. Yet, after having established the accounts of the personal of the Palace and of the commoners, –and already they have harvested more than the normal rate!–, (only) 400 acres have been harvested –including the carrying (of the grain) to the threshing-floor. Apart from these 400 acres, not a single acre has been harvested, (and) 500 acres are abandoned, for there is no manpower left to me, although I have written to the governors and intendants!

81 See especially Heimpel 1996 and Lion & Michel 1997

82 Lion & Michel 1997:712-713.

83 The file consists of ARM XXVII 33-42 & 100, and of FM II 69 & 70. The texts ARM XXVII 26-31 are also linked to the same events, if focusing on the problem caused by the locusts and not on the expansion of arable land around Qaṭṭunān.

84 ARM XXVII 100, 5-35: (5) *ša-lu-úš-ša-ni* 4 me 50 gán a-ša *me-re-šu-um ša-é-kál-lim*, (6) *ku₅ AN-ma-tar il₅-li-kam-ma i-na ša-ba* 4 me 50 gán a-ša, (7) *ša-a-ti* 1 me 50 gán a-ša *é-kál-lum*, (8) *ù lú-meš mu-úš-ke-nu i-ši-id*, (9) *ù a-na ma-aš-ka-nim ú-še-li*, (10) *ù 3 me a-ša AN-ma-tar i-ši-id*, (11) *ù a-na ma-aš-ka-nim ú-še-l[i]*, (12) *ša-ad-da-ag-di-im* 6 me gán a-ša, (13) *in-né-ri-iš-ma ša-bu-um^{meš} egir* *ù [i]ú-didli*, (14) *ša ḥa-la-aš ma-ri^{ki} ter-qa^{ki} ù sag-ga-ra-t[i]m^{ki}*, (15) *il₅-li-ku-nim-ma* 4 me <gán> a-ša, (16) *i-ši-du* *ù a-na ma-aš-ka-nim ú-še-lu-ú*, (17) *ù 2 me gán a-ša lú-lú-meš é-kál-lim*, (18) *ù lú-meš mu-úš-ke-nu-um*, (19) *ʿi¹-ši-du* *ù a-na ma-aš-ka-nim*, (20) *ú-še-lu-ú ša-at-tam*, (21) 9 me gán a-ša *me-re-šu-um ša ʿé¹-[k]ál-lim*, (22) *ù ni-ik-ka-as-si lú-lú-meš é-kál-lim*, (23) *ù lú-meš mu-úš-ke-nim ú-up-pi-iš-ma*, (24) *[i]-nu-ma āš-gār da-an-na-am i-ši-du¹*, (25) [4] me gán a-ša *in-né-ši-id* *ù a-na ma-aš-ka-nim ú-š[e-]i*, (26) *ul-la-nu-um* 4 me gán a-ša 1 gán a-ša *wa-[a]t-rum*, (27) *ú-ul in-né-ši-id* 5 me gán a-ša *in-na-ad-[d]i*, (28) *ù ša-bu-um^{meš} i-na qa-ti-ia ú-ul i-b[a]-a[š-šu]-ʿú¹*, (29) *ʿi¹ a-na lú ša-pi-ti-im*, (30) *ù lú a-bu é-tim aš-pu-ṛa-am*, (31) *i-na-an-na be-lí a-na lú ša-pi-ti-im* *ù lú a-bu é-[im]*, (32) *dan-na-tim li-iš-ku-un-ma ša-ba-am^{meš}*, (33) *ša* 5 me gán a-ša *e-šé-di-im*, (34) *ù su-li-šu li-ṭ-ru-du-nim-ma*, (35) *a-ša šu-ú li-in-né-š[i]-d*.

Now, my Lord shall issue strict orders to the governors and intendants, so that they send me the taskforce required to harvest 500 acres and carry (the grain), and that this land will be harvested!”

These elements are partially echoed by another letter, this time from Zakira-Ḥammû⁸⁵:

“In the past, the cultivated land equated the work of 4 ploughteams of the Palace, and after that I wrote to my Lord, my Lord had sent me 300 men under the direction of Ilī-Maṭar, and together with the commoners they had harvested the land of the Palace. (...) And, last year, in the time of Zimrī-Addu, similarly my Lord had sent reserve soldiers, and they had harvested the land of the Palace.

Now, the work assigned to 6 ploughteams of the Palace –together with that of Asqudum– amounts to 1000 acres!”

Reading these two letters, one might have the impression that both of them date from the very same time, and that the two officials write separately to the king to request supplementary taskforce⁸⁶. Yet, the apparent similarities in the letters (due to the fact that they both recall the past⁸⁷ by mentioning two previous years), is misleading, since the terms employed show that these two past years are not similar in the two letters. In ARM XXVII 100, Zimrī-Addu clearly recalls the situation of the two previous years (“two years ago“, *šaluššani*, l. 5, and “last year“, *šaddadgdim*, l. 12), opposed to that of the actual year (“this year“, *šattam*, l. 20), whereas in ARM XXVII 37, Zakira-Ḥammû opposes the actual situation (“now“, *inanna*, l. 38) to what happened in a past which also relates to the previous year (“last year“, *šaddadgdim*, l. 36, also described as “in the time of Zimrī-Addu”), and to a more ancient situation which is not set precisely in time, the only indication being that it was «in the past» (*panānum*, l. 30). Actually, Zimrī-Addu’s “two years ago” equals Zakira-Ḥammû’s “in the past”, since they both refer to the year when Ilī-Maṭar came with his soldiers to help the people of Qatṭunān. If the vocabulary used by the two officials to describe this precise event differs, it’s because its position in time (compared to the date of enunciation) also differs: Zakira-Ḥammû’s “last year” actually was, as he precises, “in the time of Zimrī-Addu” – this points to it being the very year when ARM XXVII 100 was written. Hence, “in the past” in ARM XXVII 37 refers to the situation of three years ago, not to that of two years ago, which explains the change in vocabulary between the two letters when referring to that very same year. This also implies that the request for supplementary taskforce sent by Zimrī-Addu was accepted by the king, as is indicated by Zakira-Ḥammû, whereas there is a clear indication that Zakira-Ḥammû’s request the following year was rejected⁸⁸.

85 ARM XXVII 37, 30-33: (30) *ù pa-na-nu-um aš-gàr 4 giš-apin-ḥá é-kál-lim a-ša-ḥá e-ri-iš*, (31) *ù a-na be-li-ia aš-pu-ur-ma 3 me-tim ša-ba-am {AŠ}*, (32) *ni-šu AN-ma-tar be-lí iṭ-ru-dam-ma it-ti mu-úš-ke-nim*, (33) *a-ša é-kál-lim i-ši-du*. & l. 36-40: (36) *ù ša-da-ag-di-im i-nu-ma zi-im-ri-IM*, (37) *qa-tam-ma be-lí lú-diri-ga-meš iṭ-ru-dam-ma* (38) *a-ša é-kál-lim i-ši-du i-na-an-na aš-gàr 6 giš-apin-ḥá*, (39) *é-kál-lim qa-du-um ša àš-qú-di-im 1 li-im gán a-ša*, (40) *[b]i-ri-it giš-apin-ḥá i-ba-aš-ši*.

86 This is how the situation is understood in van Koppen 2001:496-499.

87 See for these questions Charpin 1998.

88 This can be inferred from ARM XXVII 38, where it is specified that the king refused to send harvesters to Zakira-Ḥammû.

The chronological frame of the situations described in the letters –and by extension, the expansion of arable land around Qaṭṭunān in the time of Zimrī-Lîm–, can thus be reconstructed as follows:

- Year 1: 450 acres of Palace land cultivated in Qaṭṭunān; Ilī-Maṭar and his soldiers come to help at the time of the harvest;
- Year 2: 600 acres of Palace land; the reserve forces of the central districts (Mari, Terqa and Saggārātum) come to help at the time of the harvest;
- Year 3: 900 acres of Palace land; Zimrī-Addu asks for help (ARM XXVII 100) and the king sends him once again reserve forces⁸⁹ to help at the time of the harvest;
- Year 4: 1000 acres of Palace land (including that of Asqūdum); Zakira-Ḫammû asks for help (ARM XXVII 37), but this demand is rejected by the king (ARM XXVII 38).

