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Lake Level Variations of Ngangzi Co Lake in Tibetan Plateau from Retracked TOPEX and Jason-1 data

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The lakes in Qinghai-Tibetan Plateau are sensitive indicators of climate change. Most of them are closed lakes and seldom affected by human activities. Therefore, lake level variation can directly reflect the change of climate and environment. However, few in-situ gauge data can be available in this area because of terrible circumstances and other reasons. Satellite radar altimetry provides an opportunity to monitor inland lakes. This study evaluates the possibility to determinate Tibetan lake level time series using TOPEX and Jason-1 radar altimeter data. Jason-1 data have radar lose lock problem and have been ignored for inland hydrologic studies. We verify Jason-1 data can be useful after retracking for some Tibetan lakes, such as Ngangzi Co lake. Waveform classifications and corresponding optimal retrackers are discussed for frozen and unfrozen seasons respectively Atmospheric delay corrections are recalculated for TOPEX data using ECMWF modal. The bias between TOPEX and Jason-1 data is assessed over the study lake. Finally, the lake level time series between September 1992 and January 2009 are computed.

Key words: Lake level; Qinghai-Tibetan Plateau; TOPEX; Jason-1
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