



## The modification of Meteorological Drought Composite Index

Haiyan Zhao (1), Ge Gao (2), Peiqun Zhang (3), and Xiaodong Yan (4)

(1) Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China(hmt567@163.com), (2) National Climate Center, Beijing, China, (3) National Climate Center, Beijing, China, (4) Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China

The Meteorological Composite Drought Composite (CI) is recommended as an effective operational drought monitoring index from National Standard and has been applied by National Climate Center to monitor drought conditions across the whole China in recent years. However, there are many UED (Uncontinuous Enhancement of Drought) in development of drought process at many stations, which UED means daily change of value is greater than or equal to one drought degree(-0.6) and the value of the days ahead of one day is equal to or less than -0.6(the light drought). The main objective of this paper is to modify CI, based on modified Standard Precipitation Index(SPIW) by Weighted Average Precipitation (WAP).Due to different weighted coefficients of daily precipitation, CWI (modified CI) can decrease UED to most extent. Taking example of Luniang of Yunnan, Xichang of Sichuan, Liupanshui of Guizhou and Baise of Guangxi, it is calculated that daily CI and CWI from January 1st ,1961 to May 10th, 2010 and analyzed that the differences between CI and CWI in frequency of every drought degree and monthly variability of drought frequency. Since CWI's formula and value range are both similar to CI, the same drought degree is adopted. It indicates that there is no significant difference between CWI and CI in frequency of drought. Moreover, it is analyzed that annual intensity of drought from 1961 to 2009. The results say CWI is similar to CI very much and there is no significant trend of annual intensity. Furthermore, as stable index of drought, UED of CI and CWI are counted. It shows that CWI has less UED than CI at all four stations. It shows CWI improves the stability of drought according to different weighted coefficients of daily precipitation. Soil moisture is observed on 8th,18th and 28th from January,1993 to May, 2010. The paper selects CI and CWI of corresponding date from daily index and analyzes the correlation with soil moisture from January, 1993 to May, 2010. CWI has greater correlation coefficients with soil moisture of 10cm at all stations than CI, and CWI has greater correlation coefficients with soil moisture of 20cm at three stations than CI. And the correlations of CI and CWI with soil moisture of two levels are all significant. Correlation statistic shows CWI has better accord with soil moisture. Above all, the analysis shows that CWI is close to the characteristics of actual drought and suitable for daily drought monitor in Southwest.