Holocene Inundation of the Gulf of Mexico Hinterland: Oklahoma

Terry W. Noble, Environmental Consultant, Thunder Bay, Ontario (2004).

INTRODUCTION

In past papers (Noble, 2004a; b: c) I described a water body that inundated the western and eastern coasts of the United States at the start of the Holocene Epoch roughly 10000 years ago. The papers defined its extent within the Pasco Basin portion of the Columbia River Basin in Washington State, and its coverage in California and Texas. Its postulated existence contradicts the typical scenario described in the research literature for this period. The more profound contradiction was ascribing this event, and others both before and after, to shifts in the equatorial axis relative to the orbital axis. The shifts are recorded by shoreline profiles that tilt in opposite directions and are juxtaposed against today's horizontal levels. Intrinsic to these events are sills that are alternatively submerged or above water and that these are also juxtaposed against similar barriers around the World (e.g., Panama and Bering Strait).

WEST FLANK OF THE MISSISSIPPI VALLEY: OKLAHOMA/KANSAS

I previously postulated (see www.axialshift.com) that sea level at the start of the Holocene (10000 BP) had inundated the Mississippi River valley (i.e., the Mississippi Embayment) to roughly Keokuk, Iowa, on the main river channel; just beyond Boonville, Missouri, on the Missouri River; and Clinton, Indiana, on the Wabash River. In other words, the Gulf of Mexico had submerged the lower and also, in some cases, the middle portions of its constituent river valleys, including the Mississippi and most of its tributaries. I chose Texas (Noble 2004c) to further illustrate this shoreline as it is the southwestern flank for my version of the Gulf at that time as it is for the Gulf today (Figure 1).

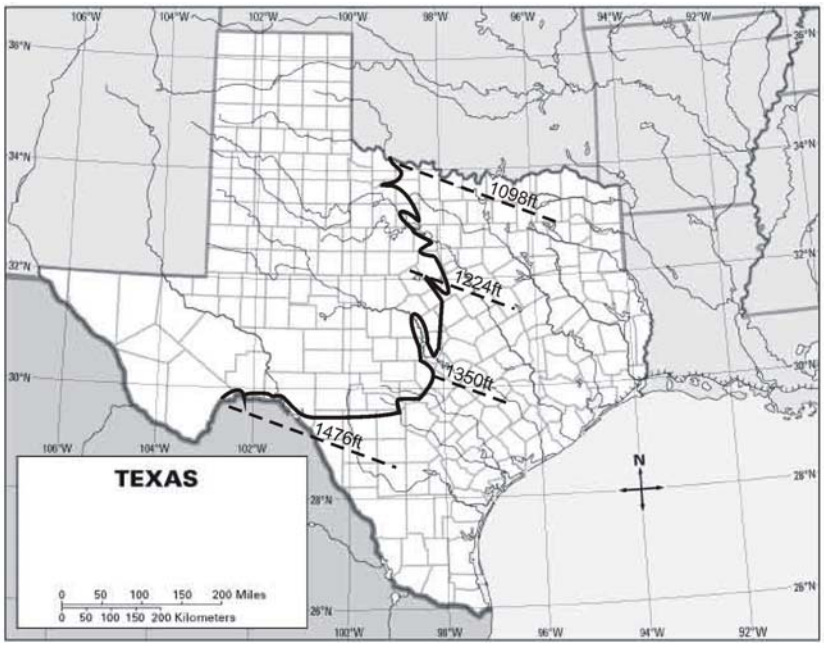

Figure 1. The shoreline depicted here denotes how far up the coastal slope of Texas that sea level reached at the start of the Holocene Epoch roughly 10000 years ago.

Diagrams in that paper and sites on the internet (e.g., maps and aerial photographs at Terraserver.com or Topozone.com) enabled readers to follow the postulated Holocene shoreline through Texas. Figure 1 shows the shoreline tilting down to the north across Texas from the Rio Grande River in the south to ultimately cross the Red River into Oklahoma west of Burkburnett at roughly 1100 feet. Figures 2 and 3 illustrate the continuation of the Holocene Gulf embayment from the southwest corner of Oklahoma (Figure 2) to the northeast corner (Figure 3) where it extends short distances up the river valleys into adjacent Kansas. The offshore islands are not shown in either figure. A particularly large island complex was associated with the mountain systems located in the southeast corner of the State (e.g., Ouachita Mountains). The transgression across Oklahoma and into Kansas represents a drop of roughly 280 feet. It did not exit the State from the northeast corner due to the steeper gradient in this area. Instead it was forced to swing south around the base of the Ozark Plateau where it ultimately turned east into Arkansas just north of State Highway 40.