This sequence of events can even be refined and given an absolute datation through several elements. The first one is the indication that, in Year 4, the land of the Palace also contained that of Asqūdum, which implies that he was already dead, an event which occurred at the latest at the very beginning of year ZL 9 (=8'), since his house is inventoried at the month iv of that year⁹⁰, the palatial goods granted to him during his life being reintegrated to the Palace as early as the first month of that year⁹¹. The harvest of our Year 4 can thus be equated to that of ZL 9 (= 8'), and the agricultural Year 4 covers the period between the autumn of civil year ZL 8 (= 7') and the spring of civil year ZL 9 (= 8'). This is confirmed by FM II 70, a letter of Sammêtar mentioning the mobilisation of Ilī-Maṭar's soldiers: since Sammêtar dies at the end of ZL 6 (= 5')⁹², our Year 1 can only be the agricultural season covering the last months of ZL 5 (= 4') and the first ones of ZL 6 (= 5').

Since Ilī-Maṭar is also mentioned in ARM XXVII 34, which indicates that he came to help in the time of a locust invasion, we now can refine the chronological sequence of invasions established by C. Michel and B. Lion, by precisating that the two consecutive years of invasions between ZL 3 (= 2') and ZL 6 (= 5') were actually ZL 5 (= 4') and ZL 6 (= 5'). The whole sequence of events can be reconstructed as follows:

- ZL 4 (= 3')-ZL 5 (= 4'): no indication regarding the amount of cultivated land; locust invasion;
- ZL 5 (= 4')- ZL 6 (= 5'): 450 acres of Palace land cultivated; Ilī-Maṭar and his soldiers come to help at the time of the harvest; locust invasion; (Redaction of FM II 69 & 70, ARM XXVII 26-31 & 33-35);
- ZL 6 (= 5')- ZL 7 (= 6'): 600 acres of Palace land cultivated; the reserve forces from the central districts come to help at the time of the harvest;
- ZL 7 (= 6')- ZL 8 (= 7'): 900 acres of Palace land; Zimrī-Addu asks for help (ARM XXVII 100), the king sends reserve forces;

89 The two texts mention different form of troops, the ^{lu}egir and the ^{lu}didli on the one hand, and the ^{lu}diri-ga on the other hand. Their precise role remains debated, but they were all part of the army, serving in reserve forces alongside the regular army (*pilrum*); cf Charpin 2004:281.

90 M. 11506, quoted in Durand 1988:77.

91 van Koppen 2002:330-331.

92 He is last mentioned in ARM IX 102, dated from the 1[x]/xii/ZL6 (=5'); see the details in van Koppen 2002:296-298.

- ZL 8 (= 7')- ZL 9 (= 8'): 1000 acres of Palace land (including that of Asqūdam); Zakira-Ḥammû asks for help (ARM XXVII 37), but this demand is rejected by the king; (Redaction of ARM XXVII 36-39, and probably also 40-42); according to ARM XXVII 38, a locust invasion also took place in this year: it is then to be linked with the invasions in *Ida-maraṣ* reported for that year by B. Lion and C. Michel.

If we recall that, at the very beginning of Zimrī-Līm's reign, the Palace land under cultivation in Qaṭṭunān was of 100 acres, it appears that it was multiplied by ten in less than a decade. This can be understood in several ways: F. van Koppen has suggested that this land was the land of the commoners who had fled because of the locust invasions⁹³. Without denying the phenomenon of flight due to economic distress⁹⁴, this seems highly improbable in the present case, since the greatest phase of expansion actually occurred between ZL 6 (= 5') and ZL 8 (= 7'), when no invasion of locusts is recorded. Such an appropriation by the Palace of land owned by the commoners would also be, on a juridical point of view, highly problematic, and contradicts all that we know regarding the status of land in the amorrite time⁹⁵. Moreover, ARM XXVII 100 shows that, already in ZL 6 (= 5'), in a time when Palace land in Qaṭṭunān only amounted to 450 acres, the amount of sedentary taskforce available locally for the harvest (comprising of palatial dependants and requisitioned commoners⁹⁶) was very low, and could only cope with 150 acres of land –the soldiers of Ilī-Maṭar having to deal with a share twice as big. The phenomenon was amplified in the following years, with the expansion of arable land of the Palace, and the mobilization of soldiers was the rule until the final refusal of ZL 9 (= 8'). This can only be explained by the low density of sedentary population in and around Qaṭṭunān, which prevented the normal system of requisition of taskforce to be operative in this area. We do not know how many soldiers were sent to Qaṭṭunān, and even if we did, it would be hazardous to try to establish the local population by comparing its work to that of the mobilized soldiers: no doubt were the latter requested to work full-time, when the commoners only had to harvest a given part of Palace land, their «share» (*iškarum*), which was not to exceed a certain amount, otherwise the weight would have been seen as too high and unfair –needless to say, the harvest was ripe exactly at the same time on Palace fields and on theirs, and they needed time to take care of their own crops. It is nevertheless important to note that, as is stressed by the administrator himself in ARM XXVII 100, the commoners of Qaṭṭunān were already assigned a bigger duty than the normal one. A letter from the following year, ZL 9 (=8') shows that this situation perdured at the next harvest, and we hear about the commoners bitterly complaining about it; if the complaint does not exaggerate the numbers for the sake of argumentation, we can infer that the normal rate (which was applied in the central districts, along the banks of the Euphrates) was of 1 acre of Palace land to be harvested pro commoner, whereas in Qaṭṭunān it was no less than doubled⁹⁷.

93 van Koppen 2001:499.

94 Several texts of Qaṭṭunān actually mention such cases, like ARM XXVII 26, 27 & 29; see also Reculeau 2005.

95 See Reculeau 2008:339-343 and Charpin 2008:68-72 & 78-79.

96 On the mechanisms of requisition for high-demanding agricultural works, see Reculeau 2008:351 and 2009b:75-79.

97 ARM XXVII 37, 41-43: (41) *ù lú mu-úš-ke-nu-um ša ha-al-ši-im ki-a-am iq-bé-e-[em]*, (42) *[u]m-ma-a-mi šum-ma lú ah-hu-ni ša na-ri-im 1 gán a-[šà-àm]*, (43) *i-ši-du ni-nu 2 gán a-šà-àm i ni-ši-id*.

«The commoners of the district have said me: “Whereas our brothers of the River (= the Euphrates) have to harvest 1 acre each, we should harvest 2 acres each?!”»

This is echoed by the indication, in ARM XXVII 100, that in Year 3 (ZL 8 [= 7']) the share of the commoners was 200 acres of Palace land, whereas it amounts to 400 acres in Year 4 (ZL 9 [= 8']); this does in no way imply that the population summoned for the harvest was doubled, but that a double share was requested from a globally stagnating population. The insufficient local taskforce appeared a very complicated matter to Zakira-Ḥammû, since the royal refusal to send him additional manpower forced him to issue very strict orders on the local commoners, more than what was deemed tolerable, as we can infer from ARM XXVII 37.

This long reconstruction allows a better understanding of the nature of settlement around Qaṭṭunān at the beginning of Zimrī-Līm's rule: the Palace planned there, over a decade, an expansion of arable land, undoubtedly in order to secure its grain supply, which was always a problematic issue⁹⁸. An apparent reason for the choice of Qaṭṭunān was that land was available in quantity in the vicinity, when the heart of the Kingdom (or at least the good land in it) was already allotted⁹⁹. The counterpart of this available land was that the local sedentary population was so limited, that it could not fulfill its duties on palatial land at the time of the harvest, hence requiring the mobilization of soldiers from the central districts. As is generally the case in ancient Mesopotamia, the availability of land was not the problem, that of taskforce was¹⁰⁰. In the case of Qaṭṭunān, the phenomenon reached its extremis, due to the mostly nomadic nature of the population and the quasi-absence of a developed sedentary occupation outside the administrative center of Qaṭṭunān itself. This is, naturally, echoed in the means available to put that area under cultivation – not only taskforce for the harvest, as we have seen, but also in the nature of irrigation systems around Qaṭṭunān.

