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## Schwarz-Christoffel Conformal Mapping based Grid Generation for Global Oceanic Circulation Models

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We propose new grid generation algorithms for global ocean general circulation models (OGCMs). Contrary to conventional, analytical forms based dipolar or tripolar grids, the new algorithm are based on Schwarz-Christoffel (SC) conformal mapping with prescribed boundary information. While dealing with the conventional grid design problem of pole relocation, it also addresses more advanced issues of computational efficiency and the new requirements on OGCM grids arisen from the recent trend of high-resolution and multi-scale modeling. The proposed grid generation algorithm could potentially achieve the alignment of grid lines to coastlines, enhanced spatial resolution in coastal regions, and easier computational load balance. Since the generated grids are still orthogonal curvilinear, they can be readily 10 utilized in existing Bryan-Cox-Semtner type ocean models. The proposed methodology can also be applied to the grid generation task for regional ocean modeling when complex land-ocean distribution is present.