



## **Retrieval of the Three Gorges Dam water impoundment from space laser altimetry and gravity measurements**

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The impoundment of the Three Gorges Reservoir along the Yangtze River (China), which started in 2003 and will continue to 2009, offers a unique "calibration/validation" experiment of the GRACE (Gravity Recovery And Climate Experiment) mission (Boy & Chao, 2002). By 2009, the volume of reservoir will reach 40 km<sup>3</sup>, flooding a stretch of 600 km along the Yangtze river.

In addition to the gravity measurements and inferred mass changes produced by GRACE, water level variations are retrieved from the Geoscience Laser Altimetry System (GLAS) on board the Ice, Cloud and Land Elevation Satellite (ICESat), which has produced a comprehensive, highly precise, set of along-track elevation measurements periodically since its launch in 2003.

Changes of the reservoir volume, especially the 2 first impoundment phases (June 2003 and October 2006) are compared to the results from GRACE mascon solutions. To interpret the observations, hydrological changes in the region computed from different global soil-moisture and snow models are also compared to the GRACE observations of mass changes in the Yangtze basin.