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Tidal dynamics in the Southeast Asia seas

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The Southeast Asia seas (SEAS) are the most complicated water body that connects two of the largest oceans of the Earth, the Pacific and the Indian. Surface elevation and volume transport of the SEAS are predominantly governed by ocean fluxes and tidal forces. A numerical model of tides in the SEAS has been developed using the Semi-implicit Eulerian–Lagrangian Finite-Element (SELFE) model. Bathymetry is derived from Jeppesen's C-MAP product and the General Bathymetric Chart of the Oceans One Minute Grid (GEBCO1). An unstructured triangular mesh has been generated to better resolve the irregular coastlines. Tide potential is considered over the entire domain as well as at the open boundaries, and is corrected to account for volume transport. The surface elevation and current agree well with tide records and ADCP measurement, as well as are consistent with results from tidal prediction softwares (TotalTide, MIKE21 and FES2012). The model estimates of seasonal fluxes in the SEAS are similar to previous studies.