

Chayanut Buathongkhu 2006: Numerical Simulation Study on Controlling of Salt Intrusion through the Chao Phraya Estuary by Chao Phraya Dam Drainage.
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In a present day the damage occurred by the salt intrusion through the Chao Phraya estuary is in a critical time and more stronger especially, in the dry season because of the tidal current in the Chao Phraya estuary. It impacts the unbilled water utilization, publicly water production, agriculture and industries. So, the salt intrusion through the Chao Phraya estuary should be watched carefully for the necessity of the enduring use of the water in Chao Phraya River.

In the study, the three dimension numerical method was used to consider the complex of the tidal current, the natural characteristic of the river, the wind and the water discharge from Chao Phraya dam in order to controll the salt intrusion through the Chao Phraya estuary. The maximum saltiness in the dry season in 1995-1999, the value of harmonic (M_2) at the Fort Phra Julajomklao Station (km.0) and the rate of water discharge from Chao Phraya dam were also considered in the same time.

The result of the study about the salt intrusion through the Chao Phraya estuary was considered from the result of Meander river, the longitudinal dispersion salinity coefficient (D_L) and transversal dispersion salinity coefficient (D_T), 2,500 square meters per second. The distance of the salt intrusion which did not impact the water utilization for agriculture and water supply was 58 km. and 87 km. from the mouth of river accordingly. The percentage of the saltiness compared with the one at the outdoor measurement station at Samutprakarn Station (km.8), Sapanuth bridge Station (km.49) and Nonthaburi Station (km.65) was 3.393, 9.20, 6.343 accordingly. The mixed type of sea water and fresh water at the Chao Phraya estuary in the dry season was well mixed type. Besides, the relationship of the water discharge drainage of Chao Phraya dam, the saltiness and the intrusion distance were set as an alignment chart in order to use as the tools for controlling the salt intrusion through Chao Phraya estuary and it can be adapted to use in the same problem area .

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Thesis Advisor's signature

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