



Analysis on surface and atmospheric heat source around Asian Summer Monsoon season and verification of ERA-Interim data over the Tibetan Plateau

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Firstly, we used the ERA-Interim reanalysis data to analyze the surface heat flux over past few decades in order to find out the distribution and the change of heat source over Tibetan Plateau. The surface sensible heat flux and latent heat flux of ERA data was analyzed and compared with our three sites' observation data. The Mann-Kendall (M-K) test was also used to analyze the change trend of surface heat flux over TP. The results showed that the surface of TP is a heat source during March to October. Compared with observation data, the ERA-Interim data was larger in surface sensible heat flux; the reason was that it overestimated the surface temperature over TP. Then the atmospheric heat over TP was calculated by inverse algorithm and the long-term distribution of atmospheric heat source was analyzed. In addition, the atmospheric on different layers over TP were also introduced. The results showed that The TP was an atmospheric heat source during April to September and a heat sink in other months. The atmospheric heat changed from 550hPa to 300hPa and then become stable in upper layers. In order to make the conclusion more reliable, the radiosonde data collected in western part and southern part of TP was used and compared with the ERA data. The conclusion shows a high consistency between those two kinds data.