

If indeed climate changes often have effects over wide areas, as appears partly to be the case, then integrating climate change with historical records holds great promise in verifying each of these two sources of information. It may be essential to increasing respect for historical records in cultures other than our own. Of course it is not correct to assume single causes for most events. And it is too easy to attribute events to some climate change, since there is always some change. So this analysis looks at the following questions: Which climate fluctuations were the most severe? Which climate changes were therefore most likely to correlate with difficulties or even failures of civilizations? The major sources stimulating this investigation were the epigraphic information on fates of Tikal and Calakmul and other sites (a possible transfer of population Calakmul to Oxpemul?) and the first two sources following. My sincere thanks to Marc Zender for telling me a few years ago that Gill 2000 contained much of value. Epigraphic history has now led me back to it.

Richardson B. Gill 2000 *The Great Maya Droughts* University of New Mexico Press
 Information on climate history is from this book and a bit from *Science* vol.322, 7 Nov. 2008. Other Mayan epigraphic information has been added to the first chart to fill out the framework, along with the approximate earliest dates in Mixtec codices. For the following 2-page bar chart, most dates of "first" and "last" inscriptions for sites are from Gill (2000) table 12 p. 326, or from Gill (2007) table 2. The bar for Calakmul reflects the defeat of 695 and the end of its dominance. See also Gill (2007) "Drought and the Maya Collapse" *Ancient Mesoamerica* 18:283-302). It summarizes the book and offers additional data sets pointing to the same sequence of climate conditions. Bristlecone pine records from the White Mountains of California also show the coldest periods, thus focusing our search for links to history around two dates, around 900 (end of the Tang; Maya "Collapse") and around 1450++ (fall of Mayapan; the famous "1 Rabbit" drought of Central Mexico 1454) Records of these last two dates mention an eclipse, so possibly the same eclipse. The reliability of records of eclipses needs to be the subject of a separate study.

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 "Chinese Cave Speaks of a Fickle Sun Bringing Down Ancient Dynasties"
 This summary article mentions ends of Tang, Yuan, and Ming dynasties, contrasting with the abundance and population growth of the Northern Sung. But in Needham's summary histories, water is prominently mentioned for the end of the Tang, not for the Yuan or the Ming.
 Joseph Needham 1953 *Science and Civilization in China* Vol.I Ch.6 p.131
 "...there had been great neglect of the waterworks during the latter part of the Thang [dynasty], hardly any having been undertaken after +750" (closely followed by)
 "The most curious thing about this time of confusion was that printing took great steps forward."

Munro Edmonson 1982 *The Ancient Future of the Itza: The Book of Chilam Balam of Tizimin*
 p.3 "I consider the claim of the Itza to have ruled Chichen Itza (and that of the Xiu to have come from Tula) in 8 Ahau (692) to be legend or myth, but the tale seems to be substantially historical from the following 8 Ahau (948) on."

Gill 2000 argues that the dates Edmonson considered to be implied by the earliest years of these records are indeed most likely correct. Those dates are entered in the last column of the chart.

Gill 2000 provides a map Fig.96 p.327 arguing that the ends of datable inscriptions on stone at various Maya sites follow a pattern, with the Southwestern zone failing first (roughly the triangle between Calakmul, Palenque, and Aguateca; and also Edzna), then the Southeast (Copan, Quirigua, Machaquilá, Caracol, Naranjo); and finally the center and northern Yucatan (Seibal, Ixlú, Tayasal, Tikal, Uaxatún, Xultún, El Palmar, La Muñeca, Dzibanché, Chichén, Uxmal).

Independent evidence is needed from paleobotany etc. for the dates at which severest droughts affected each site, along with integration of human history such as invasions up the Usumacinta, which could have ended stone inscriptions in the Southwest area earlier than droughts alone. We might argue instead that the first sites to cease producing datable stone inscriptions mainly as a result of adverse climate were central ones (Naachtun, Nakum, La Honradez, Polol, Yaxhá, Calakmul), then (Oxpemul and Machaquilá) overlapping with (Copán, Naranjo, Caracol). Migrations should also be considered (Calakmul to Oxpemul? Ucanal to Seibal?).

It is my hope that this presentation can stimulate research into integration of multiple influences on history.

China stalagmite dates rainfall history of northern China for last 1800 years to within 2.5 years (article in <i>Science</i> 2007)	Swedish tree rings > cold periods	Northern hemisphere strongest cold -- Specific years from bristelcone pines in White Mountains, California	Mayan dates	Central Mexico	Peten	Calakmul & Southeast Campeche	Yucatan and Chilam Balams
	worldwide aberration 536				El Mirador		
	535-595	550				411 noted? Calakmul begins Bat EG 431 8.19.15.12.13	
				Teotihuacan withdrew from influencing Mesoamerica		562 Calakmul defeats Tikal; Peten decline, "Hiatus"	
	650				began again		End of Xiu cycle 692
					692 Tikal rises again, 695 defeats Calakmul	Calakmul Snake EG ends 736 AD 9.15.5... Bat EG 741, 751	(Tizimín) End of Itza cycle 771
	(760-) 810	800 cold	as cold as the "Little Ice Age"	9.19.0... (AD 810)		Tikal 9.19... last major construction	Oxpemul 731 to 845 10.0.15...
	(811-) 860	860 cold	cold the entire century	10.1.10... (AD 860)	Diaspora of peoples of the gulf coast	Tikal 10.2... last date 869	Chich'en Itza 10 K'atuns 692-889
907 end of Tang dynasty (drought)	890-910	910 cold	890-930	10.4.0... (AD 910)	End of GLYPHIC MONUMENTS in stone From here on, writing more on skin & paper		889
				Mixtec Codex Bodley begins shortly before 900 AD			Yuc. books of Chilam Balam earliest dates recorded may be 692AD
	1200	1140 1240					Late 12th cent. Mayapan emerges
			1450-1500	an eclipse 1454 "1 Rabbit" year Central Mexican famine		an eclipse 1451-1454 Mayapan falls	Hunac Ceel 1451? / 1450 drought Mayapán & Yucatan < < Chilam Balam of Maní, of Chumayel
		1570-1750					