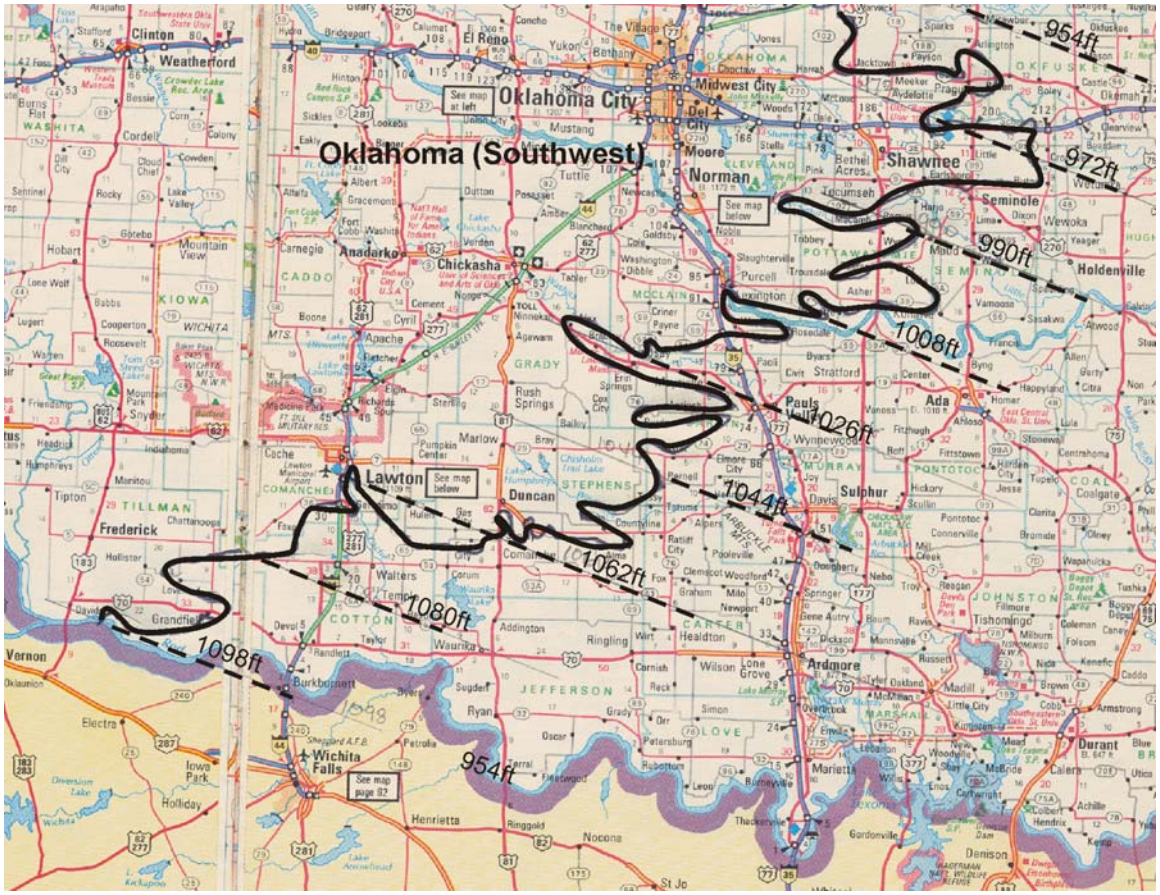

Figure 2. Location of postulated sea level in southwestern Oklahoma at the start of the Holocene. Superimposed on the Rand McNally map is a sequence of elevation isolines for this waterbody.

