Development and applications of the coastal quasigeostrophic ocean model to the case of multiple coasts and multiply connected domains

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The Harvard quasigeostrophic ocean model has been generalized to be applicable to semi-enclosed or closed ocean domains bounded by multiple segments of coasts and/or multiply connected geometry. Inviscid coastal boundary conditions and consistency constraints are required and the Greens function methods are utilized in the solution algorithm. The performance of the model is guaranteed by comparison with analytical solutions of Flierl (1977) and cases derived from them. The methodology is applied to the quasigeostrophic dynamical modeling of the Levantine Basin. The robustness of the method is illustrated by the stable preliminary predictions and sensitivity runs.

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