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2D SALINITY CALCULATIONS FOR LOWER ST. JOHNS RIVER USING DISCONTINUOUS GALERKIN METHODS

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A discontinuous Galerkin-based code [1] for depth-integrated circulation (shallow water equations) and transport (advection-diffusion) was applied to simulate hydrodynamics and longitudinal salinity transport in the lower St. Johns River [2] as driven by tides (or hydrograph), meteorology and freshwater inflows. The results from mass conservation tests confirmed that mass is numerically conserved within the model. As a corollary of the mass conservation tests, tidal prisms were quantified and demonstrated to be highly spatial variability. The model was validated at nine monitoring stations on the basis of tides, tidal currents, water levels and salinity.

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