

Chontalpa: No Man's Land, or Cradle of Maya Civilization?

by

Vincent H. Malmström

Professor Emeritus (Geography)

Dartmouth College

Deltaic coastal plains are among the most hazard-prone regions in the world. Only a few examples need be cited to illustrate the point. Every few years, typhoons sweep up the length of the Bay of Bengal to inundate large areas of the country of Bangladesh. On more than two dozen occasions the Yellow River of China has changed course to seek a new outlet to the sea, most recently in 1852 when it drowned over a million people as it shifted its mouth over 400 km (250 mi.) to the north. In the 13th century a combination of high tides and winter storms broke through the barrier dunes of the North Sea coast of Holland to form in a single night the great embayment known as the Zuider Zee. And, at the present time, the slow, steady submergence of the Po Delta continues to put at risk the medieval architectural treasures of the city of Venice.

Although no such catastrophes have been described in the far shorter written history of the New World, there is no reason to believe that the deltaic coastal plains of the Americas are or have been immune to similar disastrous events. Indeed, there is strong circumstantial evidence that one calamitous episode of this nature may have been at least in part responsible for the demise of the highest civilization ever produced in pre-Columbian America, namely that of the Maya.

While not the originators of civilization in Mesoamerica -- that honor belongs to the mysterious people known as the Olmecs -- the Maya were unquestionably the most advanced practitioners of the rich culture bequeathed to them by their shadowy antecedents. No other Native American people achieved such heights in architecture, astronomy, calendrics, city planning, mathematics, or writing as did the Maya. Geographically, many of their earliest triumphs were attained in the karstic lowlands of the southern Yucatán and northern Guatemala -- a region today largely mantled in rain forest. Beginning about the 9th century, however, the focus of their civilization shifted northward into the lower and drier karstic plain of northern Yucatán where it persisted in a much more modest form until at least the 13th century.

Ironically, their Olmec forbearers had shown little or no interest in those geographic areas that we have come to recognize as the Maya homeland or cultural hearth. Instead, what Bernal has identified as the "Olmec metropolitan area" was primarily situated in the Gulf coastal plain of southern Veracruz state (1969, 15); indeed, apart

from their major site of La Venta, which dates from 1000 to 600 B.C. and is located at the very western edge of the region known as Chontalpa (which is largely coincident with the present state of Tabasco), there is little evidence that the Olmec ever penetrated any farther to the east. (See Figure 1.)

