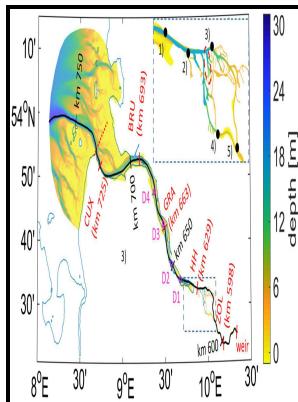


# Numerical modelling of vertical circulation in lakes and estuaries

University of Birmingham - Modelling circulation and vertical mixing in estuaries



Description: -

-numerical modelling of vertical circulation in lakes and estuaries

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Notes: Thesis (Ph.D.) - University of Birmingham, Dept of Civil Engineering.

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**Modeling Influence of Stratification on Lateral Circulation in a Stratified Estuary in: Journal of Physical Oceanography Volume 39 Issue 9 (2009)**

Most major contributors to longitudinal estuarine circulation seem to roughly scale with the Simpson number, as shown in. Contours are for maximum flood and maximum ebb conditions; along-channel velocity is contoured in 0. Because the dynamics near the surface strongly depend on surface wind stress, surface heat fluxes, and surface waves, processes which have been ignored here, it is not clear at this point how much stake to put in the exact value of 0.

## Modelling circulation and vertical mixing in estuaries

In , the first term on the right-hand side is the transport due to the river discharge, the second term is the transport due to estuarine circulation, and the third term is due to the covariance between velocity and concentration see also.

## Numerical Modeling of Estuarine Circulation in the Geum River Estuary, Korea

The cross-channel grid is subsampled by a factor of 2 for clarity in a and b. This rectification mechanism was recently highlighted by , who derive the contribution of the lateral advective terms analytically.

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One explanation for this could be that, according to the law of the wall, for unchanged bottom friction velocity and unchanged vertical-mean current velocity, larger values of bottom roughness increase vertical shear outside a narrow boundary layer near the bed.

## Modelling circulation and vertical mixing in estuaries

This pattern is reversed during ebb tides.



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