

# Accepted Manuscript

Impact of and adaptation strategies for sea-level rise on Yangtze River Delta

Qiu-Shun Wang, Cun-Hong Pan, Guang-Zhi Zhang

PII: S1674-9278(17)30003-5

DOI: [10.1016/j.accre.2018.05.005](https://doi.org/10.1016/j.accre.2018.05.005)

Reference: ACCRE 131

To appear in: *Advances in Climate Change Research*

Received Date: 11 January 2017

Revised Date: 20 April 2017

Accepted Date: 29 May 2018

Please cite this article as: Wang, Q.-S., Pan, C.-H., Zhang, G.-Z., Impact of and adaptation strategies for sea-level rise on Yangtze River Delta, *Advances in Climate Change Research* (2018), doi: 10.1016/j.accre.2018.05.005.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



# Impact of and adaptation strategies for sea-level rise on Yangtze

## River Delta

WANG Qiu-Shun<sup>a, b</sup>, PAN Cun-Hong<sup>\*a, b</sup>, ZHANG Guang-Zhi<sup>a, b</sup>

<sup>a</sup> Zhejiang Institute of Hydraulics and Estuary, Hangzhou, 310020, China;

<sup>b</sup> Zhejiang Institute of Marine Planning and Design, Hangzhou, 310020, China

\*Corresponding author: Pan C.-H., Email address: [panch@zjwater.gov.cn](mailto:panch@zjwater.gov.cn)

### Abstract

The Yangtze River Delta characterized by a dense population and a rapidly developing economy is highly vulnerable to sea-level rise. The data from the China Oceanic Information Network and the Zhejiang Provincial Hydrology Bureau are used to analyze sea-level rise. The rate of sea-level rise in the delta was 2.4 mm per year in 1981–2015. The annual sea-level at Daishan, Dinghai, and Dongtou stations in the south wing of the delta were 4.3, 3.1, and 5 mm per year respectively over the same period. The 10-year averaged results at each station also indicate a perceptible trend of sea-level rise. Sea-level rise is contributed to a larger proportion of intensified erosion, ranging from 3% to 14% in the delta. Meanwhile, the 100-year return period of tidal level has decreased to the 50-year rank at Dongtou and Dinghai stations. Moreover, the arrival time of tidal bores at Yanguan is 4 min earlier under sea-level rise of 0.145 m than that of 0 m. The height of tidal bores and the velocities at the surface and bottom layers have an increase under sea-level rise. The maximum increases of high and low tide levels are 0.122 m and 0.016 m while the maximum increases of the velocities at the surface and bottom layers are 0.07 m s<sup>-1</sup> and 0.05 m s<sup>-1</sup>, respectively. Sea-level rise will bring about the damage of seawall, thus the design standard of constructing seawalls should adopt a higher level to minimize the associated risks in the Yangtze River Delta and its south wing.

**Keywords:** Coastal erosion; Sea-level rise; Saltwater intrusion; Tidal bore; Yangtze River Delta; Zhejiang province

Download English Version:

<https://daneshyari.com/en/article/8906179>

Download Persian Version:

<https://daneshyari.com/article/8906179>

[Daneshyari.com](https://daneshyari.com)