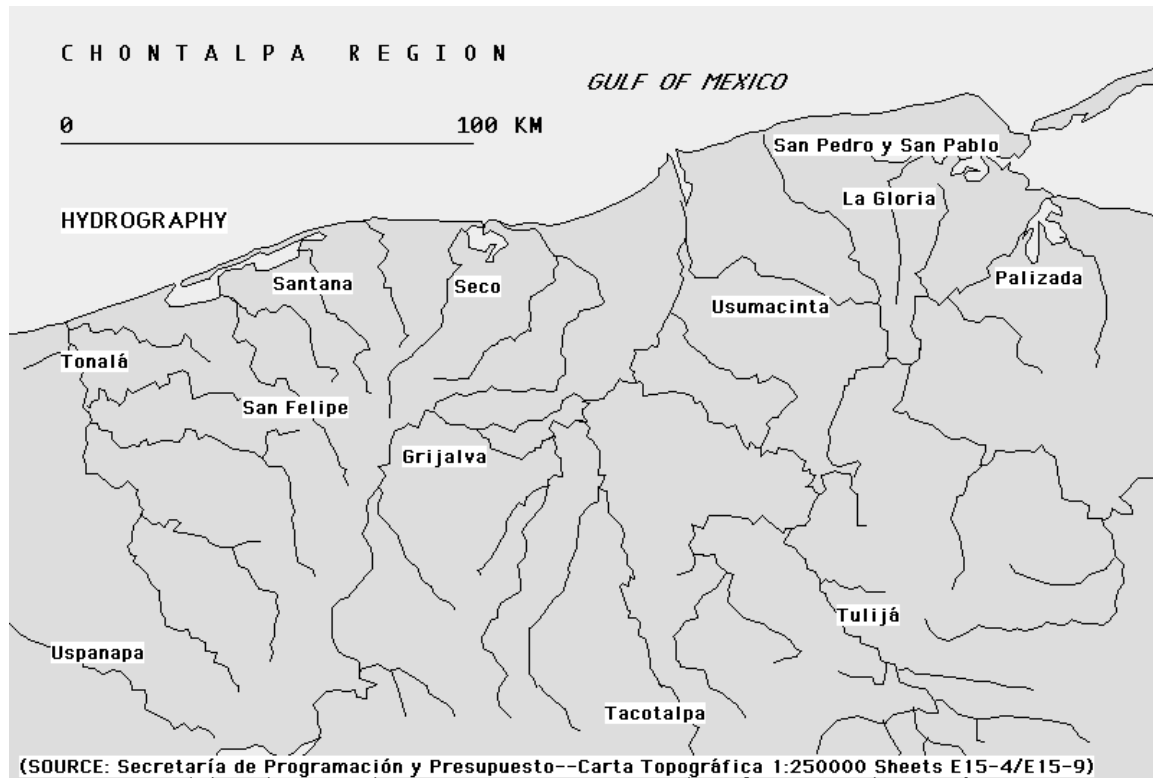


Figure 1.

Maya settlements, however, have been found not only along the coast as far west as Comalcalco, i.e., within 80 km (50 mi.) of La Venta, but also along the inner edge of the coastal plain where they include such places as the imposing site of Palenque. Without exception the Maya sites would seem to date to the Late Classic Period (A.D. 600-900), which means that there is about a 1200-year hiatus between the founding of their settlements and the occupance of La Venta by the Olmecs. This strongly suggests that the fringes of the Chontalpa region were occupied by a "backwash" of the Maya civilization from an earlier core area surrounding the "pioneer sites" of Edzná in southwestern Yucatán (dating from 150 B.C.) and El Mirador in northern Guatemala (founded about 1 A.D.). (See Figure 2.)

But, why then, the wide temporal and spatial gap between the Olmec and Maya penetration of the Chontalpa region? At the very minimum we find a difference of nearly 500 years between the decline of La Venta and the founding of Edzná, as well as a

separation in space of nearly 500 kilometers (300 miles). Two possible explanations present themselves: either (1) the low, swampy nature of the Chontalpa region constituted a barrier to the spread of Olmec civilization which it could not hurdle for nearly half a millennium; or (2) although there may have been just as steady an eastward

