

# Abstract

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## **SEA LEVEL CHANGE IN ALEXANDRIA WATER**

• The sea level in the Eastern Harbor and Western almost identical, but the values in the Eastern Harbor to be slightly higher than the value in the western Harbor but the both almost identical. • The Sea level change in Western harbor the less value of Mean in April is 0.36899 and the highest value in December is 0.58482, the minimum 0.13 m in April and the Maximum is 0.80 m in two months in October and December. In Eastern harbor the less value of Mean in April is 0.31939 and the highest value in December is 0.58393, the minimum 0.14m in April and the Maximum is 0.82m in December, the difference in sea level between Eastern and Western Harbor in minimum. Sea Level decrease in April and increase in May and the difference of maximum Sea Level decrease in September and increase in March. • The Histograms of Sea level change indicate the sea level in Western Harbor to be slightly higher than the Sea level in Eastern Harbor. In Surge indicate the Surge in Eastern Harbor to be slightly higher than the Surge in Western Harbor. • The regression equation of sea level change between Eastern Harbor (E.H.) and Western Harbor (W.H.) :  $\text{Sea Level E.H.} = 0.970144 \times \text{Sea Level W. H.} - 0.004852$  • The Harmonic analyses in Eastern Harbor in case of mean sea level value from May 1996 to December 1996 the mean between (43.4 to 57.3 cm) and at Western Harbor be between (44.3 to 58.2 cm) in the Western harbor. • The difference between Eastern and Western Harbor in case of harmonic analysis constants the value of the difference are significant in August, September and November ,MM in May and December the difference is 2.138 cm and July ,August ,October and November the difference almost 1.0 cm ,generally the differences are clearly MM , MSF ,OO1, K1 , O1 , 2SM2 • The difference of the Surge in the Western Harbor to be higher than in Eastern Harbor • The Surge in Western harbor the minimum - 13cm in April and the Maximum is 49cm in December, but In Eastern harbor the minimum -0.13cm in April and the Maximum is 46cm in December. The difference in the Surge between Eastern and Western Harbor the minimum Surge decreases in October and increases in March and the in maximum the Surge decreases in October and increases in June. • The Regression Equations of Surge between Eastern Harbor (E.H.) and Western Harbor (W.H.):  $\text{Surge E.H.} = 0.780705 \times \text{Surge W.H.} + 2.746139$  The area of the Eastern Harbors 2607969 m<sup>2</sup> and the mass of water 13892588 m<sup>3</sup>, the range of water entrance (km<sup>3</sup> per day) in period of study minimum value 0.480254 which occurs at March and maximum value 1.072632 at May1996.The rate of renewal water in Eastern harbor the minimum 1.295186 which occurs at May and maximum 2.881959 at March 1996.