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*Supplement of*

## **Patterns in data of extreme droughts/floods and harvest grades derived from historical documents in eastern China during 801–1910**

**Zhixin Hao et al.**

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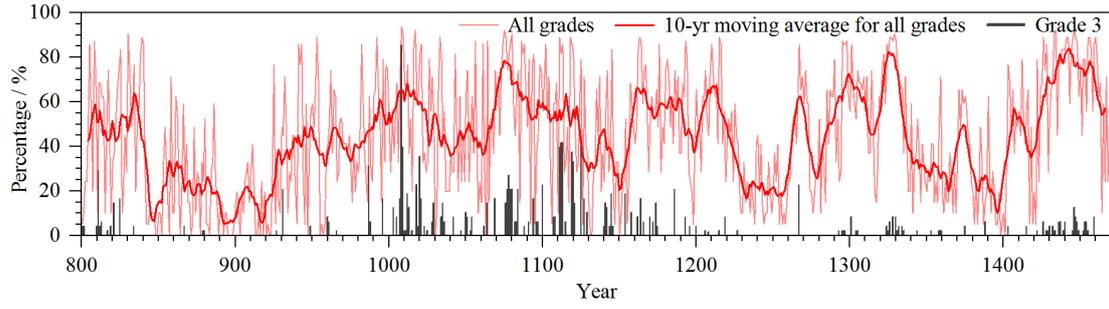
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**Table S1: Criteria for calibrating the drought/flood grade and descriptions of drought/flood disasters recorded in historical documents (Zhang, 1996)**

Grade	Frequency distribution (%)	Descriptions with meaning in historical documents
1	10	Continuous drought lasting two or more months in wet season (usually May to September) or crossing two seasons with severe intensity and impact over a broad area, such as “villages for hundreds of miles were abandoned”
2	20	Drought lasting two months or more than one month in wet season with visible impacts
3	40	Usual case (such as “rain blended well in seasons”) or nothing special to be recorded
4	20	More rains lasting less than two months or more heavy rains in wet season with evident impact
5	10	Continuous more rains lasting two or more months, or extraordinary heavy rains in wet season with severe impacts, such as “driving boats over land”

**Table S2: The classification of yearly harvests level derived from the wording recorded in historical documents (Su et al., 2014; Yin et al., 2015)**

Levels of yearly harvests	1	2	3	4	5	6
	Very poor	Poor	Slightly poor	Average	Near bumper	Bumper
Harvest rating in percentage	<40%	40%-50%	50%-60%	60-70%	70-80%	>80%
Direct wording on assessment of crop yield	Very poor harvest; Very bad year; Nothing was reaped; No harvest in vast areas	Poor harvest; Poor grain harvest; Bad year; No prospect for harvest; No any bumper crops	Slightly poor harvest; No enough crop yield; No good harvest/year	Normal harvest; Unusual year; Not bad year; Common year	Bumper harvest; Good harvest; Bumper year; Favorable year	Large bumper harvest; Large harvest; A golden year; Bumper harvest of all "five" crops
Impact wording on assessment of food security related to crop harvest directly	People became cannibal; Large famine and no food; Deadly famine year and beggars were everywhere, many people died of hunger	People were starving; No enough food for people; People had pale and anemic complexions; Production on alcohol and related drink were prohibited			Surplus grain stored in the fields; Foods and clothes more than enough	
Related features, e.g., tax remission, people's livelihoods, grain prices and grain storage status	All taxes were remitted; People fled everywhere; Pirates and beggars were rampant; Food storage was exhausted	Taxes were partly remitted; People were not engaged in agriculture; People lived in poverty; People could not support themselves; Most of the people were poor; People were impoverished and had many complaints; The granaries were nearly empty; The whole country was poor and weak; The grain price was five or ten thousand Qian per Dan; The grain price was soaring; Grain became more and more expensive	Farms were laid waste; People had no surplus food storage		People lived a prosperous and contented life; There was enough grain for store	Every family had adequate supplies of food and clothes; People were well-off; The whole country was in safety and good order; The granaries were all full; The grain price was so low that peasants could not earn enough money



**Figure S1: The percentage of available data in the reconstructed 63-stations annual drought/flood grades from 801 to 1470 CE. Pink line indicates the yearly variation for all grades in total and red bold line shows its 10-yr moving average. Black bars indicates the yearly variation for “normal” conditions (i.e. grade 3).**