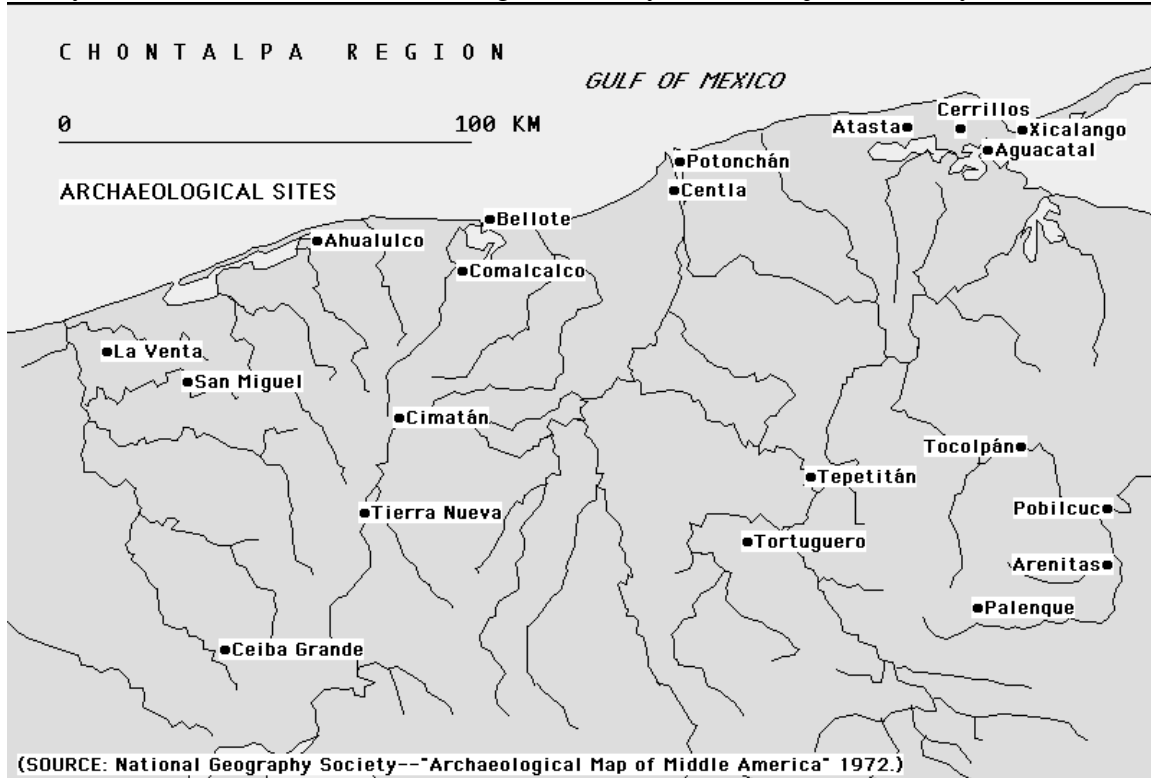


Figure 2.

advance of Olmec civilization through the Chontalpa region as there was a westward expansion through southern Veracruz, all evidence of this diffusion has been obscured due to subsequent changes in drainage patterns.

Implicit in the first scenario is the notion that Olmec civilization, after being stalled out for 500 years, somehow achieved an advance in technology or a change in resolve that finally unleashed an eastward wave of settlement through the Chontalpa region which left no record of its progress until it reached Edzná and El Mirador. Implicit in the second scenario is the notion that whatever earlier Olmec or "pioneer Maya" settlements may have been located in the Chontalpa area have all been swept away as the rivers of the region changed course. While we have no evidence whatsoever that the first scenario can be substantiated, especially in view of the relatively early spread of Olmec civilization westward through the similarly vast and swampy lowlands of the Río Papaloapan, the second scenario at least seems worthy of exploration.

The low, water-logged area that comprises the heart of the Chontalpa region is a compound delta formed by two major rivers, the Grijalva, or Mezcalapa, on the west and the Usumacinta on the east, and by about a half dozen smaller ones, most of which (such as the Ríos Tacotalpa, Puxcatán, Tulijá, and Chilapa) debouch between them. (It should be noted that the term Grijalva is assigned by the Mexicans only to the lower reaches of the large western river as it crosses the coastal plain, whereas in its more extensive upstream reaches it is known as the Mezcalapa.) Both the Grijalva-Mezcalapa and the Usumacinta rise in the highlands of western Guatemala and flow in a general northwesterly direction toward the Gulf of Mexico. The drainage basins of both rivers encompass areas of very heavy precipitation on the eastern slopes of the mountains of Chiapas in southern Mexico and of Guatemala; indeed, the volume of water currently discharged by the Grijalva-Mezcalapa and the Usumacinta rivers has been estimated to equal some 28 per cent of total run-off of the Mexican Republic (Bassols Batalla, 1972,112). Yet, as a result of the very different geologies of their respective basins, the Grijalva-Mezcalapa system carries an enormous load of sediment in suspension whereas much of the material brought down by the Usumacinta is lime in solution.

Today the two rivers share a common mouth as they empty into the Gulf of Mexico near the modern city of Frontera. However, hydrologic and topographic evidence show that this situation is of relatively recent geologic age, and archaeological evidence pinpoints it even more specifically to having occurred sometime within the last millennium or so. A former outlet of the Grijalva, now known as the Río Seco, or "Dry River", reaches the Gulf some 50 km (30 mi.) to the west of the river's present mouth, but it would appear that at least three and possibly five progressively older outlets of the Grijalva are to be found farther to the west in the now-truncated watercourses of the such rivers as the Tular, Santana, and San Felipe. Similarly, it is quite clear that the Río Usumacinta had its earlier mouth about 25 km (15 mi.) to the east of its present outlet through a watercourse now known as the Río San Pedro y San Pablo. Indeed, at a even earlier date the Usumacinta reached the Gulf through a series of lagoons at the western end of the great embayment known as the Laguna de Términos, and sometime before that through a yet-more easterly outlet called the Río Palizada which empties into the southern reaches of the same embayment. Thus, it is apparent that these two great rivers not only have repeatedly changed course in the past but also that the block of the earth's crust beneath the central portion of the deltaic plain has been settling more rapidly than either its western or eastern edges, causing the outlets of both rivers to have been progressively diverted toward a common mouth in the middle. (Other well-known instances of sub-deltaic blocks that are settling unevenly include the mouth of the Rhine,

which is being deflected southward, and the mouth of the Ganges that is shifting eastward.)

