



Quantitative estimation of land surface characteristic parameters and evapotranspiration in the Nagqu river basin over the Tibetan Plateau

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Evapotranspiration is an important component of the water cycle in the Tibetan Plateau. It is controlled by many hydrological and meteorological factors. Therefore, it is of great significance to estimate the evapotranspiration accurately and continuously. It is also drawing much attention of scientific community to understand land surface parameters and land-atmosphere water exchange processes in small watershed-scale areas. Based on in-situ conventional meteorological data in the Nagqu river basin and surrounding regions, the point-scale evapotranspiration distribution characteristics in the study area were quantitatively estimated while the main meteorological factors affecting the evaporation process were analyzed. Both polar orbiting and geostationary satellite data with different spatial resolutions (such as Landsat, SPOT, MODIS, FY-2C) were used to derive the surface characteristics in the river basin simultaneously. A time series processing was applied to remove the cloud cover and reconstruct data series. Combined with the meteorological observation data in Nagqu river basin and surrounding regions, evapotranspiration in the small watershed area of alpine region was estimated and validated by remote sensing parameterization scheme. Thus typical spatio-temporal variation characteristics of evapotranspiration in small watershed of an alpine region were successfully revealed.