



The modification of Meteorological Drought Composite Index



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Motivation

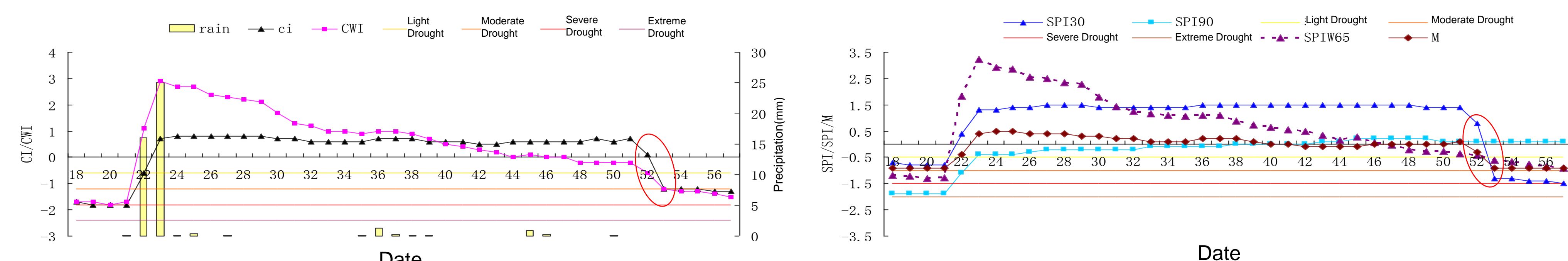


Fig.1. Daily CWI, and CI of Baise in Guangxi (From Jan. 18th to Feb. 26th, 2009)

The Composite Index (CI) (Zhang et al., 2006) is recommended as an effective operational drought monitoring index for National Standard and has been applied by National Climate Center to monitor drought conditions across the whole country in recent years. However, using CI, there are many **Uncontinurous Enhancement of Drought (UED)** in development of drought process at many stations. For the propose of decreasing UED, the modified CI (CWI) is presented in this study.

