

1. Record Nr.	UNINA9910830438303321
Autore	Pedersen Flemming Bo <1939->
Titolo	Environmental hydraulics : stratified flows / / Flemming Bo Pedersen
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer-Verlag, , [1986] ©1986
ISBN	1-118-66970-3 3-642-86600-X
Edizione	[1st ed. 1986.]
Descrizione fisica	1 online resource (VIII, 278 p.)
Collana	Lecture Notes on Coastal and Estuarine Studies ; ; Volume 18
Disciplina	627
Soggetti	Environmental hydraulics Stratified flow
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	I Non-Miscible Stratified Flows -- 1. Introduction -- 2. Pressure Conditions and Potential Energy -- 3. The Motion of Non-Miscible Stably Stratified Fluids -- II Miscible Stratified Flows -- 4. The Equations of Continuity and Motion for Miscible Stratified Flows -- 5. IRfT = The Bulk Flux Richardson Number -- 6. Entrainment (VE) -- 7. Interfacial Shear Stress (?) -- 8. Dense Bottom Currents -- 9. Free Penetrative Convection -- 10. Wind-Driven Stratified Flow -- 11. Horizontal Buoyant Flow -- 12. Vertical Buoyant Jets and Plumes -- III Case Studies -- 14. Sediment Laden Buoyancy Jets -- 15. Dense Bottom Currents in Rotating Ocean -- 16. Laboratory Experiments on Entrainment due to Free Convection -- 17. Steady Wind Set-up in Prismatic Lakes -- 18. Division of the River Neva. How will it influence the Baltic Sea, the Belt and Cattegat -- 19. Surface Jet at Small Richardson Numbers -- 20. Internal Seiches in a Stratified Sill Fjord -- 21. On Arctic Lakes. A thermodynamic and hydrodynamic investigation -- 22. A Multipurpose Stratified Flow Flume.
Sommario/riassunto	The present lecture notes cover a first course in th~ most common types of stratified flows encountered in Environ- mental Hydraulics. Most of the flows are buoyancy flows, i.e. currents in which gravity acts on small density differences. Part I presents the basic concepts of

stagnant, density-stratified water, and of flowing non-miscible stratified fluids. The similarity to the (presumed) well-known open channel flow, subject to a reduced gravity, is illustrated. Part II treats the miscible density stratified flows. In outlining the governing equations, the strong coupling between the turbulence (the mixing) and the mean flow is emphasized. The presentation and discussions of the basic governing equations are followed by illustrative examples. Separate chapters are devoted to Dense Bottom Currents, Free Penetrative Convection, Wind-driven Stratified Flow, Horizontal Buoyancy Flow and Vertical jet/plumes. Part III presents some examples of practical problems solved on the basis of knowledge given in the present lecture notes. It is the author's experience that the topics treated in chapter 8 and in the subsequent chapters are especially well-suited for self-tuition, followed by a study-circle. ACKNOWLEDGEMENT The author has benefited by the valuable help of his colleagues at the Institute of Hydrodynamics and Hydraulic Engineering, the Technical University of Denmark, especially our librarian Mrs. Kirsten Djørup, our secretary Mrs. Marianne Lewis and our technical draftsman Mrs. Liselotte Norup.