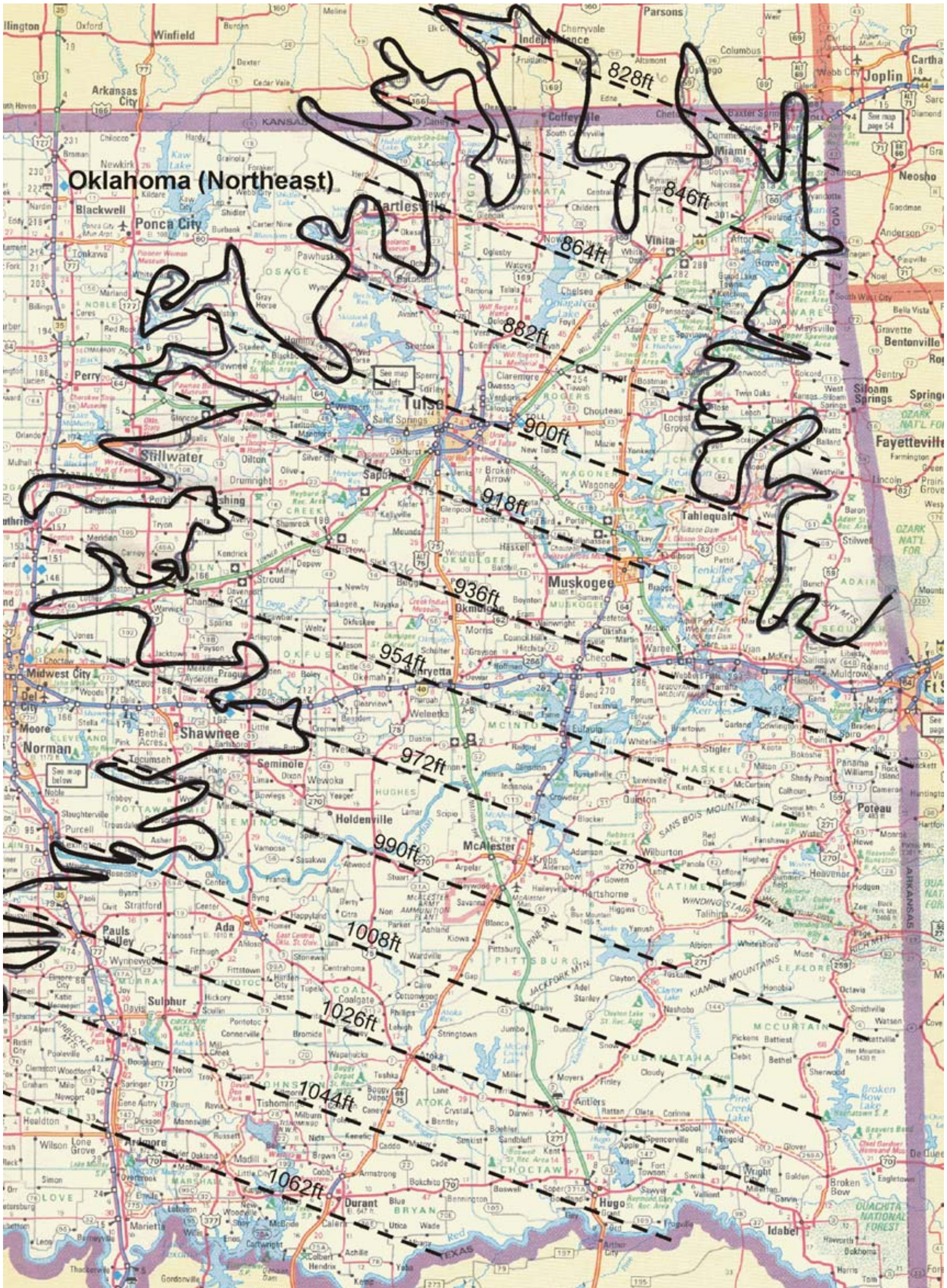

Figure 3. Location of postulated Holocene shoreline in the eastern half of Oklahoma and its small extension into adjacent Kansas.

It can be seen from the isolines in Figures 2 and 3 that this shoreline tilts down towards the northeast corner of the State. Using the isolines readers can follow the shoreline on internet sites that offer map and aerial photograph facilities (e.g., Terraserver.com; Topozone.com). Figure 4 below is a profile of this water level with appropriate locations to represent elevations in the general area.