Methods

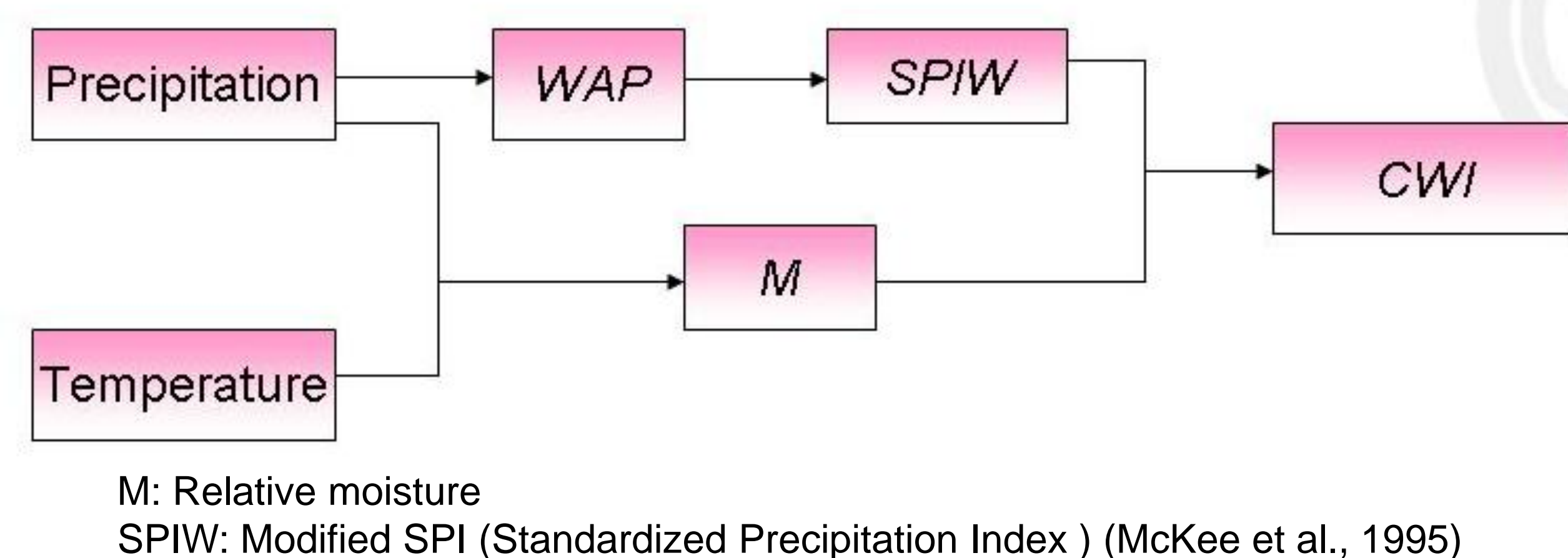


Fig. 2. Frame of modifying CI based on the weighted average of precipitation (WAP)(Lu, 2009)

Similar characteristics between CWI and CI

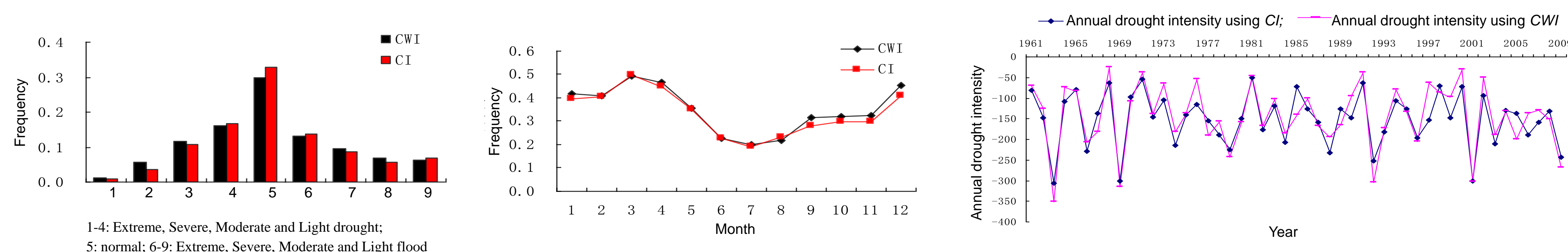


Fig. 3. Frequency of different droughts and floods categories, monthly variation based on daily CWI and CI values of Luliang in Yunnan from 1961 to 2009

Key improvements: Decrease of UED

Table1. UED in developing process of drought from Jan., 1961 to the first ten days of May, 2010

Extent	Daily change aggravates by one grade		Daily change aggravates by two grades	
	CWI	CI	CWI	CI
Luniang of Yunnan	58	134	1	12
Xichang of Sichuan	53	208	0	17
Liupanshui of Guizhou	89	198	10	26
Baise of Guangxi	40	150	0	8
Mean	60	172.5	2.75	15.75

