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Nota di contenuto	Preface -- 1. Introduction -- 2. The governing equations and asymptotic approximations to them. 2.1. The governing equations. 2.2. Key asymptotic regimes. 2.3. Derivation of the semi-geostrophic approximation. 2.4. Various approximations to the shallow water equations. 2.5. Various approximations to the three-dimensional hydrostatic Boussinesq equations -- 3. Solution of the semi-geostrophic equations in plane geometry. 3.1. The solution as a sequence of minimum energy states. 3.2. Solution as a mass transportation problem. 3.3. The shallow water semi-geostrophic equations. 3.4. A discrete solution of the semi-geostrophic equations. 3.5. Rigorous results on existence of solutions -- 4. Solution of the semi-geostrophic equations in more general cases. 4.1. Solution of the semi-geostrophic equations for compressible flow. 4.2. Spherical semi-geostrophic theory. 4.3. The shallow water spherical semi-geostrophic equations. 4.4. The theory of almost axisymmetric flows -- 5. Properties of semi-geostrophic solutions. 5.1. The applicability of

	semi-geostrophic theory. 5.2. Stability theorems for semi-geostrophic flow. 5.3. Numerical methods for solving the semi-geostrophic equations -- 6. Application of semi-geostrophic theory to the predictability of atmospheric flows. 6.1. Application to shallow water flow on various scales. 6.2. The Eady wave. 6.3. Simulations of baroclinic waves. 6.4. Semi-geostrophic flows on the sphere. 6.5. Orographic flows. 6.6. Inclusion of friction. 6.7. Inclusion of moisture -- 7. Summary.
Sommario/riassunto	Aims to counteract the fashion for theories of "chaos" and unpredictability by describing a theory that underpins the accuracy of deterministic weather forecasts. This book suggests that further improvements are possible.