

# **Low-inflow estuaries: hypersaline, inverse and thermal estuaries.**

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## OUTLINE OF LECTURE

- Introduction, including definition of terms and review of how density depends on salinity and temperature.
- Factors accounting for estuarine waters being warmer, saltier and denser than ambient coastal waters. Identification of estuary types, locations and seasons where low-inflow characteristics are observed.
- Salt and heat balances driven by surface fluxes.
- Hydrodynamic response in inverse estuaries (density-driven exchange flow), including Stommel transition.
- Seasonal, tidal and synoptic changes in estuary balances and structure (differences between small and large basins).
- Long-term residence as cause or symptom of hypersaline, inverse and thermal estuaries. Longitudinal exchange and longitudinal zonation.
- Case studies.
- Implications of transport patterns for ecology and water quality in estuaries. Prospect of environmental change (water management and climate).
- Conclusion