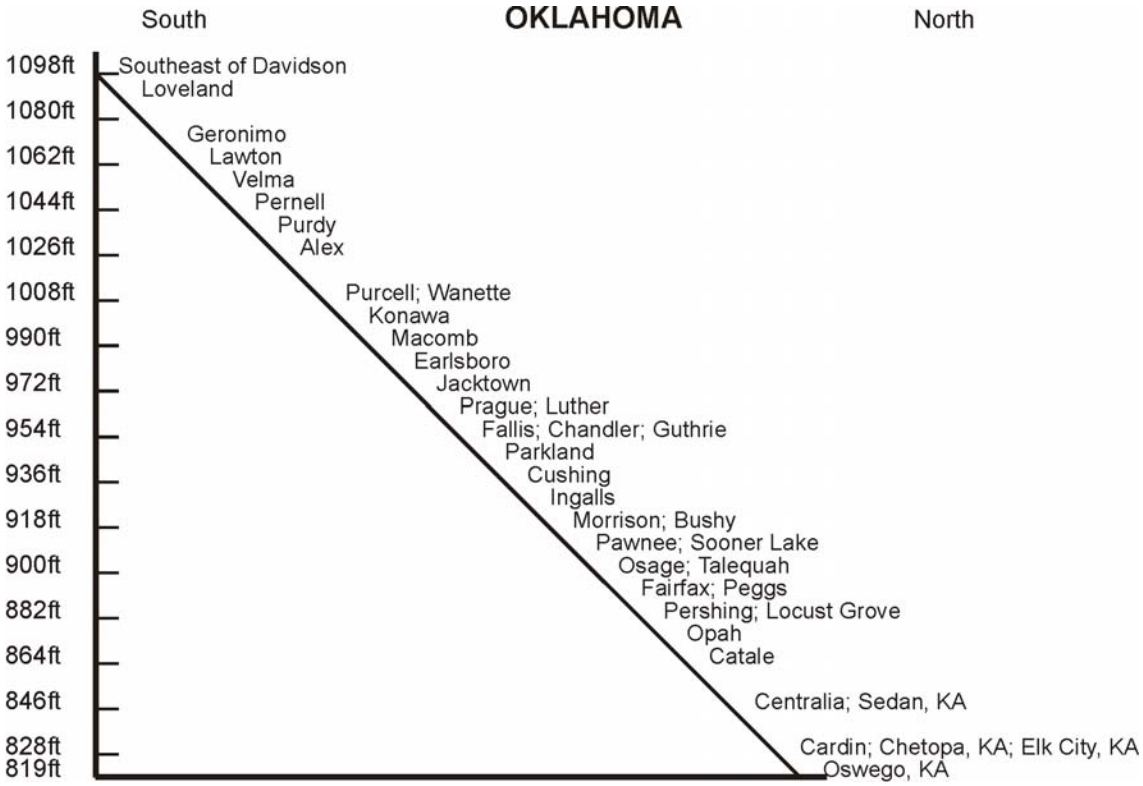

Figure 4. Shoreline profile of postulated water level that inundated the eastern half of Oklahoma at the start of the Holocene (ratio 1:1).

Figure 5 below shows the termination of a narrow embayment that extended up the Cache Creek valley to Lawton. The bed of this embayment is essentially marked by the agricultural field pattern in the photograph. The shoreline, which in this area is at roughly the 1060-1070 foot level, is located along the eastern and western periphery of this plain and separates this flat area from the flanking older undulating uplands that are a lighter tone in this photograph. Differing soil types associated with these two distinct terrain units dictate different agricultural practices. Figure 6 shows an area near Locust Grove in the northeastern corner of the State. The incised drainage pattern depicted here is generally ascribed to downcutting related to headward erosion in specific materials. Initially this perhaps was the case. However, aspects of this particular pattern, and others nearby, indicate inundation by water to at least the 880-885 foot level. I believe this inundation level relates to the transgressive flooding that this paper purports to have occurred roughly 10000 years ago. The perched nature of the lateral branches of this pattern, in relation to the gully bottoms, indicates that periodic inundations occurred after this date but at successively lower elevations. Different scales of this image and its corresponding map can be viewed at Terraserver.com.

Figure 5. Agricultural fields on this USGS photo define a small embayment of this paper's postulated Holocene level near Lawton, Oklahoma. The shoreline demarcation between the seabed and the flanking older, undulating, lighter-toned uplands is readily visible.

Figure 6. Drainage pattern near Locust Grove, Oklahoma, reflects inundation by a water level that was at roughly 880-885 feet. There is also evidence of other inundations but at successively lower levels.

Figure 7 below depicts a crude approximation of this shoreline superimposed on a topographic image of the northeast corner of the State. The somewhat subtle features on this image hint at the embayment nature in this area as well as the incursion of water up the river valleys into adjacent Kansas. The physiography displayed on this image, however, was not the result of this incursion alone as later lower incursions were also involved.

