Record Nr.	UNINA9910807631403321
Autore	Shokr Mohammed
Titolo	Sea ice : physics and remote sensing / / Mohammed Shokr, Nirmal Sinha
Pubbl/distr/stampa	Washington, District of Columbia : , : American Geophysical Union : , : Wiley, , 2015 ©2015
ISBN	1-119-02796-9 1-119-02800-0 1-119-02788-8
Descrizione fisica	1 online resource (624 p.)
Collana	Geophysical Monograph Series ; ; 209
Disciplina	551.342028
Soggetti	Sea ice - Remote sensing Sea ice - Arctic regions Arctic Regions
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Title Page; Copyright Page; Contents; Preface; Acknowledgments and Recognitions; Chapter 1 Introduction; 1.1. Background; 1.2. Historical Synopsis: Canada and the Arctic; 1.3. Fascinating Nature of Sea Ice; 1.4. Sea Ice in Research and Operational Disciplines; 1.4.1. Sea Ice in Marine Navigation; 1.4.2. Sea Ice in Physics; 1.4.3. Sea Ice in Climatology; 1.4.4. Sea Ice in Meteorology; 1.4.5. Sea Ice in Oceanography; 1.4.6. Sea Ice in Marine Biology; 1.4.7. Sea Ice and Offshore Structures; 1.4.8. Sea Ice for Search and Rescue and Transportation; 1.5. Sea Ice and Remote Sensing 1.6. About the Book and Its OrganizationChapter 2 Ice Physics and Physical Processes; 2.1. Initial Ice Formation; 2.1.1. Relevant Seawater Properties; 2.1.2. Seawater Freezing Mechanism; 2.1.3. Initial Ice Crystals and Frazil Ice; 2.2. Ice Growth; 2.2.1. Lateral Ice Growth; 2.2.2. Vertical Ice Growth (Congelation Ice); 2.2.3. Superimposed Ice; 2.2.4. Thermodynamic Ice Growth; 2.3. Inclusions in Ice; 2.3.1. Compositional (Constitutional) Supercooling and Brine Pocket Formation; 2.3.2. Dendritic Interface of Sea Ice; 2.3.3. Salinity Loss During Ice Growth;

1.

	 2.4. Ice Deformation 2.5. Ice Decay and Aging2.5.1. Ice Decay; 2.5.2. Ice Aging; 2.6. Ice Classes and Ice Regimes; 2.6.1. Criteria of Ice Classification; 2.6.2. Polynyas; 2.6.3. Pancake Ice Regime; 2.6.4. Marginal Ice Zone and Ice Edge; 2.6.5. Ice of Land Origin; Chapter 3 Sea Ice Properties: Data and Derivations; 3.1. Temperature Profiles in Ice and Snow; 3.2. Bulk Salinity and Salinity Profile; 3.2.1. Bulk Salinity; 3.2.2. Salinity Profiles; 3.3. Density of First-Year and Multiyear Ice; 3.4. Volume Fraction of Sea Ice Constituents; 3.4.1. Brine Volume Fraction; 3.4.2. Solid Salt Volume Fraction 3.4.3. Pure Ice Volume Fraction3.4.4. Air Volume Fraction; 3.5. Thermal Properties; 3.5.1. Thermal Conductivity of Sea Ice; 3.5.2. Thermal Conductivity of Snow; 3.5.3. Specific Heat of Sea Ice; 3.5.4. Latent Heat of Sea Ice; 3.6. Dielectric Properties; 3.6.1. Dielectric Constant of Brine; 3.6.2. Dielectric Mixing Models; 3.6.3. Field Measurements of Dielectric Constant; Chapter 4 Polycrystalline Ice Structure; 4.1. Terms and Definitions Relevant to Polycrystalline Ice; 4.1.1. Special Thermal State of Natural Ice; 4.1.2. General Terms for Structural Aspects of Ice 4.1.3. Basic Terms and Definitions4.2. Morphology of Ice; 4.2.1. Form of Ice Crystals; 4.2.4. Ice Density in Relation to Crystalline Structure; 4.3. Structure- and Texture-Based Classification of Natural Ice; 4.3.1. Freshwater Ice Classification of Michel and Ramseier; 4.3.2. Extending Crystallographic Classes of Natural Ice; 4.3.4. Stereographical Projection (Fabric Diagram) of Natural Polycrystalline Ice 4.4. Age-Based Structural Features of Natural Sea Ice
Sommario/riassunto	1. Sea ice physical, dielectric and radiometric properties 1.1 Sea ice phase diagram 1.2 Sea ice growth under different oceanographic and atmospheric conditions 1.3 Thickness-based ice types 1.4 Physical properties of sea ice 1.5 Dielectric properties of ice type 1.5.1 Measurements of complex dielectric constant 1.5.2 Modeling complex dielectric constant 1.6 Radiometric properties of ice types 2. Ice Crystalline Structure 2.1 Hexagonal structure and birefringence of ice 2.2 Thin ice section double microtoming technique 2.3 Sea ice fabric diagram 2.4 Categories of ice crystalline struc