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利用ENVISAT/AATSR资料反演黄土高原陇东地区地表温度

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Land surface temperature retrieval using ENVISAT/AATSR data over east Gansu of Loess Plateau

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摘要

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摘要 由于ENVISAT/AATSR资料不同角度热辐射亮度值之间存在较高的相关性从而导致较大误差的产生, 本文尝试避开这种误差源, 只选取天底观测数据对黄土高原陇东地区整层大气水汽含量及地表温度进行反演.与MODIS整层大气水汽含量产品对比验证表明, 本文结果与MODIS产品有一定差异, 但是可以直接用于大气透过率的估算.结合野外观测数据对地表温度反演结果的检验表明, 最大绝对误差为4.0℃, 平均相对误差为5.0%, 因此, 该算法在黄土高原陇东地区应用比较成功.

关键词 地表温度, AATSR, 反演, MODIS, 黄土高原

Abstract: As the high correlation among the multi-angle thermal radiances can result in large errors, in this paper, only ENVISAT/AATSR nadir data are used to estimate total atmospheric water vapor content and land surface temperature over east Gansu of Loess Plateau instead of using both nadir and forward data. Comparing the result of the retrievals with MODIS total atmospheric water vapor content products, a little difference was found between the AATSR retrievals and MODIS products, but the retrieval of water vapor content is acceptable and can be directly used in deriving atmospheric transmittance. Land surface temperature retrievals are also validated by using the ground measurements, the maximal absolute error is 4.0℃, the average relative error is 5.0%, which indicates that the estimation is successful in the Loess Plateau.

Keywords Land surface temperature, AATSR, Retrievals, MODIS, the Loess Plateau

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