2.3. A small-scale irrigation agriculture

The Bronze and Iron Age irrigation systems of the Ḥābūr have been the object of several studies, using different methods, and which yielded completely antagonistic results. The main debate focuses on the date and extension of the canal remains still to be detected in the landscape, and known locally as the “Nahr Dawrīn”¹⁰¹. The archaeologists in charge of the Mari excavations, on the one hand, have proposed a reconstruction, based on “logical arguments”, according to which the Nahr Dawrīn – or, to be precise, its lower part, mostly located in the Euphrates valley – was a regional canal, used for both navigation and irrigation, which derived its water from the Ḥābūr, but was used to double the Euphrates on its left

98 In spite of a common opinion, the kingdom of Mari was more or less self-sufficient in grain, and the local production provided the necessary food supply to the population. Trade of grain is only attested in very dramatic cases, and especially at the time of the „civil war“ between the king of Mari and his Bensim'alite tribe on the one hand, and the Benjaminite tribes on the other hand, which prevented the fulfillment of most of the agrar tasks for a year (see, for these matters, Marti 2008:28-288, with references to the previous literature). Yet, this self-sufficiency was fragile, and constantly threatened by human (war) or natural (flood, locusts) risks, and it is no wonder that the King of Mari tried to develop his grain supply, especially in a time when locust invasions were recurrent.

99 For the spatial organization of the kingdom of Mari, see Reculeau 2008:344-347.

100 van Driel 1998; van Koppen 2001.

101 Several descriptions of the canal are available in the literature, the most ancient ones being reported by western travelers of the 19th and early 20th centuries, conveniently presented in Geyer & Monchambert 2003:211. Within scholarly literature, see Kühne 1990, Ergenzinger & Kühne 1991, Berthier 2001:32-69 and Geyer & Monchambert 2003:199-217.

bank, the water inlet being supposedly located near to Seġer, some 18 km upstream from the mouth of the Ḫābūr¹⁰². Yet, these reconstruction can hardly be accepted, for three reasons: first of all, the absence of a Bronze Age settlement pattern along the banks of the canal, when Neo-Assyrian¹⁰³ and (for the lower, “euphratean” part of it) Islamic¹⁰⁴ sites are numerous, strongly suggests a later phase of use for the Nahr Dawrīn, established in this part of the valley during the Neo-Assyrian era and later reused in the time of Islamic occupation. This is confirmed by textual evidence from the Mari archives, which do mention the existence of an irrigation system connected to the Ḫābūr on the left bank of the Euphrates, but which was by no mean a navigation canal, and whose size and characteristics must have been far less ambitious than those of the later Nahr Dawrīn, whose remains are the only ones still to be seen in the landscape¹⁰⁵. A last argument against this hypothesis is that the Nahr Dawrīn, as it can be observed in the very lower part of the Ḫābūr and along the Euphrates, is morphologically connected to a regional canal system which derived its water from the Ġāġġāġ, and whose first stage can be dated to the Medio-Assyrian time, when it ran down to the area of Dūr-Katlimmu, its prolongation (with the aforementioned canal) being first realized during the Neo-Assyrian period¹⁰⁶.

It thus appears that the archaeological remains along the Lower Ḫābūr are irrelevant for the study of the pre-assyrian period, for which we must rely solely on textual evidence. For the time of the Mari archives, texts clearly indicate the existence of two different irrigation systems along the Ḫābūr: the so-called Ḫābūr-canal, which derived its water from the river but was essentially a euphratean reality (and will therefore not be studied here)¹⁰⁷, and the irrigation structures of the Qaṭṭunān region, which will now be discussed¹⁰⁸.

The first point which shall be stressed is that none of the mentions of a canal which can be linked to the area around Qaṭṭunān is ever described as a *rākibum*, the term used to describe a regional earthwork carrying water from a natural stream to its terraces¹⁰⁹ by gravitation¹¹⁰. The only canal known by its name is the “*Šadītum*-canal” (*id.da šadītum*), which has to be

102 Margueron 2004:72-75; Geyer & Monchambert 2003:199-217. According to these authors, the three canal systems on the left and right banks of the Euphrates were planned and realized at the foundation of the city, in the Early Bronze Age; see Margueron 2004:68-82.

103 Kühne 1990; Ergenzinger & Kühne 1991.

104 Berthier 2001.

105 Durand 1998:573-578.

106 Ergenzinger & Kühne 1991.

107 This canal is *never* mentioned in the texts from Qaṭṭunān, and all its textual occurrences appear in the texts from the central districts of the kingdom, especially those of the governors of Saggarātum who were responsible for its maintenance. For this infrastructure and the other canals of the Euphrates core of the Mari kingdom, see Durand 1998:573-653.

108 See Birot 1993:10.

109 In the Middle Euphrates region and along the Lower Ḫābūr, terraces susceptible to be used for agriculture are located *above* the river level, contrary to what is the case in the alluvium of Central and Southern Mesopotamia. This implies that water has to be fetched quite far away from the fields and carried in canals first incised in the terraces until, following the lengthways slope, it reaches the ground level of the terrace, on which it from then on continues to run (or just slightly under it, if systems are used to elevate the water levels locally when irrigation is required, as was the case in the time of the Mari archives; see Reculeau 2008:338-339). For a more detailed study of gravitational irrigation techniques, applied to the archeologically attested canal remains of the Euphrates’ valley, see Geyer & Monchambert 2003.

110 The term has been understood in several contradictory manners, but its identification with the highest level of gravitation canals is now secured. See Durand 1990:126-127 and 1998:580-581.

understood as the name of the canal which derived its water from a local wādī, itself known as *Šadītum*¹¹¹, presumably the Wādī Hamḍa¹¹², if Qaṭṭunān is to be located at the Tall Fadḡamī. The canal is expressly mentioned in two letters written by Zakira-Ḥammū, where it is filled with water in order to try to prevent the progression of locusts – in vain¹¹³. These two occurrences do not allow a concrete reconstruction of its technical specifications, the only known detail being that it consisted of at least two tiers of canals, since its *atappātum* (“secondary branches”)¹¹⁴ are mentioned in ARM XXVII 28. In several letters from Qaṭṭunān, a canal is mentioned without any specific name being given to it, this structure being simply designated as “the canal” (*id.da/nārum*). The activities connected to it are the usual ones mentioned in the letters of governors in charge of irrigation devices, especially the cleaning out of the canal-bed (*ḥalāṣum*) and the removing of silt and vegetal obstructions (*kiṣrum*)¹¹⁵; in the same canal is also planned the installation of a “nose” (*appum*)¹¹⁶, a permanent device made of stones, woods and silt which could be closed or opened depending on whether one wanted to raise the water level locally or to let it flow downstreams¹¹⁷. Both activities (and the fact that they were reported to the king) shall imply that “the Canal” in Qaṭṭunān was a reality of some size, but no further precision can be given. The fact that this device could be mentioned without any specific name to the king of Mari, and yet allow him to understand which canal was meant, should imply that there was no possibility of confusion, hence that there was only one canal of some size around Qaṭṭunān¹¹⁸ – in which case, “the Canal” and the *Šadītum*-canal were probably one and the same reality.

Neither its dimensions nor its length can be estimated in details, but if I am right in seeing it as deriving its waters from the Wādī Hamḍa, it has to be seen as a local reality, without any common measure with the following regional system of the Middle-Assyrian era and afterwards, and it was certainly limited to the immediate surroundings of Qaṭṭunān, where it nevertheless had a crucial role to play in the planned development of palatial agriculture mentioned above. An indication reinforcing this analysis can be found in the text where a “nose” has to be installed in this canal, since it also mentions, independantly from the question of this canal and the works to be performed on it, that the distribution of irrigation waters

111 The term can occur either as a common name or, in the region of Qaṭṭunān, as a proper name. It is derived from the word *šadūm*, “mountain, steppe plateau”, and is used to describe steep wādīs descending from higher points in the landscape, like the Wādī es-Souab in the Mari alveole. The complete feature of these landscape features have been studied in my PhD., which shall be published soon. For the generic meaning of *šadītum*, see Durand 1998:598.

112 This huge intermittent stream has its outlet around the Tall Abu Hamḍa, some 3 km from T. Fadḡamī, and its drainage basin covers the piedmont of the Ġabal Singār, thus ensuring it a consequent water supply.

113 ARM XXVII 28 & 29. On this technique, see Lion & Michel 1997:713-714.

114 The *atappum* (pl. *atappātum*) is the name given to canals bringing directly water to the fields, and is thus the most common element of a canal system, whatever its size and complexity. Its place within the hierarchy of channels is thus always at the lowest level, but its rank depends on the number of branches and sub-branches which separate it from the main canal (the one connected to the water source). In the present case, at least two levels are attested, the *Šadītum*-canal itself and its *atappātum*; whether they were in direct connexion one to the other, or whether they were separated by one or several sub-branches, remains unknown.