Against such a background of "natural" and repeated change it is surprising that what was probably the Grijalva's most drastic alteration of course has been attributed to human intervention. For example, West et al. [1969, 171] cite a Tabascan legend that suggests that the local Indians diverted the Grijalva eastward about the year 1675 in an effort to ward off pirate attacks. However, when one considers the river's great size and volume, even at its low water stage, as well as the level of indigenous technology available in the late 17th century, such an explanation scarcely seems credible.

Perhaps a more accurate indicator of the timing of the Grijalva's most abrupt shift to the east is to be found in the former Maya seaport site of Comalcalco. The latter has excited the interest of archaeologists for many years because it is not only the westernmost urban creation of the Maya but it also one of the few ceremonial centers in all of Mesoamerica whose building materials consist exclusively of baked bricks. Because Comalcalco is located in the midst of a vast alluvial plain, there is no stone within a radius of almost 80 km (50 mi.). (Indeed, Quaternary alluvial deposits make up the entire Gulf coastal plain of Mexico from the Río Tonalá on the west to the Río Champotón in the east and only two small outcrops of deeply weathered Miocene sandstone -- both reaching a scant 20-30 meters in elevation -- are to be found to the northeast of Villahermosa. [Secretaría de Programación y Presupuesto, Carta Geológica 1:1,000,000 (Villahermosa) 1981.]) Unlike the Olmecs, who are known to have rafted immense amounts of stone from the Tuxtla mountains up-river to their early inland sites in Veracruz, the Maya lacked a comparable source of supply, and also perhaps the need or motivation for such an extensive transport network. Thus, just as in the stone-less delta of the Tigris and Euphrates where the Sumerians first employed baked bricks in the building of their cities, the Maya, quite independently, came up with a similar solution to a comparable challenge in the region of Chontalpa. (See Figure 3.)

Comalcalco is located on the right bank of the Río Seco about 15 km (10 mi.) upstream from the Gulf of Mexico. If the city truly served the function of a seaport -- as several of its structures having the configuration of warehouses seem to suggest -- both its site and situation raise some rather intriguing questions. Why, for instance, was it located so far from the coast, when most other Maya commercial ports were found immediately behind the coastal dunes? Could its inland location reflect the seaward growth of the Grijalva's delta prior to the river's abrupt change in course? If so, it would represent a rate of deposition equivalent to building out the coast about 15 km in 300 years, which is

probably a fairly accurate estimate of the city's maximum longevity. This means an average seaward growth of one kilometer every 20 years, which is quite within the realm

