



## **Periodic stratification at the head of estuarine salt tip**

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Conventionally, tidal straining has been known to induce more stratified condition during ebb in estuarine settings, i.e., strain-induced periodic stratification (SIPS). As opposed to the traditional tidal straining concept, observation data from the upper reach of Chesapeake Bay demonstrate that the water column is more stratified during flood than ebb, which results in condensed suspended sediment concentration near the bed during flood. In order to assess the stability of stratified flow, a composite Froude number is estimated for the outputs from an idealized 2-dimensional vertical numerical simulation. The results show the consistency with the conventional tidal straining in case of relatively stronger density-induced bottom flow (e.g., Normal Periodic Stratification, NPS). However, the opposite case, i.e., stratified flow during flood, is observed when freshwater flow is relatively stronger in the upper layer (i.e., Inverse Periodic Stratification, IPS). Finally, this study shows that a composite Froude number analysis can be a proper indicator representing the tidal variability in the mixing pattern at the head of estuarine salt tips.