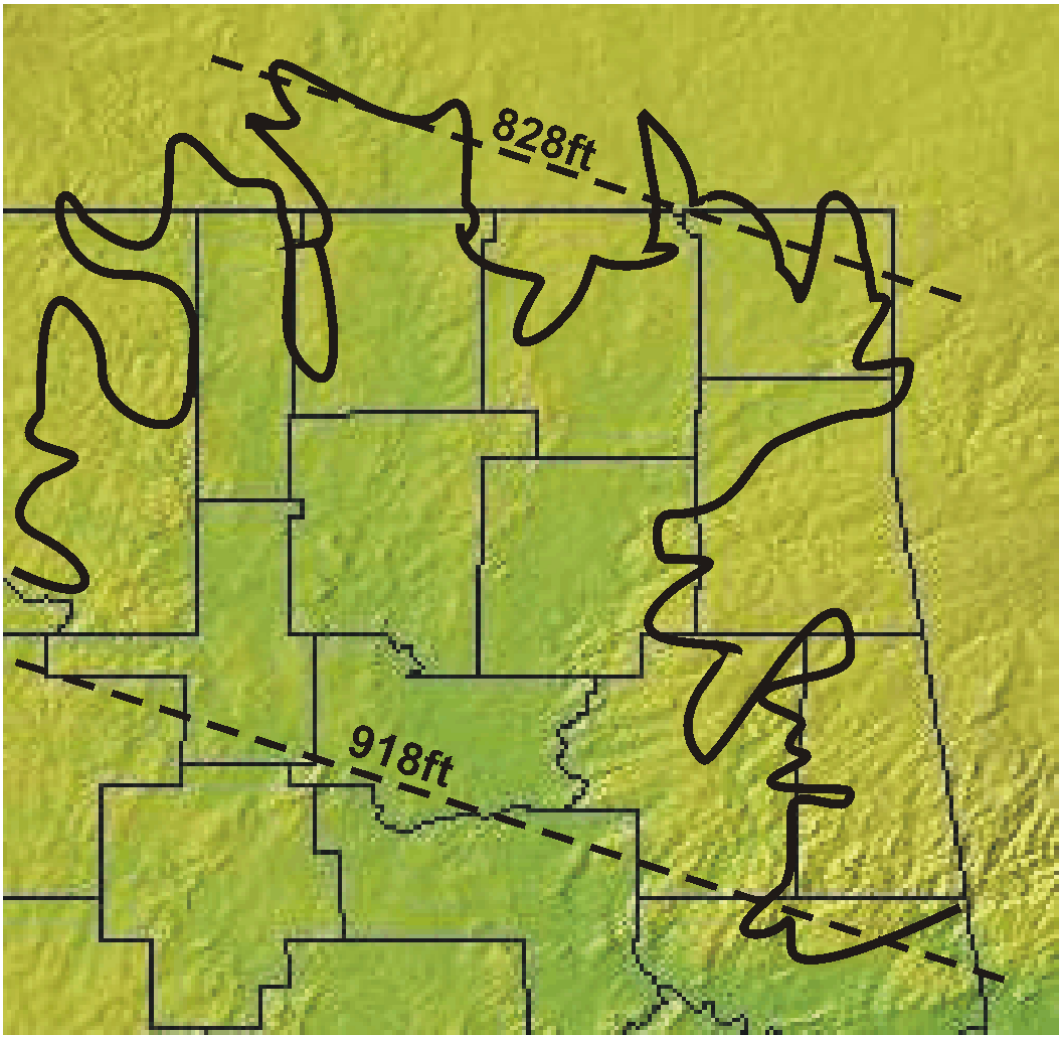

Figure 7. A crude approximation of the postulated water level in the northeast corner of the State of Oklahoma superimposed on a National Oceanic and Atmospheric Administration (NOAA) topographic map of the area. The image subtly illustrates the area's embayment nature.

References

Noble, T.W., 2004a. Sea Level and the Columbia River Basin at the Beginning of the Holocene: www.axialshift.com.

Noble, T.W., 2004b. Holocene Seawater Incursion of California's Valleys: www.axialshift.com.

Noble, T.W., 2004c. Seawater Inundation of Texas at the Beginning of the Holocene: www.axialshift.com.