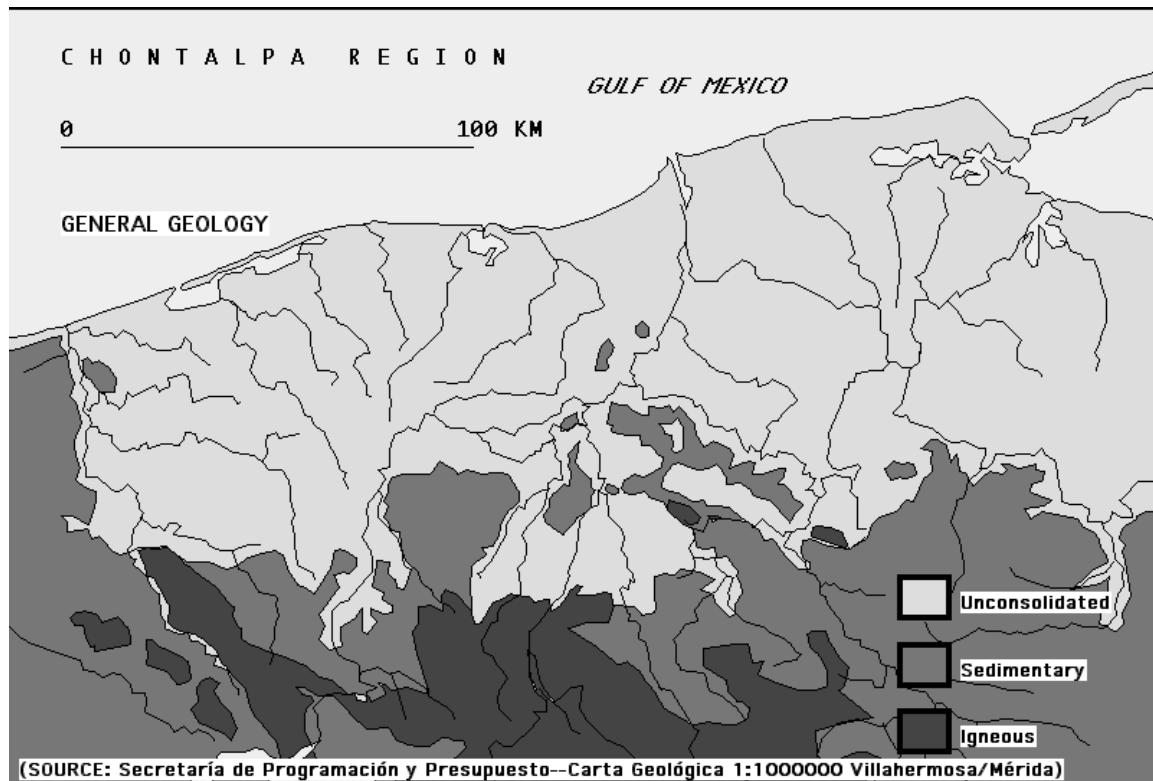


Figure 3.

of reason for a river which has the volume of water and carries such an immense load of sediment as does the Grijalva.

Tempting though this hypothesis may be, local geomorphic evidence does not appear to support it. On the other hand, Comalcalco would have been easily accessible by the shallow-draft vessels that the Maya employed, so its inland location may well testify to its having been a bulk-handling port, most likely for the massive export of cacao from the rich plantations which once flourished in its immediate hinterland.

One aspect of the town's site that does testify to the magnitude of physical change that has taken place in the region since Comalcalco was founded is the local water table. A present-day visitor to the site finds that several of the Maya structures are standing with their carved footings in as much as 15 cm (6 inches) of water. Because they obviously were not built under water, we can only conclude that the area around them has subsided as the land beneath the delta has continued to sink through time. This suggests

that the rate of subsidence has averaged just over 1 cm (0.4 inch) per century in the 1400 years since the port was founded.

Not alone the town's site, i.e., its specific location, but also its situation, i.e., its relationship to its surroundings, must be called into question. Certainly, for Comalcalco to have functioned as an active seaport it likewise needed a relatively extensive hinterland -- something which its present situation on the Río Seco totally precludes. Only as long as it served the main stream of traffic along the Grijalva-Mezcalapa system could it fulfill the function for which it was created; once the river had changed its course, it was commercially dead. Thus, there is every reason to believe that at the time of Comalcalco's founding (at the earliest, ca A.D. 600), the Grijalva flowed immediately past its wharves and warehouses. But, by the same token, the town would have lost its very *raison d'être* when the river shifted course. Whether this happened about the time of the general collapse of Maya civilization, i.e., A.D. 900, or more recently cannot, of course, be established without securely dating the latest deposits brought down by the Grijalva into the now abandoned and over-sized valley of the Río Seco.

The subsidence of the delta block beneath the mouths of the Grijalva and Usumacinta had naturally begun long before the Maya chose to locate their seaport at Comalcalco. The remnants of several older and smaller distributaries of the Grijalva to the west of the Río Seco suggest that the river's outlet some centuries earlier lay much closer to the Olmec capital of La Venta. However, if a far more ancient seaport -- perhaps of Olmec origin -- lay near the mouth of the westernmost river, that is, somewhere behind the Barra de Santa Ana which is a long coastal spit that today forms a barrier beach along this stretch of the Gulf, it has yet to be found. In any case, near the mouth of the intermediate distributary -- the Río Santana -- just behind the end of the same spit, lie the ruins of a small seaport settlement known as Ahualulco. One can only speculate that it once served as a predecessor to the larger and later city of Comalcalco. (Even Comalcalco may have possessed an "outport", because on the sand bar overlooking the mouth of the Río Seco the ruins of a small settlement called Bellote have been discovered.)