115 ARM XXVII 25, 39, 40 (Zakira-Ḥammū), 103 & 104 (Zimrī-Addu). For the technical terms, see Durand 1998:587-588.

116 A.338, unpubl.

117 The complete analysis of these devices is also part of my still unpublished PhD. For now, see Durand 1990:132-137 and Reculeau 2008:338-339.

118 Such is, on the contrary, never the case with the three great canals of the Euphrates, because of possible confusion.

for the Palace land has begun at Terḥān (hence, at the northernmost location of the district), and this even before the installation of the nose has begun on the canal of Qaṭṭunān: such a picture suggests that Terḥān and Qaṭṭunān derived their irrigation waters from local systems independent one from the other.

The situation of the Lower Ḥābūr in the time of the Mari archives appears thus as a contrasted one: the lower part, between Qaṭṭunān and the junction with the Euphrates, was mostly unsettled and left to wilderness and nomads. The area around Qaṭṭunān, on the other hand, was the subject of a planned development issued by the king's of Mari – but this development itself was the consequence of the low density of sedentary settlement and land-use in the area, which caused numerous problems to the local authorities at the time of the harvest. This development was at least partly dependant from a local irrigation system of rather small size. These features were inherited by the followers of the Mari kings, who continued this development politics – paving the way for the later regional achievements of the Assyrians.

3. The Lower Ḥābūr in the time of the “Ḥana” Kings (18th-14th century BCE)

After the fall of Mari (1761) and its subsequent destruction (1759) by the armies of Ḥammurabi of Babylon, the former kingdom of Mari lost most of its political importance, and a new kingship was installed, whose kings cover the end of the Middle and the Late Bronze Age in the area¹¹⁹. Politically speaking, these so-called “Ḥana” Kings were alternately independent or vassals of foreign powers¹²⁰, and the territory under their control probably changed throughout the centuries: as far as we can see, it is fairly certain that all the ancient zone of influence of Mari in the Ḡazīra was lost¹²¹, but the Lower Ḥābūr apparently remained under their control most of the time, and there are strong elements to posit that it even was a privileged axis of development in the following centuries: in order to understand it, we shall first try to study the becoming of the structures known in the Mari texts, before analyzing the new patterns of development introduced under these kings.

3.1. Is the Ḥābūr-canal of the Mari period mentioned in the “Ḥana”-texts?

Following the reconstruction of the canal systems proposed for the Early and Middle Bronze Age by J.-Cl. Margueron, B. Geyer and J.-Y. Monchambert, O. Rouault¹²² has suggested that the textual evidence from Terqa allowed to see the further use of the Ḥābūr-canal known from the Mari texts (once again identified with the Euphratean part of the Nahr Dawrīn), and which could be tracked down to the last phases of this documentation, under the rule of the

119 This dynasty are known essentially by texts from Terqa, hence supposed to have been their capital, but Mari might have maintained its political importance, at least for some time; see Charpin 2004:356-360.

120 These are the kingdom of Babylon in the 17th century BCE, that of Mitanni in the 16th-15th century, and even the Middle-Assyrian empire around the time of Tukulti-Ninurta I. Cf Charpin 2002:64-79 and 2004:356-360, completing Podany 2002:1-14 and Rouault 1998:193.

121 See Charpin 2004:348-354.

122 Rouault 1998:192-193.

local king ‘Ammu-rapi’ (15th century)¹²³ and that of Tukultī-Ninurta I of Assyria (13th century BCE)¹²⁴. According to Rouault, the *Ḫābūr-ibāl-bugaš*-canal that ‘Ammu-rapi’ indicates having (re)dug in one of his yearnames¹²⁵ even refers to that very same device, being thus a reality of the Euphrates and not one of the Lower *Ḫābūr* as is commonly thought¹²⁶. As will be seen thereafter¹²⁷, this hypothesis cannot be accepted. Several other occurrences suggested by Rouault to be linked to the ancient *Ḫābūr*-canal of Mari must nevertheless be examined thoroughly, especially since they are linked to the question of the permanence (or not) of the toponym *Qaṭṭunān* in the “Ḫana” period – a question crucial to its transmission down to the Assyrian times.

There are clear indications that the left bank of the Euphrates was still cultivated in the post-Mari old-Babylonian times, via a canal which, although never being given this name, can be seen as the follower of the previous *Ḫābūr*-canal¹²⁸. Yet, like its predecessor, it remains mostly a Euphratean reality of little interest for the present study. More important is the question whether the “great *Ḫābūr*” (id *Ḫubur* [gal]) mentioned in several LBA texts from Terqa can be considered to be the *Ḫābūr*-canal of the Mari archives, as suggested by Rouault, thus implying the transmission of the canal’s name over at least four centuries¹²⁹. One text, dated from ‘Ammu-rapi’, can only be mentioned here provisionally, since it is still unpublished: it mentions a field bordered by the *Ḫābūr*¹³⁰ in a list where are also mentioned a field located “within the territory of the new city of Terqa”¹³¹ and another “on the territory of the city of Ḫanna”¹³², a place located close to Zurubbān, on the left bank of the Euphrates opposite Terqa. Both these locations are clearly Euphratean, and if the *Ḫābūr* mentioned here actually belongs to the same geographical environment, then we should posit that, in the 15th century BCE, the canal known from the Mari archives not only did survive as an irrigation device, but its name also remained unchanged throughout the centuries, although it is never mentioned as such in the documents of the early “Ḫana” period. Yet, and as long as the text remains unpublished, it is hard to tell whether the order in which the fields are listed is of any geographical signification, which is far from granted¹³³.

123 LH 15 & 16. The texts of Terqa found outside of the official excavations are referred to according to their edition in Podany 2002, where all previous literature can be found.

The dating of ‘Ammu-rapi’ has been discussed: A. Podany (2002:65-67 & 72-73) distinguishes two homonyms, one of the «Middle Ḫana» period (15th century), and the second one of the last phase of the documentation (14th century). It seems nevertheless preferable to unit the two in one, who ruled in the 15th century BCE; see Charpin 2002a:78-79.

124 LH 17.

125 LH 13.

126 Rouault 1998:192. For the «traditional» point of view, see *inter alii* Unger 1938, Röllig 1978:420-421 and Ergenzinger & Kühne 1990:184.

127 See here, under 3.2.

128 TFR 1 1, 3 & 4; cf Rouault 1984:6-27.

129 The last text suggested to refer to this device is LH 17, from the time of Tukultī-Ninurta I. (Rouault 1998:192). This is partly contradictory with the hypothesis that the *Ḫābūr-ibāl-bugaš* canal would be the same device, unless one shall consider the “*Ḫābūr*” name as a short form of the longer one, which is definitely ruled out for the Mari time, and would imply that the apparent continuity in denomination was actually only superficial.

130 TQ12 1, 28, quoted in ROUAULT 1998:192, fn. (13).

131 TQ12 1, 33: 5 sar *i-na* uru gibil^{ki} ša uru *ter-qa*^{ki} (Rouault 1992:248, n.2); see Charpin 2002a:75, n. 100.

132 TQ12 1, 69: 10 gán a-ša a-gār uru *an-na*^{ki}; for this city, see Charpin 2002a:76, n. 105.

133 For these questions, see Reculeau, forth. (b), sub. 2.2.2., as well as E. Cancik-Kirschbaum’s contribution at that same volume.

As far as the other mentions of the Ḫābūr, and more especially of the “great Ḫābūr” (íd *Ḫubur gal*) in the “Ḫana” texts are concerned, I disagree with Rouault’s suggestion that they might refer to the canal, and clearly advocate that the river is indicated here, as is usually understood. The first example regards a garden bordering, on its lower small side, the “great Ḫābūr”¹³⁴, and the second a field bordering on its upper small side “the great Ḫābūr”¹³⁵ and on its lower small side “the Ḫābūr”, followed by the enclitic *-ma*¹³⁶. This later text is understood by Rouault as showing an opposition between the canal (the “great Ḫābūr”) and the river (“the Ḫābūr proper”)¹³⁷. This is difficult to accept, first because it would be very strange that a canal named after the river should be described as “greater” as the river itself. Moreover, the geographical location of the field in LH 17, with its two opposite sides bordering the “Ḫābūr gal” and the “Ḫābūr-ma” does not fit the understanding of the first one being a major canal: such an irrigation device needed, in order to be efficient, to run parallel to the river, but on the first level of terraces, so that the land comprised between it and the valley floor could be inundated by gravitation. If the “great Ḫābūr” was a canal susceptible to border a field which was also adjacent to the river, then it can only be understood as running on the valley floor itself, at the same level than the river – which would make it totally useless. It seems to me preferable to understand here the use of the enclitic *-ma*, just as in all the documents of the same type found on the Middle Euphrates for that period, as the emphatic used to describe a geographical reality when it borders more than one of the sides of the plot¹³⁸: this is, indeed, an indication that the two realities are one and the same, the “great” being not repeated in the second case (“the great Ḫābūr” / “the Ḫābūr again”), and we must picture the field as being located on the valley floor, inside a meander of the river. The mention of a “great Ḫābūr” – which implies that there was, somewhere, a “small Ḫābūr”, though it never occurs in the texts as such – can then only be understood as implying, in this part of the valley, the existence of at least two branches of the river running side by side¹³⁹.

