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Titolo	Englands thankes, or, A message of thankes [[electronic resource]] : delivered by Guild-Hall, from our Mother England to all her true hearted children that have been any way assistant to the Parliament in maintaining the honour of the King, the true reigion, liberty of the subjects, and priviledges of Parliament : with a caveat to the vulgars, that they speake not immodestly of the king and envie not his person but leave all things to be controverted by the grave and wise Parliament and leave the issue to God
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Nota di contenuto	Cover; Contents; Preface; 1. Introduction; 1.1 THE ATMOSPHERIC CONTINUUM; 1.2 PHYSICAL DIMENSIONS AND UNITS; 1.3 SCALE ANALYSIS; 1.4 FUNDAMENTAL FORCES; 1.4.1 Pressure Gradient Force; 1.4.2 Gravitational Force; 1.4.3 Viscous Force; 1.5 NONINERTIALREFERENCEFRAMESAND?APPARENTZ FORCES; 1.5.1 Centripetal Acceleration and Centrifugal Force; 1.5.2 Gravity Force; 1.5.3 The Coriolis Force and the Curvature Effect; 1.5.4 Constant Angular Momentum Oscillations; 1.6 STRUCTURE OF THE STATIC ATMOSPHERE; 1.6.1 The Hydrostatic Equation; 1.6.2 Pressure as a Vertical Coordinate 1.6.3 A Generalized Vertical CoordinatePROBLEMS 1; MATLAB EXERCISES 1; Suggested References 1; 2. Basic Conservation Laws; 2.1 TOTAL DIFFERENTIATION; 2.1.1 Total Differentiation of a Vector in a Rotating System; 2.2 THE VECTORIAL FORM OF THE MOMENTUM EQUATION IN ROTATING COORDINATES; 2.3 COMPONENT EQUATIONS IN SPHERICAL COORDINATES; 2.4 SCALE ANALYSIS OF THE EQUATIONS OF MOTION; 2.4.1 Geostrophic Approximation and GeostrophicWind; 2.4.2 Approximate Prognostic Equations; the Rossby Number; 2.4.3 The Hydrostatic Approximation; 2.5 THE CONTINUITY EQUATION; 2.5.1 An Eulerian Derivation 2.5.2 A Lagrangian Derivation2.5.3 Scale Analysis of the Continuity

Equation; 2.6 THE THERMODYNAMIC ENERGY EQUATION; 2.7 THERMODYNAMICS OF THE DRY ATMOSPHERE; 2.7.1 Potential Temperature; 2.7.2 The Adiabatic Lapse Rate; 2.7.3 Static Stability; 2.7.4 Scale Analysis of the Thermodynamic Energy Equation; PROBLEMS 2; MATLAB EXERCISES 2; Suggested References 2; 3. Elementary Applications of the Basic Equations; 3.1 BASIC EQUATIONS IN ISOBARIC COORDINATES; 3.1.1 The Horizontal Momentum Equation; 3.1.2 The Continuity Equation; 3.1.3 The Thermodynamic Energy Equation; 3.2 BALANCED FLOW
3.2.1 Natural Coordinates 3.2.2 Geostrophic Flow; 3.2.3 Inertial Flow; 3.2.4 Cyclostrophic Flow; 3.2.5 The Gradient Wind Approximation; 3.3 TRAJECTORIES AND STREAMLINES; 3.4 THE THERMAL WIND; 3.4.1 Barotropic and Baroclinic Atmospheres; 3.5 VERTICAL MOTION; 3.5.1 The Kinematic Method; 3.5.2 The Adiabatic Method; 3.6 SURFACE PRESSURE TENDENCY; PROBLEMS 3; MATLAB EXERCISES 3; 4. Circulation and Vorticity; 4.1 THE CIRCULATION THEOREM; 4.2 VORTICITY; 4.2.1 Vorticity in Natural Coordinates; 4.3 POTENTIAL VORTICITY; 4.4 THE VORTICITY EQUATION; 4.4.1 Cartesian Coordinate Form 4.4.2 The Vorticity Equation in Isobaric Coordinates 4.4.3 Scale Analysis of the Vorticity Equation; 4.5 VORTICITY IN BAROTROPIC FLUIDS; 4.5.1 The Barotropic (Rossby) Potential Vorticity Equation; 4.5.2 The Barotropic Vorticity Equation; 4.6 THE BAROCLINIC (Ertel) POTENTIAL VORTICITY EQUATION; 4.6.1 Equations of Motion in Isentropic Coordinates; 4.6.2 The Potential Vorticity Equation; 4.6.3 Integral Constraints on Isentropic Vorticity; PROBLEMS 4; MATLAB EXERCISES 4; Suggested References 4; 5. The Planetary Boundary Layer; 5.1 ATMOSPHERIC TURBULENCE; 5.1.1 The Boussinesq Approximation 5.1.2 Reynolds Averaging

Sommario/riassunto

This revised text presents a cogent explanation of the fundamentals of meteorology, and explains storm dynamics for weather-oriented meteorologists. It discusses climate dynamics and the implications posed for global change. The Fourth Edition features a CD-ROM with MATLAB® exercises and updated treatments of several key topics. Much of the material is based on a two-term course for seniors majoring in atmospheric sciences. * Provides clear physical explanations of key dynamical principles * Contains a wealth of illustrations to elucidate text and equations, plus end-of-chapter pr