Although the Grijalva in any of its historic stages was navigable only up to the foothills (approximately 80-90 km, or 50-55 mi.), its sister river to the east, the Usumacinta, served a hinterland that stretched at least 300 km (200 mi.) upstream. In Late Classic times, great ceremonial centers such as Piedras Negras and Yaxchilán obviously depended on the river for imported trade items from as far distant as the Mexican plateau and the Caribbean coast of Central America. For this commerce, the Maya developed a seaport just behind the dunes fringing the western end of the Laguna de Términos at a place called Xicalango.

Long recognized as one of the principal trading centers of the coastal-dwelling Chontal Maya, Xicalango quite likely ranks as one of their oldest seaports. Indeed, it may well have been founded at a time when the Usumacinta discharged its waters through the Río Palizada into the Laguna de Términos. A cluster of other smaller ports including Aguacatal, Cerrillos, and Atasta is found behind the dunes a few kilometers to the west of Xicalango, and may reflect an attempt on the part of the Maya to "follow" the Usumacinta's shifting mouth away from the Laguna. However, if this is true, the sites of these alternate seaports soon proved less desirable than that of the original port, because they all became quickly silted up.

While no remains of a seaport have been found near the mouth of the Río San Pedro y San Pablo -- perhaps because the Usumacinta did not retain its mouth there for a sufficient length of time -- an important successor seaport known as Potonchán had arisen near the river's present mouth by the time of the arrival of the Spanish. Indeed, it was near here that Cortés fought his first major battle in New Spain, defeating a vast horde of the sea-trading Chontal Maya after driving them upstream to Centla. The fact that the Chontal Maya had located their major trading town at Potonchán strongly suggests that the Grijalva had shifted its course to its present outlet well before the Spanish conquest, and that the river had not been "diverted by the inhabitants of the region in the seventeenth century", as suggested by the local legend.

If the argument advanced above is sound, then the subsidence of earth's crust in the middle of the deltaic plain of Chontalpa has been responsible for a progressive shift of the two largest rivers in southeastern Mexico toward one another, resulting finally in their sharing a common outlet on the Gulf. The human reaction to these physical changes has been to repeatedly relocate seaport settlements that were initially founded at both edges of the delta toward the center. Whether Comalcalco was the casualty of such a course change in the 9th century or if it was already long "dead" when the Grijalva abruptly veered eastward sometime later, we cannot be certain.

Subsidence alone can, of course, have been the sole process responsible for the gradual movement of the two major rivers toward one another. (See Figure 4.) Indeed, in the earliest discernible stage of both the Grijalva's and the Usumacinta's drainage patterns, their lower courses appeared to have diverged rather than converged (their original respective outlets each identified as (1) on the map), with the Grijalva emptying into the Gulf through the Río San Felipe (azimuth ca. 320°) and the Usumacinta debouching into the Laguna de Términos through the Río Palizada (azimuth ca. 50°). In this stage, the distance between their mouths would have been approximately 200 km (120 mi.) apart. A secondary stage can be recognized when the Grijalva shifted to the Río Santana outlet

(azimuth ca. 340°) and the Usumacinta emptied out into the Gulf through the Río La Gloria (?) (azimuth ca. 360°). At this stage the distance between their respective mouths