This identification with the Ḫābūr, and not with the canal of the same name known from the Mari archives, also fits the mention of the city of Qaṭṭunā, on which territory the orchard is located in LH 15, better¹⁴⁰: there is thus no reason to doubt that this Qaṭṭunā is the same city than the one known as Qaṭṭunān in the Mari archives, and as Qaṭnu/Qaṭni in the later Neo-Assyrian texts. This implies that part of the valley floor, which could be

134 LH 15,5: sag-ki ki-ta id *ḫu-bur gal*.

135 LH 17,7: ús ki-ta id *ḫu-bur gal*.

136 LH 17,8: sag an-ta id *ḫu-bur-ma*.

137 Rouault 1998:192.

138 This use is frequent and constant in the texts from Emār, such as for example *TSABR* 11, 1-7: a-šà *ma-la ma-šú-ú i-na e-be-er-ta i-na k[ā-b]i nu-za*, (2) 2 gán gíd-da-šú, (3) 1 gán *ru-up-šú*, (4) ús-sa-rá an-ta uru^{ki}, (5) ús-sa-rá ki-ta uru^{ki}-m[a], (6) sag-ki-1-kám-ma uru^{ki}, (7) sag-ki-2-kám-ma uru^{ki}-ma (“A field, as much as there is, in the irrigation district of Nuza. 2 acres long, 1 acre broad. Its upper great side: a city-field; its lower great side: a city-field again; its first small side: a city-field; its second small size: a city-field again”). This use of the enclitic *-ma* is not restricted to field descriptions, and can also be found in witness lists, as for example in *Emar* VI/3 142, 20-23: igi *el-li dumu pí-l-su-^dda-gan*, igi *ia-šl-^dda-gan* šeš-šú, igi *zu-zu* šeš-šú, (23) igi *ḫi-mi-ia* šeš-šú-ma. (“In front of Elli, son of Pilsu-Dagan; in front of Yaši-Dagan his brother; in front of Zuzu, his brother; in front of Ḫimija, his brother again”).

139 Note that the use of “the great stream”, íd(-da) gal, is also known from the Mari texts to describe the Euphrates, but never for a canal. See Durand 1998:595 and Reculeau 2002:520-521.

140 LH 15,1: igi-4-gál-la kiri₆ a-gàr uru *qa-ṭú-na*.

inundated by the flood of the river, was put into cultivation, presumably profiting of the humidity of the soil in this area, or taking water through the aid of small irrigation devices. This phenomenon, which is also known for the Mari area in a time where regional irrigation canals were also in use for the cultivation of the higher part of the low terraces¹⁴¹, does not imply the absence of larger scale irrigation devices in the vicinity, and there are good indications that the Lower Ḫābūr became, under the Kings of “Ḫana”, an axis of privileged development.

3.2. A shift in development of the Lower Ḫābūr: the *Ḫābūr-ibâl-bugaš*-canal

The main event in the development of the Lower Ḫābūr in the time of the “Ḫana” kings is known only by a year-name of the king ‘Ammu-rapi’, which commemorates “the year when the king ‘Ammu-rapi’ opened the *Ḫābūr-ibâl-bugaš*-canal, from Dūr-Išar-Lîm down to Dūr-Iggid-Lîm”¹⁴². The three kings here mentioned (the one who commemorates and the two ones who gave their names to the fortresses) belong to the “Middle Ḫana Period”, be it the 16th century (Išar-Lîm and Iggid-Lîm) or the end of the 15th century (‘Ammu-rapi’)¹⁴³, perhaps in a time of weaker Mitannian overlordship¹⁴⁴. The geographical situation of the canal is not completely clear, but it is doubtless that it was a reality of the Lower Ḫābūr: there is no reason not to follow W. Röllig when he posits, after E. Unger, that Dūr-Iggid-Lîm is to be sought on the Tall Šēḫ Ḫamad, whose Assyrian name Dūr-Katlimmu can be seen as a deformation of the former name¹⁴⁵ (perhaps voluntarily so as not to celebrate a previous ruler outside of the Assyrian control). The location of Dūr-Išar-Lîm – and hence the size of the canal – on the other hand remains unknown: H. Kühne and P. Ergenzinger have proposed that it should be sought some dizains of kilometres from Tall Šēḫ Ḫamad, either southwards (Tall Namliya) or northwards (Tall Ašamšāni/Tall Fadgamī)¹⁴⁶. The Akkadian formulation does not allow Dūr-Išar-Lîm to be located downstream from Dūr-Iggid-Lîm, excluding the possibility of Tall Namliya. Tall Ašamšāni, located on the right bank of the Ḫābūr, isn’t a good candidate either, and there are good chances that Tall Fadgamī was Qaṭṭunān. One could, naturally, envision that the city was renamed from Qaṭṭunān to Dūr-Iggid-Lîm during the “Ḫana” period, and afterwards returned to its ancient name¹⁴⁷, but the above-mentioned presence of Qaṭṭunā in LH 15, also dated from ‘Ammu-rapi’, does not support this hypothesis. The fact that the city was named in Dūr- might imply that it was a border town, located at the northern limit of the kingdom of Ḫana on the Ḫābūr – but since this limit remains unknown, this is of little help to determine the precise location of the canal’s head, and hence its dimensions.

141 Reculeau 2008:337-339 for the Euphrates, and here above, under 1.2. for the Ḫābūr.

142 LH 13, 30-34: mu *ḫa-am-mu-ra-pi-iḫ* lugal, id *ḫa-bur-i-ba-al-bu-ga-áš, iš-tu* uru bād-i-šar-li-im^{ki}, a+na uru bād-i-gi-id-li-im^{ki}, ip-tu-ú.

143 Charpin 2002a:76-79.

144 Podany 2002:60-69 & Charpin 2002a:78-79.

145 Unger 1938; Röllig 1978:421.

146 Ergenzinger & Kühne 1991:184.

147 Such was, for instance, the situation of Seḫnā/Šubat-Enlil in the time of Samsī-Addu (18th century BCE); Cf Charpin 1987.

One point shall be stressed, regarding the name of the canal. The fact that ‘Ammu-rapi’ indicates having «opened» the canal does not necessarily imply that he dug it from nothing, since it was common practice to celebrate as a new creation what was more often than not simply the reshaping of ancient devices¹⁴⁸. The presence of a Kassite element in it, on the other hand, is rather peculiar in this region, and shall not be underestimated. K. Balkan¹⁴⁹ suggested that the term *bugaš* shall not be understood as a theonym, as it is often the case¹⁵⁰, but as a common name designing the bull and, by extension, the king, with the *bu-ka-šum* form of AbB VI 24 being an Akkadized form of it: the name of the canal would thus be, according to Balkan’s interpretation, “the-king-rules-over-the-Ḫābūr”¹⁵¹. A. Goetze proposed another understanding, according to which no canal is here intended, *ibal* being seen as the st. constr. of a semitic term (otherwise unattested in Akkadian) and denoting deficiency, the king being understood here as having “opened” the river which was deficient (in water)¹⁵². This analysis can hardly be followed, not only because of its philological difficulties, but also because such namings of canals are known by dozens¹⁵³ and because, as far as I know, the verb *petûm* (“to open”) is only used with canals, never with natural watercourses: I hence maintain Balkan’s understanding of the canal’s name.

