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| Descrizione fisica      | 1 online resource (405 p.)   |
| Collana                 | Instrumentation and measurement series   |
| Disciplina              | 551.46028/4  |
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| Formato                 | Materiale a stampa   |
| Livello bibliografico   | Monografia   |
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| Nota di bibliografia    | Includes bibliographical references and index.   |
| Nota di contenuto       | Cover; Instrumentation and Metrology in Oceanography; Title Page; Copyright Page; Table of Contents; Preface; Chapter 1. What We Measure and What We Process; 1.1. The quantities we want to know; 1.1.1. Velocity and density; 1.1.2. Pressure and depth; 1.1.3. Speed and movement; 1.1.4. Time and space; 1.2. Linking of essential quantities in oceanography; 1.2.1. Temperature; 1.2.2. Pressure; 1.2.3. Conductivity and salinity; 1.2.4. Velocity; 1.2.5. Time; 1.3. Calculation of density; 1.3.1. Density and EOS-80; 1.3.2. Laboratory densitometers; 1.3.3. Density and absolute salinity<br>1.4. Bibliography1.4.1. Quantities that we want to know; 1.4.2. Linking of essential quantities in oceanography; Chapter 2. Measurement Systems in Practice; 2.1. Determining temperature; 2.1.1. Principal instruments; 2.1.2. Sensor technologies; 2.1.3. Thermal transfers; 2.1.4. Response time of temperature sensors; 2.1.5. Viscous heating of temperature sensors; 2.2. Determining conductivity; 2.2.1. Principle instruments used; 2.2.2. Sensors' technologies; 2.2.3. Response time of conductivity sensors |

2.2.4. Aligning the response times of temperature and conductivity sensors and correcting thermal inertia  
 2.2.5. Biofouling and protection of instruments; 2.3. Determining pressure; 2.3.1. Piezoresistive pressure sensors; 2.3.2. Piezoelectric pressure sensors; 2.3.3. Errors in pressure sensor measurements; 2.4. Determining velocity; 2.4.1. Principles of measurement; 2.4.2. Instruments used at sea; 2.5. Determining current; 2.5.1. Rotor current meters; 2.5.2. Doppler effect current meters; 2.5.3. Electromagnetic current meters; 2.5.4. Doppler effect profilers  
 2.5.5. Directional referencing of current measurements  
 2.5.6. Calibration of Doppler effect current meters; 2.6. Determining time or measuring frequency; 2.6.1. The connection of clocks; 2.6.2. Time bases of instruments; 2.7. Determining position and movement; 2.7.1. The Argos system; 2.7.2. The global positioning system; 2.8. Determining the height of water; 2.8.1. Tide gauges; 2.8.2. Tide gauges with pressure sensors; 2.8.3. Keying and uniting of tide gauges; 2.9. Determining waves and swell characteristics; 2.9.1. Factors relating to the origins and modeling of swell  
 2.9.2. Instruments used to measure the state of the sea  
 2.10. Determining the turbidity or sea water's optical properties; 2.10.1. Theoretical notions of the optical properties of sea water; 2.10.2. Measurement of apparent optical properties; 2.10.3. Transmissiometers and measurements of absorption; 2.10.4. Nephelometers and turbidity sensors; 2.10.5. Fluorimeters; 2.11. Determining various physicochemical properties; 2.11.1. Notions of the chemical parameters of sea water; 2.11.2. In situ measurement of dissolved oxygen; 2.11.3. In situ measurement of dissolved carbon  
 2.11.4. In situ measurement of some other components

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## Sommario/riassunto

Through research, physical oceanography aims to solve the numerous problems stated by thermal, optical and dynamical properties of the oceans. Instrumentation and Metrology in Physical Oceanography describes the means used in oceanography to determine physical properties of the oceans by medium of in situ measurements. This book explores the theoretical functioning of sensors and instruments, as well as different practical aspects of using these tools. The content of this book appeals directly to technicians or engineers wishing to enhance their knowledge of instrumentation a

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