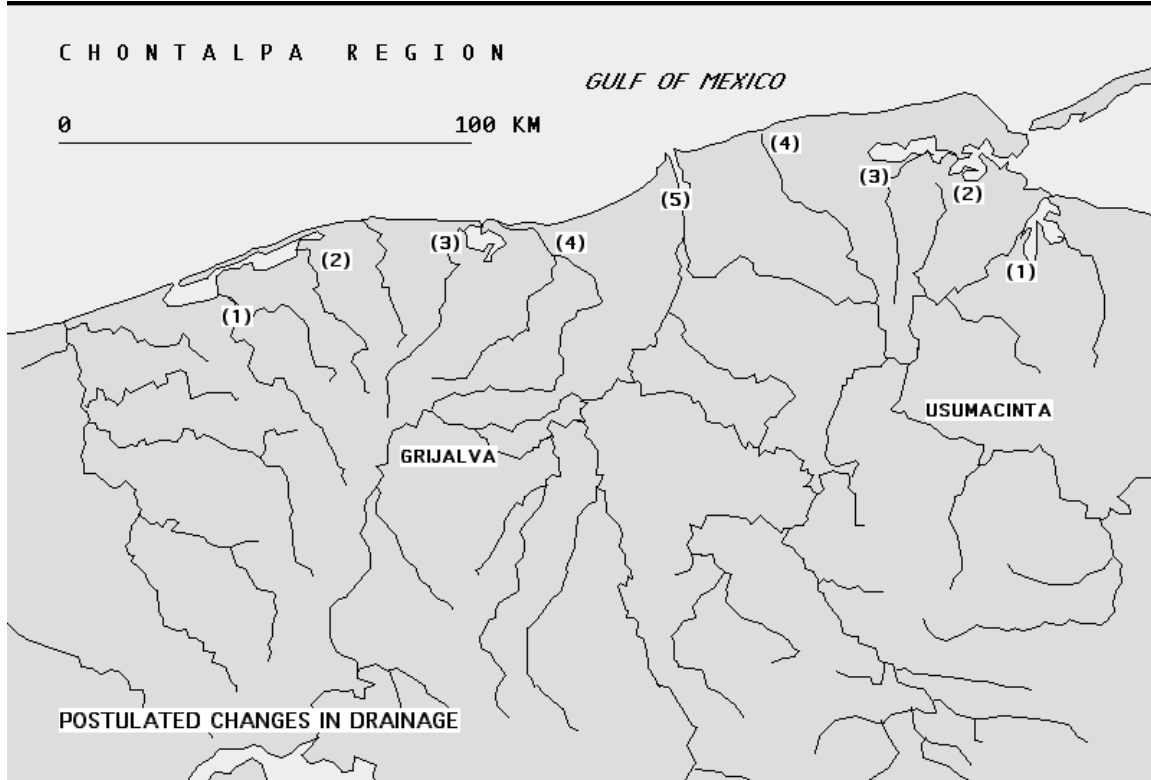


Figure 4.

– each identified by (2) on the map -- would have narrowed to approximately 150 km (95 mi.). A tertiary stage can be identified in the case of the Grijalva as it moved to the Río Seco outlet (azimuth ca. 20°) and the Usumacinta flowed out through the Río San Pedro y San Pablo (azimuth ca. 330) (each designated by (3) on the map). By this time, their mouths would have been less than 90 km (55 mi.) apart. The most momentous shifts, however (labeled (4) and (5) on the map), were those which caused the Grijalva to turn virtually due east (azimuth ca. 90°) for a distance of 50 km (30 mi.) and the Usumacinta to turn sharply westward (azimuth ca. 280°) about the same distance, uniting in a single mighty stream about 30 km (20 mi.) from the present coastline. (Note that Figure 4 depicts an idealized reconstruction of the evolution of drainage patterns within the Chontalpa region. The reader should be cautioned that there is no way of knowing whether a given shift of the Grijalva on the west was in fact accompanied by a corresponding shift of the Usumacinta in the east, although it is logical to assume that such movements were largely synchronous.)

Was this massive conjunction of the two rivers solely the result of the long-continued subsidence of the central portion of the delta, as the earlier course changes may well have been, or was something else involved here as well? Although we can't be totally sure, the sheer magnitude of the latest alterations in the drainage pattern make it appear that something more than just the steepening of the gradient had occurred. Could, for example, a change in climate have resulted in heavier precipitation and hence in greater run-off in the catchment areas of the two rivers, thereby swelling the already immense volume of water and sediment which they carried? If so, changes which had been relatively modest and only moderately troublesome for the human population up to then now took on far more drastic and destructive proportions. Nearly 100 km (60 mi.) of land between the two rivers would have been inundated, probably in a matter of hours. In this virtually featureless landscape the rampaging waters would have spread far beyond the new channels that the rivers had laced across these soggy lowlands. (During the late 1970's, when for several years regional precipitation totals were sharply higher than normal, the author was himself witness to the extensive inundations which occurred throughout Tabasco.) Surely the area that was involved in such flooding must have totaled several thousand square kilometers at the very least. (The modern state of Tabasco has an area of almost 25,000 square km (ca. 9600 sq. mi.), of which over 70% is composed of swamps and coastal marshes. Most of the latter areas lie between the present courses of the Grijalva and Usumacinta rivers.)

