



Retrieving hydrological signals from current and future gravity field missions

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The Global Geodetic Observing System is formed by three pillars: Changes in Earth's shape, gravity field and rotation. Dedicated satellite missions are crucial in the determination and monitoring of the Earth's gravity field. Monitoring the gravity field and studying mass transport phenomena, responsible for the temporal variability of the gravity field, are of high interest. Especially the hydrology is of importance since the mechanisms of water redistribution and unexpected events like floods and droughts can have significant socio-economic impact. The presented study investigates in the possibilities and limits of current space geodetic missions like GRACE to observe such effects. The main target of the study is to determine the potential gain in accuracy as well as spatial and temporal resolution of target signals like hydrological events, whilst operating future mission scenarios. The results from a series of comprehensive simulation runs are presented to demonstrate the benefits to society operating dedicated future space geodetic gravity field missions.