1. Record Nr. UNISALENTO991003066159707536

Autore	Elliott, S.R.
Titolo	The physics and chemistry of solids / S. R. Elliott
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Lingua di pubblicazione	Inglese
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Autore	Kantha L. H
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Descrizione fisica	1 online resource (981 pages)
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Altri autori (Persone)	ClaysonCarol Anne
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Nota di bibliografia	Includes bibliographical references (p. 865-909) and index.
Nota di contenuto	Cover; Contents; List of Acronyms; List of Symbols; Foreword; Preface; Prologue; Chapter 1. Introduction to Ocean Dynamics; 1.1 Types, Advantages, and Limitations of Ocean Models; 1.2 Recent Examples; 1.3 Governing Equations; 1.4 Vorticity Conservation; 1.5 Nondimensional Numbers and Scales of Motion; 1.6 Geostrophic Flow and Thermal Wind; 1.7 Inertial Motions; 1.8 Ekman Layers; 1.9 Sverdrup Transport; 1.10 Western Boundary Intensification (Stommel Solution); 1.11 Gyre Scale Circulation (Munk Solution); 1.12 Barotropic Currents over Topography; 1.13 Baroclinic Transport over Topography 1.14 Coastal Upwelling and Fronts; 1.15 Mesoscale Eddies and Variability; 1.16 Thermohaline Circulation and Box (Reservoir) Models; 1.17 Numerical Models; Chapter 2. Introduction to Numerical Solutions; 2.1 Introduction; 2.2 Ordinary Differential Equations; 2.3 Partial Differential Equations; 2.4 Elliptic Equations and Steady-State Problems; 2.5 Time Dependent Problems; 2.6 Finite-Difference (Grid Point) Methods; 2.7 Spectral (Spectral Transform) Methods; 2.8 Finite-Element Methods; 2.9 Parameterization of Subgrid Scale Processes; 2.10 Lateral Open Boundary Conditions; 2.11 Computational Issues 2.12 Examples; Chapter 3. Equatorial Dynamics and Reduced Gravity Models Solutions; 3.1 Oceanic Dynamical Response to Forcing; 3.2 Governing Equations; 3.3 Equatorial Waves; 3.4 Equatorial Currents; 3.5 Reduced Gravity Model of Equatorial Processes; Chapter 4. Midlatitude Dynamics and Quasi-Geostrophic Models; 4.1 Linear Motions; 4.2 Continuous Stratification; 4.3 Geostrophic Adjustment and Instabilities; 4.4 Spinup; 4.5 Quasi-Geostrophic Models; Chapter 5. High-Latitude Dynamics and Sea-Ice Models; 5.1 Salient Features of Ice Cover; 5.2 Momentum Equations for Sea Ice 5.3 Constitutive Law for Sea Ice (Ice Rheology); 5.4 Continuity Equations for Sea Ice; 5.5 Response of Sea Ice to Storm Passage; 5.6 Numerics; Chapter 6. Tides and Tidal Modeling; 6.1 Description of Tides; 6.2 Formulation: Tidal Potential; 6.3 Body, Load, Atmospheric, and Radiational Tides; 6.4 Dynamical Theory of Tides: Laplace Tidal Equations; 6.5 Equilibrium Theory of Tides; 6.6 Tidal Analysis: Orthotides; 6.7 Tidal Currents; 6.8 Global Tidal Models; 6.9 Regional Tidal Models; 6.10 Geophysical Implications; 6.11 Changes in Earth's Rotation; 6.12 Baroclinic (Internal) Tides 6.13 Long-Period Tides; 6.14 Shallow Water Tides and Residual Currents; 6.15 Summary; Chapter 7. Coastal Dynamics and Barotropic Models; 7.1 Wind- and Buoyancy-Driven Currents; 7.2 Tidal Motions; 7.3 Continental Shelf Waves; 7.4 Modeling Shelf Circulation; 7.5 Barotropic Models; Chapter 8. Data and Data Processing; 8.1 In Situ Observational Data; 8.2 Remotely Sensed Data; 8.3 NWP Products; 8.4 Preprocessing of Observational Data and Postprocessing of Model Output; Chapter 9. Sigma-Coordinate Regional and Coastal Models; 9.1 Introduction; 9.2 Governing Equations; 9.3 Vertical Mixing; 9.4 Boundary Conditions
Sommario/riassunto	Oceans play a pivotal role in our weather and climate. Ocean-borne commerce is vital to our increasingly close-knit global community. Yet we do not fully understand the intricate details of how they function, how they interact with the atmosphere, and what the limits are to their biological productivity and their tolerance to wastes. While satellites are helping us to fill in the gaps, numerical ocean models are playing an important role in increasing our ability to comprehend oceanic processes, monitor the current state of the oceans, and to a limited extent, even predict their future state.