Naturally, if there had been any human occupation of the Chontalpa region previous to this major change in its hydrography, it most likely would have been concentrated along the banks of the smaller existing rivers, and hence would have been totally swept away in the process. (Indeed, nearly two-thirds of the indigenous settlements identified by West et al. [1969,93] were situated along past or present natural levees.) However, since few if any of these settlements appear to have been pre-Classic in origin, no convincing case can be made for the region having had any sizable "Olmec" population. Yet, from a purely theoretical viewpoint, it is difficult to imagine that such an area of fertile alluvial soils and abundant water would not have had a strong attraction to a people attempting to live from the cultivation of maize. That it had remained a "no man's land" between the "Olmec metropolitan area" and the Maya "pioneer" outposts in the Yucatán and Petén seems extremely unlikely.

Paleoclimatological studies of the Mesoamerican region, especially those of the CLIMAP program (1984), strongly suggest that a change toward a wetter climate was beginning about the time that the inundations hypothesized above were taking place, i.e., ca AD 900, so a larger and more vigorous Grijalva and Usumacinta are not out of the

question. Whether the widespread flooding that they would have caused disrupted the lives of *thousands* of Maya farmers and city dwellers or only a few *hundred* we may never know. But, the heavier rains which would then have been falling over even the higher and drier areas of the Yucatán and the Petén may well have been the undoing of the agricultural society of the Maya and of the urban centers it had spawned. More rapid soil depletion, faster forest re-growth, and a shorter dry season making more difficult the clearing of land by fire all may have exacerbated the problem of feeding a largely urban population which has been estimated to have been as large as 10 to 12 million. Even if the great floods of the Grijalva and Usumacinta affected only a small fraction of the Maya people, they may well have been symptomatic forerunners of a catastrophe that was soon to engulf the entire civilization. *

To be sure, no change of climate need be postulated for the shift in drainage patterns suggested above. The sheer volume of water and the weight of the sediments carried by the Grijalva, especially, would be more than adequate to account for the subsidence of the crustal block beneath the compound delta it shares with the Usumacinta. On the other hand, recent studies of the impacts of El Niño and La Niña on Mexico suggest that, while the volume of summer precipitation over the country may remain the same or even decline slightly during such events, the volume of winter precipitation increases substantially (Conde and Gay, 1999). This means that throughout history, Chontalpa has no doubt been subject to periodic increases in moisture which in and of themselves may have been sufficient to re-order the region's drainage pattern. Indeed, some climatologists are suggesting that while El Niño events tend to manifest themselves in the humid tropics as warm, dry episodes, the onset of colder, moister La Niña patterns involve little more than a return to "normal" weather conditions (Donoso, 1998). More recently, and especially since the 1940's, land clearing along the Gulf coast and in the mountains to the south have resulted in heavily intensified soil erosion throughout the region, markedly swelling the sediment load carried by the rivers and increasing the likelihood of capricious flooding. Finally, to this culturally induced environmental change of a local nature we now must add the effects of global warming. In a recent study, the coastal region of Tabasco state has been singled out as being particularly vulnerable, for if current rates of temperature increase continue, a rise of sea-level approximating 0.5 m per decade could ultimately produce a 40-50 km wide inundation of the Grijalva-Usumacinta lowlands. (Conde and Gay, 1999.) Then, the region that conceivably may have been a "no-man's land" for the Olmecs and the Maya will certainly become a "no-man's land" for Mexico of the future.

(*Author's footnote: Some recent studies conducted in the Yucatán suggest that the 8th and 9th centuries were a period of increasing drought rather than of heavier rainfall. (See, for example, Curtis, Hodell, and Brenner, 1996). Understandably, in a karstic region such as the Yucatán, where the ground water supply is already precarious, any decrease in moisture would pose a serious problem to agriculture. However, in a super humid rain forest environment, such as that of Chontalpa, a decrease in rainfall may actually have been welcomed by the maize farmer.

Of course, if a scenario of increasing drought is postulated as the cause of the demise of the Maya civilization, then one is at pains to explain why the focus of Maya settlement should have shifted from the rain forest environment of the Petén (often called the "Old Empire") to the scrub-forest environment of the north of Yucatán (the so-called "New Empire") in the midst of such an ecologic catastrophe. In this connection it may also be questioned whether the weather conditions recorded in a single lakebed in a marginally dry environment of northern Quintana Roo can accurately portray the climate prevailing over such adjacent areas as the Petén and Chontalpa where even today the annual receipt of moisture is normally more than twice as great as it is in northern Yucatán.

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(Dr. Vincent H. Malmström is Professor Emeritus of Geography at Dartmouth College, Hanover, New Hampshire, 05755, U.S.A.)

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