

## Three-Dimensional Finite Element Modeling for the Yellow Sea

- Initial approach -

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In order to understand the tidal hydrodynamics of the Yellow Sea and parts of the East China Sea, we have developed a three-dimensional, fine resolution, nonlinear, harmonic finite element model. Major four tidal constituents,  $M_2$ ,  $S_2$ ,  $K_1$  and  $O_1$  are used as forcing along the open boundary. Due to the shallowness of the region, tidal results are strongly affected by the bottom roughness coefficients, especially for the quadratic form. Overall tendencies agree fairly well with previous numerical computations with a two-dimensional finite difference model, except in the Bohai Bay region where the  $M_2$  amplitudes are a little low. However the phases have good agreement with five amphidrome locations. Continuing study will give a better understanding of the tidal physics for the Yellow Sea than with other coarse finite difference models.

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