The use of a Kassite term in the canal’s name does not suggest an initial digging of the *Ḫābūr-ibāl-bugaš* in the period of the Mitanni dominion or shortly after it, when no direct Kassite influence can be seen in the region¹⁵⁴. More pertinent would be the 17th century BCE, in the time of Kaštiliaš, a contemporary of Abī-ešuh of Babylon (1711-1684) whose name, especially at that period, clearly indicates a Kassite origin¹⁵⁵. This hypothesis is confirmed by an unpublished text from Terqa which bears a year-name of Kaštiliaš celebrating the diverting (*nukkurum*) of the Ḫābūr by the king¹⁵⁶. If we are here dealing with one and the same canal, then we should envision that, less than one century after the fall of Mari, an irrigation device of some importance was dug along the Lower Ḫābūr, which contrary to its ancient predecessor around Qaṭṭunān did not derive its water from a local wādī, but from the river. Its technical aspects and size cannot be evaluated in the present state of research, apart from its ending around Tall Šēḫ Ḥamad / Dūr-Iggid-Lîm, as is indicated by the above-mentioned year-name

148 Cf Charpin 2002b:547.

149 Balkan 1954:102-104.

150 See , for instance, the classic Clay 1912.

151 This is also how the name is presented in Groneberg 1980:284.

152 Goetze 1957:64-67 and n. 122.

153 See the examples in Charpin 2002b:550-551.

154 One counter-argument could be found in the duck-weight republished as LH 16, which is dedicated by ‘Ammu-rapi’ to the god ‘du-za-BI, understood by Thureau-Dangin & Dhorme 1924:276 as an otherwise unknown kassite deity, to be read Duzagaš. If ‘Ammu-rapi’ himself had connections to the Kassites, then the name of the canal could indeed have been given in his time, but the evidence is dubious.

155 See Charpin 2002a:71-72 and 2004:372-373 for the role of the Kassites on the Middle Euphrates after the time of Ḫammu-rabi of Babylon.

156 TQ6 11, mentioned in Rouault 1998:192, n. 12, and Rouault 2004:53, without the akkadian text. One might suggest that this earthwork is related to the middle-assyrian *na-QU-ru* canal mentioned in a letter from Dūr-Katlimmu (BATSH 4 8,33’; cf. Cancik-Kirschbaum 1996:136), positing an etymological link between the verb used by Kaštiliaš (*nukkuru*, “to displace”; cf. CAD N/1:166-169, s. v. **nakāru**) and the latter term, but this seems difficult to admit, since the mA form clearly uses the sign QU/KUM, which is never used at that time to note the syllable [ku]; cf. Bagg 2000:90 n. 280 – which leaves the mA term and the few parallels rather obscure (cf. CAD N/1:198b, s. v. **nakkuru**).

of ‘Ammu-rapi’. All in all, it should be noted that the reconstruction proposed here fits well with the settlement pattern established by the TAVO prospection along the Lower Ḥābūr, as it is now understood¹⁵⁷. Unfortunately, the present knowledge on Old-Babylonian ceramic in the region does not permit to distinguish between the three historical periods marked by the flourishing of Mari, that of the Old-Babylonian “Ḥana” Kings and the transition towards the Middle-Babylonian period¹⁵⁸; yet, the prospection clearly establishes that the Western bank of the valley downstream of Tall Šēḫ Ḥamad (regardless of its situation in the time of the Mari archives¹⁵⁹) was during the Middle Bronze Age void of any settlement until Tall Abu Ḥā’it¹⁶⁰, a situation which fits the picture suggested by the texts of a wild region only extensively exploited by nomads.

At the end of this review of the situation of the Lower Ḥābūr prior to its conquest by the Assyrians, a general historical frame can be sketched: at the beginning of the Middle Bronze Age, the area was mostly unsettled, with a predominance of the wilderness (both on the valley floor and in the steppe) and a predominantly nomadic use of the resources. The city of Qaṭṭunān, in that perspective appears less as the higher point on the Ḥābūr of the Euphratean kingdom of Mari, than as the southernmost center of the Upper Ḥābūr area, or more precisely as the gate to this region. Compared to the fertile rain-fed plains of the the Ġazīra, this zone controlled by Beduins was more a transit area than anything else. Things begin to change in the time of Zimrī-Līm, when a planned development of sedentary agriculture is arranged around Qaṭṭunān – but with numerous difficulties, due to the lack of a sufficient sedentary population to be used as complementary taskforce at harvest time. This development continues, and is even intensified, by the kings of “Ḥana”, who are responsible for the first irrigation canal of a certain size along the Ḥābūr. Yet, it remains a local device, and the southernmost part of the valley, downstream from Tall Šēḫ Ḥamad, remains untilled. It’s on that basis that the Assyrians will, from the 13th century on, develop sedentary agriculture along the Lower Ḥābūr, initiating in the Middle Assyrian time a process of ruralization on a greater scale, which reaches its peak in the Neo-Assyrian times, when its change in size finally leads to a change in nature, with the complete development of the Lower Ḥābūr, on both banks of the river, resulting in an unprecedented impact on the natural environment.

157 See the preliminary remarks of Kühne 1974-77 and Kühne & Röllig 1980, and the actual state of research presented by Kühne forth.

158 Kühne forth.

159 See Durand, this volume.

160 Kühne forth., with fig. 6.

Bibliography

- Balkan, K.
1954 *Kassitenstudien. 1. Die Sprache der Kassiten*, AOS 37, New Haven, American Oriental Society.
- Bagg, A. M.
2000 *Assyrische Wasserbauten, Baghdader Forschungen* 24, Mainz, Zabern.
- Becker, C.
1991 “Erste Ergebnisse zu den Tierknochen aus Tall Šēḫ Ḥamad - Die Funde aus Raum A des Gebäudes P”, in H. Kühne (ed.), BATSH 1, pp. 117-132.
2008a „Die Tierknochenfunde aus Tall Šēḫ Ḥamad/Dūr-Katlimmu – eine zoogeographisch-haustierkundliche Studie“, in H. Kühne (ed.), BATSH 8, pp. 61-131.
2008b “The Faunal Remains from Dur-Katlimmu – Insight into the Diet of the Assyrians”, in E. Vila et al. (eds.), *Archaeozoology of the Near-East VIII/2*, TMO 49, Lyon, MOM, pp. 561-580.
- Berthier, S.
2001 «Le peuplement rural et les aménagements hydroagricoles dans la moyenne vallée de l’Euphrate entre la fin du VIIe et le XVe siècle. Étude archéologique», in S. Berthier (ed.), *Peuplement rural et aménagements hydroagricoles dans la moyenne vallée de l’Euphrate – Fin VIIe-XIXe siècle*, Damascus, IFEAD, pp. 29-264.
- Biro, M.
1993 *Correspondance des gouverneurs de Qaṭṭunân*, ARM XXVII, Paris, ERC.
- Cancik-Kirschbaum, E.
1996 *Die mittellassyrischen Briefe aus Tall Šēḫ Ḥamad*, BATSH 4, Texte 1, Berlin, Dietrich Reimer Verlag.
- Charpin, D.
1987 «Šubat-Enlil et le pays d’Apum», *MARI* 5, pp. 129-140.
1995 «Centre et périphérie», *NABU* 1995/89.
1998 «L’évocation du passé dans les lettres de Mari», in J. Prosecky (ed.), *Intellectual Life of the Ancient Near East*, CRRAI 43, Prague, pp. 91-110.
2002a «Chroniques du Moyen-Euphrate, I. Le ‘royaume de Hana’: textes et histoire», *RA* 96, pp. 61-92.
2002b «La politique hydraulique des rois paléo-babyloniens», *Annales HSS*, 57/3, pp. 545-559.
2004 «Histoire politique du Proche-Orient amorrite (2002-1595)», in D. Charpin, D. O. Edzard. & M. Stol, *Mesopotamien. Die altbabylonische Zeit*, OBO 160/4, Fribourg & Göttingen, Academic Press / Vandenhoeck & Ruprecht, pp. 25-480.
2008 «Le roi et la terre dans le Proche-Orient du deuxième millénaire av. J.-C.», *La ricchezza nel vicino oriente antico. Atti del Convegno internazionale, Milano, 20 gennaio 2007*, Milano, CSVO, pp. 63-87.
- Charpin, D. & Ziegler, N.
2003 *Mari et le Proche-Orient à l’époque amorrite. Essai d’histoire politique*, FM V, Mémoires de N.A.B.U. 6, Paris, SEPOA.
- Clay, A.T.
1912 *Personal Names from Cuneiform Inscriptions of the Cassite Period*, YOS 1, New Haven, London & Oxford, Yale UP, H. Porwde/Oxford UP.

