



Mapping global time-variations of the evapotranspiration rate from GRACE gravimetry satellite

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Since its launch in March 2002, the GRACE mission currently measures the global time variations of the Earth gravity field at a spatial resolution of 200-300 km and at monthly scale. Tiny variations of the gravity (\sim hundreds of mm of water thickness) correspond to changes, mainly seasonal, of water storage over the continental areas. These satellite observations represent the vertically-integrated effects of the total water variations, including surface waters (rivers), soil moisture, ground water and snow cover. The Land Water (LW) solutions, previously extracted by L2 inversion from the monthly CSR GRACE geoids, were used to integrate and then solve the water mass balance equation. Thus, evapotranspiration (ET) can be globally mapped for the first time. These results were confronted with the ET predictions of existing global models such as WGHM or LaD for validation. EOF analysis of the computed time serie of maps is performed to characterize the evolution of ET rates in space and time. Trend and seasonal cycle of ET time-serie are estimated.