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Nota di contenuto	A Brief Review of Algebra and Calculus -- Some Properties and Kinematics of Fluids -- Equations Governing the Motion of a Fluid (the Equation of Motion) -- Flow of a Homogeneous Incompressible Viscous Fluid -- Rotating, Homogeneous, Incompressible Fluids -- Shallow Water Theory -- Quasi-geostrophic Theory.
Sommario/riassunto	This textbook develops a fundamental understanding of geophysical fluid dynamics by providing a mathematical description of fluid properties, kinematics and dynamics as influenced by earth’s rotation. Its didactic value is based on elaborate treatment of basic principles, derived equations, exemplary solutions and their interpretation. Both starting graduate students and experienced scientists can closely follow the mathematical development of the basic theory applied to the flow of uniform density fluids on a rotating earth, with (1) basic physics introducing the "novel" effects of rotation for flows on planetary scales,

(2) simplified dynamics of shallow water and quasi-geostrophic theories applied to a variety of steady, unsteady flows and geophysical wave motions, demonstrating the restoring effects of Coriolis acceleration, earth’s curvature (beta) and topographic steering, (3) conservation of vorticity and energy at geophysical scales, and (4) specific applications to help demonstrate the ability to create and solve new problems in this very rich field. A comprehensive review of the complex geophysical flows of the ocean and the atmosphere is closely knitted with this basic description, intended to be developed further in the second volume that addresses density stratified geophysical fluid dynamics. .