

## **Study on tidal level consistency correction**

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**Abstract** The tidal level would be changed intensively if affected by some natural and manual factors. For example, the tidal level in Huangpu River has been rising according to the analysis of the measured tidal level data in recent years. So it is necessary to study or to seek a reasonable and feasible correction method for tidal level. Reference station amendment is one of the common consistency correction methods in hydrological analysis. However, the reference station that can satisfy the demands of consistency correction cannot be easily found, due to the increasingly extensive effects of human activities. The other two methods, namely amendments by extracting the trend of the original time series or the gliding average series, also have some shortcomings. Variables corrected by these approaches are only the function of the time  $t$ . In the actual amelioration, the amendment to the high tidal level, which takes place earlier, is usually larger; as a result, the amended tidal level is too high. These three methods have their own advantages and disadvantages. In this paper, a statistical test was adopted to analyse these three methods quantitatively. The annual maximum tidal level series observed in Wusong, Huangpu Park, Wujing and Mishidu stations, and the inconsistent sample series were amended, respectively, by using the recommended method.

**Key words** annual maximum; consistency; gliding average; statistical test; tidal level

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