



CryoSat-2 radar altimetry for monitoring surface water in China

Jiang, Liguang; Bauer-Gottwein, Peter; Nielsen, Karina; Andersen, Ole Baltazar

Publication date:
2016

Document Version
Peer reviewed version

[Link back to DTU Orbit](#)

Citation (APA):

Jiang, L., Bauer-Gottwein, P., Nielsen, K., & Andersen, O. B. (2016). *CryoSat-2 radar altimetry for monitoring surface water in China*. Abstract from AGU FALL meeting 2016, San Francisco, California, United States.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

American Geophysical Union, Fall Meeting 2016

CryoSat-2 radar altimetry for monitoring surface water in China

Liguang Jiang¹, Peter Bauer-Gottwein¹, Karina Nielsen² and Ole B. Andersen²

(1) Department of Environmental Engineering, Technical University of Denmark, Bygningstorvet 115, 2800 Kgs. Lyngby, Denmark

(2) National Space Institute, Technical University of Denmark, Elektrovej 327, 2800 Kgs. Lyngby, Denmark

Abstract

Surface water bodies (lakes, reservoirs and rivers) are key components of the water cycle and are important water sources. Water level and storage vary greatly under the impacts of climate change and human activities. A national-scale surface water monitoring dataset for China is not available. The spatio-temporal pattern of surface water dynamics is poorly known due to insufficient in situ monitoring capabilities and restricted access to monitoring data. In comparison with other satellites, the 369 day repeat orbit enables Cryosat-2 to monitor smaller water bodies than other satellites and the SIRAL sensor has higher precise than conventional altimeters.

We investigated water level variations for large lakes, reservoirs and rivers during the period of 2010 - 2015 using Cryosat-2 altimetry data. Water storage changes for 759 water bodies were estimated, and the contribution of surface water storage (SWS) changes to terrestrial water storage (TWS) was evaluated in combination with results from the Gravity Recovery and Climate Experiment (GRACE). Moreover, water level dynamics in the Yangtze and Yellow Rivers were mapped.

Results show that 1) surface water levels change significantly at regional scale, i.e. declining in Junggar Basin, Huai River Basin and Hubei Province while rising in North Tibetan Plateau and Songnen Plain; 2) SWS change affects TWS variation greatly, especially in Tibetan Plateau ; 3) TWS in Songhua River basin has been fluctuating strongly over the past decade and the North China Plain maintained a consistently decreasing trend in TWS (- 20 mm/yr); 4) Change observed in Songnen Plain is also seen from SongLiao Water Resources Bulletin.