- Cooper, L.
2006 *Early Urbanism on the Syrian Euphrates*, London, Routledge.
- Deckers, K.
2005 “Anthracological Research at the Archaeological Site of Emar on the Middle Euphrates, Syria”, *Paléorient* 31/2, pp. 152-166.
- D’Hont, O.
1994 *Vie quotidienne des ‘Agēdāt, Techniques et occupation de l’espace sur le Moyen-Euphrate*, Damas, IFEAD.
- van Driel, G.
1998 “Land in Ancient Mesopotamia: ‘That What Remains Undocumented Does Not Exist’”, in B. Haring & R. de Maijer (ed.), *Landless and Hungry? Access to Land in Early and Traditional Societies*, Leiden, CNWS, pp. 19-49.
- Durand, J.-M.
1988 *Archives épistolaires de Mari I/1*, ARMT XXVI/1, Paris, ERC.
1990 «Problèmes d’eau et d’irrigation au royaume de Mari: l’apport des textes anciens», in B. Geyer (ed.), *Techniques et pratiques hydro-agricoles traditionnelles en domaine irrigué*, BAH 136, Damas, IFAPO, pp. 101-142.
1994 «Administrateurs de Qaṭṭunân», FM II, Paris, SEPOA, pp. 83-114.
1996 *Documents épistolaires du palais de Mari*, vol. 1, LAPO 16, Paris, Cerf.
1998 *Documents épistolaires du palais de Mari*, vol. 2, LAPO 17, Paris, Cerf.
1999-2000 «Apologue sur des mauvaises herbes et un coquin», in M. Molina et al., *Arbor Scientiae* [= Fs. Del Olmo Lete], *AuOr* 17-18, pp. 191-196.
2004 «Peuplement et sociétés à l’époque amorrite: (1) les clans bentsim’alites», in C. Nicolle (ed.), *Nomades et sédentaires dans le Proche-Orient ancien*, CRRAI 46, Amurru 3, Paris, ERC, pp. 111-197.
- forth. «La vallée du Habur à l’époque amorrite», in E. Cancik-Kirschbaum & N. Ziegler (eds.), *Entre deux Fleuves I. Untersuchungen zur historischen Geographie Obermesopotamiens im 2. Jahrtausend*, BBVO 20, Gladbeck, Werner.
- Ergenzinger, P.J.
1991 „Geomorphologische Untersuchungen im Unterlauf des Ḥābūr“, in H. Kühne (ed.), *BATSH* 1, pp. 35-50.
- Ergenzinger, P.J. & Kühne, H.
1991 „Ein regionales Bewässerungssystem am Ḥābūr“, in H. Kühne (ed.), *BATSH* 1, pp. 163-190.
- Frey, W. & Kürschner, H.
1991 „Die aktuelle und potentielle natürliche Vegetation im Bereich des Unteren Ḥābūr (Nordost-Syrien)“, in H. Kühne (ed.), *BATSH* 1, pp. 87-103.
- Frey, W. – Jagiella, Ch. & Kürschner, H.
1991 „Holzkohlefunde in Dūr-Katlimmu/Tall Šēḥ Ḥamad und ihre Interpretation“, in H. Kühne (ed.), *BATSH* 1, pp. 137-161.
- Geyer, B.
1992 Review of H. Kühne (ed.), *Die rezente Umwelt von Tall Šēḥ Ḥamad und Daten zur Umweltrekonstruktion der assyrischen Stadt Dūr-Katlimmu*, *BATSH* 1, Berlin, 1991, *Paléorient* 18/2, pp. 152-156.

- Geyer, B. & Besançon, J.
 2003 «La géomorphologie de la basse vallée de l'Euphrate syrien. Contribution à l'étude des changements de l'environnement géographique au Quaternaire», in B. Geyer & J.-Y. Monchambert (ed.), *La basse vallée de l'Euphrate syrien du Néolithique à l'avènement de l'islam*, BAH 166, vol. 1, Beyrouth, IFPO, pp. 7-59.
- Geyer, B. & Monchambert, J.-Y.
 2003 «Les aménagements hydrauliques» in B. Geyer & J.-Y. Monchambert (ed.), *La basse vallée de l'Euphrate syrien du Néolithique à l'avènement de l'islam*, BAH 166, vol. 1, Beyrouth, IFPO, 2003, pp. 175-231
- Goetze, A.
 1957 "On the Chronology of the second millenium B.C.", *JCS* 11, pp. 64-73.
- Groneberg, B.
 1980 *Die Orts- und Gewässernamen der altbabylonischer Zeit*, RGTC 3, Wiesbaden, Reichert.
- Heimpel, W.
 1996 "Moroccan locusts in Qaṭṭunan", *RA* 90, pp. 101-120.
- Hopfinger, H.
 1991 „Wirtschafts- und sozialgeographische Untersuchungen zur aktuellen Landnutzung in Ġarība / Tall Šēḥ Ḥamad“, in H. Kühne (ed.), *BATSH* 1, pp. 51-68.
- Kerbé, J.
 1987 *Climat, hydrologie et aménagements hydro-agricoles de Syrie*, Atelier National de Reproduction des Thèses-Presses Universitaires de Bordeaux.
- Kock, D.
 2008 „Die Saugertierfauna der Ḥābūr-Region, Nordost-Syrien“, in H. Kühne (ed.), *BATSH* 8, pp. 29-40.
- van Koppen, F.
 2001 "The Organization of Institutional Agriculture in Mari", *JESHO* 44, pp. 451-504.
- van Koppen, F.
 2002 "Seized By Royal Order. The households of Sammētār and other magnates in Mari", in J.-M. Durand & D. Charpin (eds), *Recueil d'études à la mémoire d'André Parrot*, FM VI, Mémoires de N.A.B.U. 7, Paris, SEPOA, pp. 330-331.
- Krupp, F. & Schneider, W.
 1991 „Bestandserfassung der rezenten Fauna im Bereich des Nahr al-Ḥābūr“, in H. Kühne (ed.), *BATSH* 1, pp. 69-85.
- 2008 „Die Fischfauna des Nahr al-Ḥābūr, Nordost-Syrien“, in H. Kühne (ed.), *BATSH* 8, pp. 41-51.
- Kühne, H.
 1974-77 „Zur historischen Geographie am Unteren Ḥābūr. Vorläufiger Bericht über eine archäologische Geländebegehung“, *AfO* 25, pp. 249-255.
- 1990 „Ein Bewässerungssystem des ersten Jahrtausends v. Chr. am unteren Ḥābūr“, in B. Geyer (ed.), *Techniques et pratiques hydro-agricoles traditionnelles en domaine irrigué*, BAH 136, Damas, IFAPO, pp. 193-214.
- 1991 „Die rezente Umwelt von Tall Šēḥ Ḥamad und Daten zur Umweltrekonstruktion der assyrischen Stadt Dūr-Katlimmu - Die Problemstellung“, in H. Kühne (ed.), *BATSH* 1, pp. 21-33.

