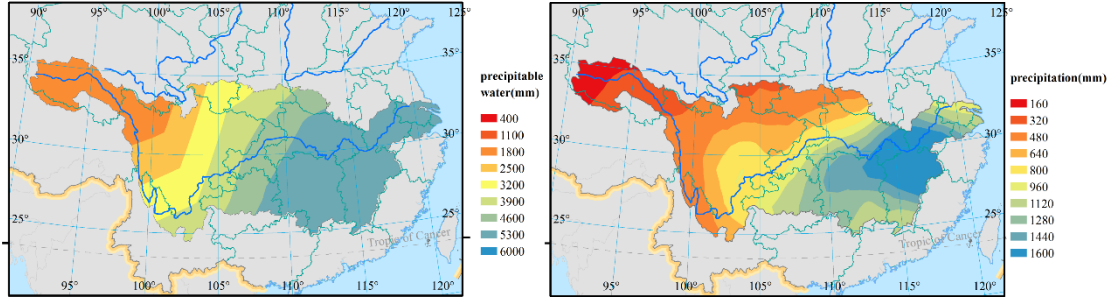
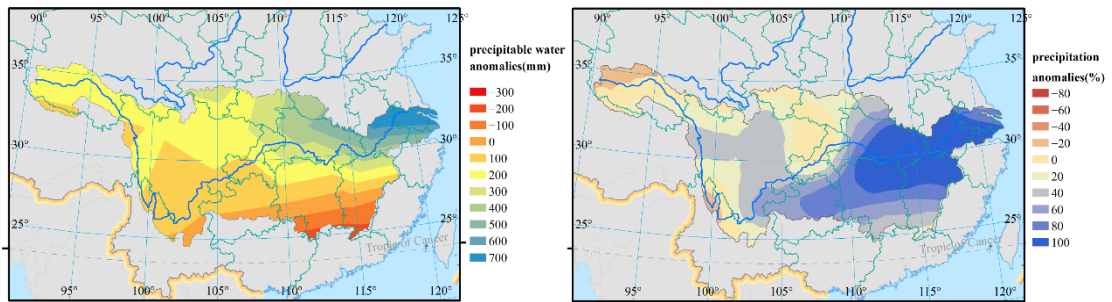


## Supplementary

We compared the precipitable water data in NCEP/NCAR reanalysis with the ground station precipitation data, and we found the precipitable water data has very low resolution and differs greatly from ground station data (Figures S1 and S2). We speculate that the NCEP/NCAR reanalysis data in 1954 mainly came from radiosonde or meteorological aircraft. There was a lack of data over Yangtze River valley at that time. So the data in the region is interpolated from the data of adjacent areas, which is very inaccurate.



**Figure S1.** (a) Precipitable water across the Yangtze river valley during April–July of 1954 based on NCEP/NCAR reanalysis. (b) Precipitation across the Yangtze river valley during April–July of 1954 based on ground station dataset.



**Figure S2.** (a) Precipitable water anomalies across the Yangtze river valley during April–July of 1954 based on NCEP/NCAR reanalysis. (b) Precipitation anomalies across the Yangtze river valley during April–July of 1954 based on ground station dataset.