

Climate Cycles in Spring and Autumn

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Abstract. I here attempt to demonstrate a pattern of alternating wet and dry climate phases, with a wet/dry cycle duration of about 120 years, for Spring and Autumn ㄌ.

Data are the Chūn/Chyōu 春秋 (CC) entries which suggest wet versus dry weather; wet evidence is in **bold**, and dry evidence in *italics* (the grand rain ceremony 大雩 seems to be an uncertain indicator of dryness, and may have ceremonial as well as climatic connections; surprisingly, hailstorms seem to go with otherwise dry evidence). Defining a wet phase not as a phase of all wet weather, but as one where wet events outnumber dry events, we then have:

0714	3mo	heavy rainstorm ; heavy snowfall	WET PHASE
0711	aut	heavy flooding	
0709	win	good harvest	
0707	aut	<i>grand rain ceremony</i>	
0704	10mo	snowfall	
0699	sum	heavy flooding	
0698	1mo	no ice	
0687	aut	heavy flooding ; no wheat sprouts	
0683	aut	heavy flooding in [neighboring] Sùng	
0670	8mo	heavy flooding	
0669	6mo	eclipse of sun; drummed and sacrificed at shrine	[cf next]
	aut	heavy flooding ; drummed and sacrificed at shrine and gate	
0666	win	<i>major grain shortage</i> ; bought grain from Chí	DRY PHASE
0663	win	<i>did not rain</i>	
0658	10mo	<i>did not rain</i>	
0657	1mo	<i>did not rain</i>	
	4mo	<i>did not rain</i>	
	6mo	rained	[end of extended <i>drought</i> ; cf 0625, 0617, 0614]
0650	win	heavy snowfall	
0649	8mo	<i>grand rain ceremony</i>	
0647	9mo	<i>grand rain ceremony</i>	
0639	sum	<i>severe drought</i>	
0631	aut	heavy hailstorm	[need not imply heavy precipitation]
0627	12mo	hoarfrost did not kill grasscrops; plums set fruit	
0625	7mo	rained	[probable end of extended <i>drought</i> , cf 0657]
0617	7mo	rained	[probable end of extended <i>drought</i> , cf 0657]
0614	7mo	rained	[probable end of extended <i>drought</i> , cf 0657]
0602	aut	<i>severe drought</i>	
0601	10mo	rain interferes with burial	[ceremonial inconvenience?]

0599	aut	severe flooding	WET PHASE
	win	famine	[probably caused by the flood]
0594	win	famine	[probably caused by insect pests]
0593	win	very good harvest	
0590	2mo	no ice	
0588	aut	<i>grand rain ceremony</i>	
0586	aut	severe flooding	
0584	win	<i>grand rain ceremony</i>	
0575	1mo	freezing rain coats trees	
0568	aut	<i>grand rain ceremony</i>	
0565	9mo	<i>grand rain ceremony</i>	
0557	aut	<i>grand rain ceremony</i>	
0556	9mo	<i>grand rain ceremony</i>	
0549	7mo	severe flooding	[last flood recorded in CC]
	win	severe famine	[probably caused by the flood]
0545	aut	<i>grand rain ceremony</i>	DRY PHASE
0539	8mo	<i>grand rain ceremony</i>	
	win	severe hailstorm	[need not imply heavy precipitation]
0538	1mo	severe hailstorm	[cf above; hail only occurs in dry phases]
0536	9mo	<i>grand rain ceremony</i>	
0534	aut	<i>grand rain ceremony</i>	
0526	9mo	<i>grand rain ceremony</i>	
0518	8mo	<i>grand rain ceremony</i>	
0517	7mo	<i>grand rain ceremony</i>	
		<i>repeated grand rain ceremony</i>	
0509	9mo	<i>grand rain ceremony</i>	
	10mo	hoarfrost kills soybeans	
0505	sum	sent millet to Tsài	
0503	aut	<i>grand rain ceremony</i>	
	9mo	<i>grand rain ceremony</i>	
0498	aut	<i>grand rain ceremony</i>	
0495	9mo	rain interferes with burial	[ceremonial inconvenience?]
0481	win	famine	
0480	aut	<i>grand rain ceremony</i>	

Conclusion. Not all the phase boundaries are sharp (on present information, some years cannot be assigned to one phase or the other), but the pattern seems to be:

- (1) 0714-0669 wet (46 years)
- (2) 0666-0601 dry (66 years)
- (3) 0599-0549 wet (51 years)
- (4) 0545-[0480] dry (66 years)

This implies a roughly 120-year cycle with a short wet phase and a long dry phase.

Support for the first dry phase may be found in the CC entries for Dí 狄 incursions into Sinitic space (Wèi, Jǐng, Chí; even as far south as Sùng), as though the Dí grassland zone had been pushed further south. These Dí incursions were recorded for 0662, 0650, 0647, 0646, 0642, 0639, 0636, 0630, 0627, 0618, 0617, 0616, and 0614; plus the “Red Dí” in 0606 and 0605. Note that the 0662-0605 span of these entries falls precisely within the 0666-0601 dry phase proposed above on other grounds.