- Kühne, H.
 1995 “The Assyrians on the Middle Euphrates and the Ḫābūr”, in M. Liverani (ed.), *Neo-Assyrian Geography*, QGS 5, Roma, La Sapienza, pp. 69-85.
 forth. „Bausteine zu einer Siedlungsgeschichte des Unteren Ḫābūr: Das 2. Jahrtausend“, in E. Cancik-Kirschbaum & N. Ziegler (eds.), *Entre deux Fleuves I. Untersuchungen zur historischen Geographie Obermesopotamiens im 2. Jahrtausend*, BBVO 20, Gladbeck, Werner.
- Kühne, H. (ed.)
 1991 *Die rezente Umwelt von Tall Šēḫ Ḫamad und Daten zur Umweltrekonstruktion der assyrischen Stadt Dūr-Katlimmu*, BATSH 1, Berlin, Dietrich Reimer Verlag.
 2008 *Umwelt und Subsistenz der assyrischen Stadt Dūr-Katlimmu am unteren Ḫābūr*, BATSH 8, Wiesbaden, Harrassowitz.
- Kühne, H. & Röllig, W.
 1980 “The Lower Ḫābūr. A Preliminary Report on a Survey conducted by the Tübinger Atlas des Vorderen Orients in 1975”, *AAS* 27/28, pp. 115-140.
- Kürschner, H.
 2008 „Hölzer und Holzkohlen der Grabung Tall Šēḫ Ḫamad und ihre Bedeutung für die Rekonstruktion der Umweltbedingungen in Nordost-Syrien“, in H. Kühne (ed.), *BATSH* 8, pp. 149-154.
- Kuzucuoğlu, C. & Marro, C. (ed.)
 2007 *Sociétés humaines et changement climatique à la fin du troisième millénaire: une crise a-t-elle eu lieu en Haute Mesopotamie?*, *Varia Anatolica* 19, Paris, De Boccard.
- Lion, B.
 1991 «Vignes au royaume de Mari», *FM* [I], Paris, SEPOA, pp. 107-113.
 2001 «Les gouverneurs provinciaux du royaume de Mari à l'époque de Zimrī-Līm», in J.-M. Durand & D. Charpin (eds.), *Mari, Ebla et les Hourrites, dix ans de travaux, deuxième partie*, *Amurru* 2, Paris, ERC, pp. 141-209.
- Lion, B & Michel, C.
 1997 «Criquets et autres insectes à Mari», *MARI* 8, pp. 707-724.
- Lyonnet, B.
 2004 «Le nomadisme et l'archéologie : problèmes d'identification. Le cas de la partie occidentale de la Djéziré aux 3ème et début du 2ème millénaire avant notre ère», in C. Nicolle (ed.), *Nomades et sédentaires dans le Proche-Orient ancien*, *CRRAI* 46, *Amurru* 3, Paris, ERC, pp. 25-49.
- Margueron, J.-C.
 2004 *Mari, Métropole de l'Euphrate au IIIe et au début du IIe millénaire av. J.-C.*, Paris, Picard/ERC.
- Martens, H.
 2008 „Zur Faunistik und Ökologie der Amphibien und Reptilien im Gebiet des Naḫr al-Ḫābūr“, in H. Kühne (ed.), *BATSH* 8, pp. 53-59.
- Marti, L.
 2008 «Tell Hariri/Mari: Textes. II. Les échanges: commerce et cadeaux entre rois», *Supplément au Dictionnaire de la Bible* XIV (fasc. 77-78), Paris, Letouzey & Ané, col. 286-298.

- Mori, L.
2003 *Reconstructing the Emar Landscape*, QGS 6, Rome, La Sapienza.
- Peltenburg, E.
2007 “Diverse Settlement Pattern Changes in the Middle Euphrates Valley in the later Third Millennium B.C: The Contribution of Jerablus Tahtani”, in C. Marro & C. Kuzucuoğlu (ed.), *Varia Anatolica* 19, Paris, De Boccard, pp. 247-266.
- Pfälzner, P.
1995 *Mittanische und Mittelassyrische Keramik. Eine chronologische, funktionale und produktionsökonomische Analyse*, BATSH 3, 2. vol., Berlin, Reimer.
2007 “The Late Bronze Age Ceramic Traditions of the Syrian Jazirah”, in M. al-Maqdissi, V. Matoian & C. Nicolle (eds.), *Céramique de l'âge du Bronze en Syrie II, L'Euphrate et la région de la Jézireh*, BAH 180, Beyrouth, IFPO, 2007, pp. 231-258.
- Podany, A.
2002 *The Land of Hana, Kings, chronology and Scribal Traditions*, Bethesda, CDL.
- Reculeau, H.
2002 «Lever d'astres et calendrier agricole à Mari», in J.-M. Durand & D. Charpin (eds.), *Recueil d'études à la mémoire d'André Parrot*, FM VI, Mémoires de N.A.B.U. 7, Paris, SEPOA, pp. 517-538.
2005 «Les fugitifs au Proche-Orient ancien», *Les Dossiers d'Archéologie* 300, pp. 32-39.
2008 «Tell Hariri/Mari: Textes. V. Environnement et occupation de l'espace. II. Les sédentaires», *Supplément au Dictionnaire de la Bible* XIV (fasc. 77-78), Paris, Letouzey & Ané, col. 324-356.
2009a «Le point sur la «plante à huile»: réflexions sur la culture du sésame en Syrie-Mésopotamie à l'âge du Bronze», *Journal des Médecines Cunéiformes* 13, pp. 13-37.
2009b «L'implantation sédentaire dans la vallée de l'Euphrate à l'âge du Bronze: un modèle centre/périphérie? Le cas du Royaume de Mari (Syrie) au XVIIIe s. av. n. è», in J.-M. Durand & A. Jacquet (eds.), *Centre et Périphérie: Approches nouvelles des Orientalistes*, CIPOA 1, Paris, Maisonneuve, pp. 57-81.
- forth. (a) “Environmental Change in Upper Mesopotamia during the Middle- and Late Bronze Ages”, in N. Brisch, E. Cancik-Kirschbaum & J. Eidem (eds.), *Constituent, Confederate, and Conquered Space: The Case of the Mitanni Transition*, Berlin.
forth. (b) „Über den Beitrag der historischen Geographie zum Verständnis der Sesshaftigkeit am Beispiel des Mittleren Euphrat-Raumes im 2. Jt. v.Chr.“, in E. Cancik-Kirschbaum & N. Ziegler (eds.), *Entre deux Fleuves I. Untersuchungen zur historischen Geographie Obermesopotamiens im 2. Jahrtausend*, BBVO 20, Gladbeck, Werner.
- Röllig, W.
1978 „Dür-Katlimmu“, *Orientalia* 47, pp. 419-430.
2008 *Land- und Viehwirtschaft am unteren Ḫābūr in mittelassyrischer Zeit*, BATSH 9, Wiesbaden, Harrassowitz.
- Rouault, O.
1984 *Terqa Final Reports I. L'archive de Puzurum*, BiMes 16, Malibu, Undena.
1992 «Cultures locales et influences extérieures: le cas de Terqa», *SMEA* 30, pp. 247-256.

- Rouault, O.
1998 «Villes, Villages, campagnes et steppe dans la région de Terqa: données nouvelles», in M. Fortin & O. Aurenche, *Espace naturel, espace habité en Syrie du Nord (Xe-IIe millénaire av. J.-C.)*, BCSMS 33/TMO 28, Québec/Lyon, pp. 191-198.
2004 “Chronological Problems Concerning the Middle Euphrates during the Bronze Age”, in H. Hunger & R. Pruzsinszky (ed.). *Mesopotamian Dark Age Revisited*, Wien, pp. 51-59.
- Sanlaville, P.
1990 «Milieu naturel et irrigation», in B. Geyer (ed.), *Techniques et pratiques hydro-agricoles traditionnelles en domaine irrigué*, BAH 136, Damas, IFAPO, pp. 3-19.
- Thureau-Dangin, F. & Dhorme, E.
1924 «Cinq jours de fouilles à ‘Ashârah», *Syria* 5, pp. 265-293.
- Unger, E.
1938 „Dûr-Igitlim“, *Reallexikon der Assyriologie* 2, p. 245.
- Wachholtz, R.
1996 *Socio-Economics of Bedouin Farming Systems in Dry Areas of Northern Syria*, Kiel, Wissenschaftsverlag Vauk.
- Wiggermann, F.A.M.
2000 “Agriculture in the Northern Balikh Valley. The Case of Middle Assyrian Tell Sabi Abyad”, in R.M. Jas (ed), *Rainfall and Agriculture in Northern Mesopotamia* [Mos Studies 3] PIHANS 138, Leiden, pp. 171-231.
- Wilkinson, T.J.
2004 *On the Margin of the Euphrates. Settlement and Land Use at Tell es-Sweyhat and in the Upper Lake Assad Area, Syria*, OIP 124, Chicago, The Oriental Institute of the University of Chicago.
- van Zeist, W.
1994 “Some Notes on Second Millenium B.C. Plant Cultivation in the Syrian Jazira”, in H. Gasche *et al.*, (ed.), *Cinquante-deux réflexions sur le Proche-Orient Ancien* [= Mél. de Meyer], MHE/O II, Louvain, Peeters, pp. 541-553
2003 “The Plant Husbandry of Tell al Raqa’i”, in W. van Zeist (ed.), *Reports on Archaeobotanical Studies in the Old World*, Groningen, pp. 7-31.
2008 “Comments on Plant Cultivation at two Sites on the Khabur, North-Eastern Syria”, in H. Kühne (ed.), *BATSH* 8, pp. 133-148.