

## ***Interactive comment on “China’s water sustainability in the 21st century: a climate informed water risk assessment covering multi-sector water demands” by X. Chen et al.***

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China has been experiencing a very quick development since the 1980s. Now as the world second biggest economy body, the huge scale of industry and large amount of population cause a water resources crisis. Based on the daily 35 precipitation and temperature variability over fifty years and the current water demands in political district units, this paper examined the differences in water demand and supply and their spatio-temporal distributions in China. The paper quantitatively assessed water risk as measured by the distribution of cumulated deficits. Situation of county level water deficits and causes of water risk are given in the paper. Results of this paper revealed

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intrinsic features of water income and water demand in China which are very helpful for correctly realizing water problems. This paper can be accepted for publication with minor improvements.

(1) Lines 130-134, the daily water deficit is defined as the difference between the daily water demand and the daily renewable water supply. The deficits are accumulated to an annual quantity. In China such a big country, it is basically impossible to obtain daily data to calculate the daily water deficit covering the whole country. Actually, it is no necessary to do so. Monthly water demand and water supply are enough for calculation of water balance in a county scale.

(2) Quantity of water has a concept of probability. It is important to give water deficits with return periods (frequencies). However, quantity of water resources (runoff) and water demand both in China has been changing yearly due to climate change and intensive human activities. So it should be good to illustrate the influence of non-stationary in the runoff time series.

(3) Transfer of industries from regions to regions and from planting to manufacture in China is very quick in recent years. Water use and demand in China also show different features as compared with that of several years before. Spatio difference is even bigger for the water balances in North and South, East and West of the Country. It is necessary to describe the impact of industries transfer on water use/demand and further on the water resources crisis.

(4) Figures 1 to 6 lost the boundary of South China Sea.

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