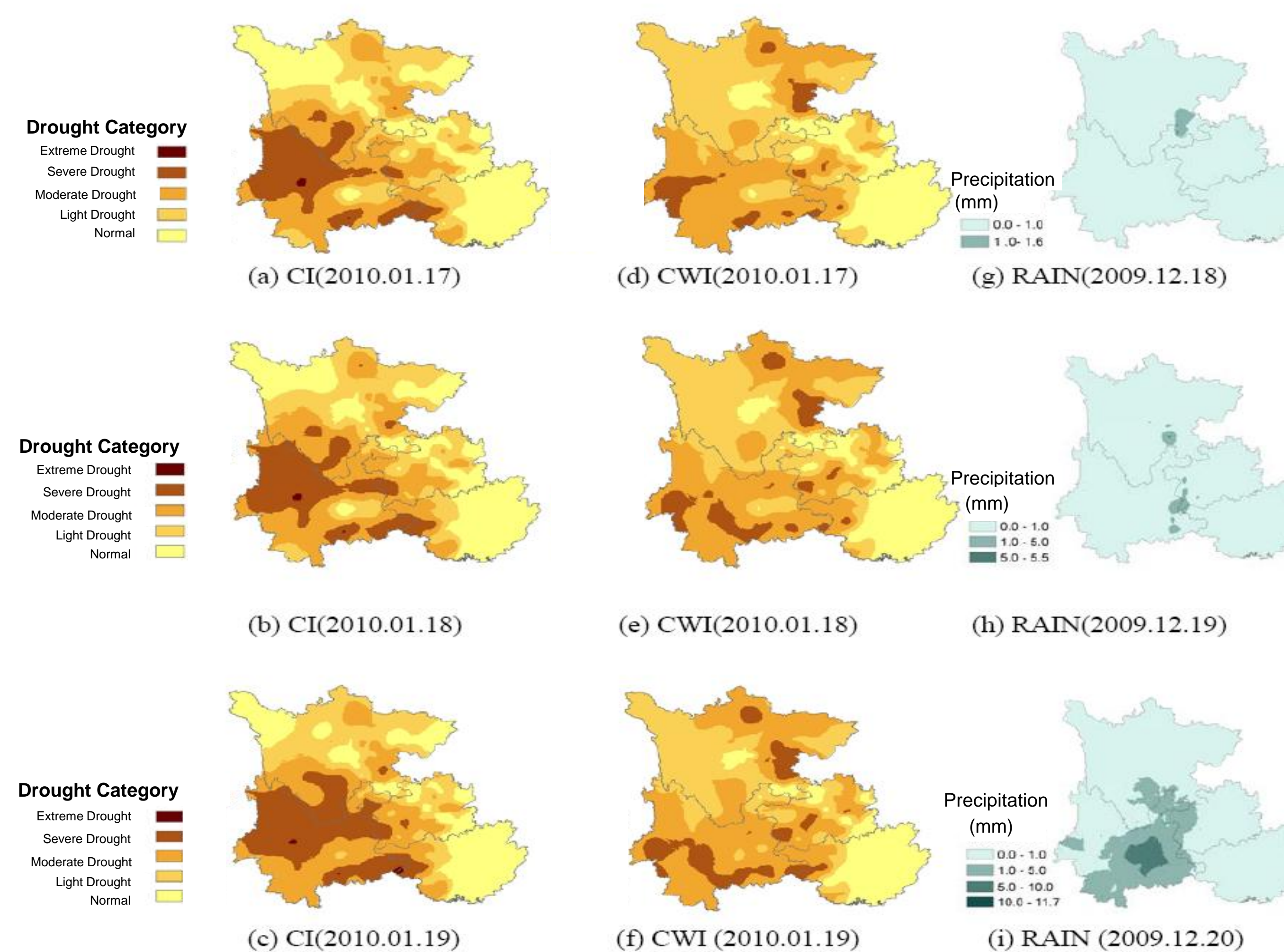


Fig.4. Daily evolution of CWI, CI and precipitation ahead of thirty days in Southwest (from Jan. 17, 2010 to Jan. 19, 2010)

A case of drought of southwest China in 2009

CI: Area of severe and medium drought increased more rapidly and category of drought became two grades during 3 days at part of stations in southwest (Fig. 4a, 4c and 4e).

CWI: The development of drought was smoother (Fig. 4d, 4e and 4f).

References

- McKee, T. B. N., Doesken, J., and Kleist, J., 1995, Drought monitoring with multiple time scales, Ninth. Conf. On Applied Climatology, Dallas, TX, American Meteorological Society, 233–236.
- Zhang Q., Zou X.K., Xiao F.J., et al. 2006, Classification of meteorological drought. GB/T 20481, National Standards of the People's Republic of China. Beijing: Standards Press of China, 1-17(In Chinese).
- Lu, E. 2009, Determining the start, duration, and strength of flood and drought with daily precipitation: Rationale, Geophysical Research Letters, 36, L12707, doi:10.1029/2009GL038817.