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Recent studies indicate that – due to climate change – the Earth is undergoing rapid changes in all cryospheric components, including polar sea ice shrinkage, mountain glacier recession, thawing permafrost, and diminishing snow cover. This textbook provides a comprehensive summary of all components of the Earth's cryosphere, reviewing their history, physical and chemical characteristics, geographical distributions, and projected futures states. This new edition has been completely updated throughout, and provides state-of-the-art data from GlobSnow-2, CRYOSAT, ICESAT, and GRACE. It includes a comprehensive summary of cryospheric changes in land ice, permafrost, freshwater ice, sea ice, and ice sheets. It discusses the models developed to understand cryosphere processes and predict future changes, including those based on remote sensing, field campaigns, and long-term ground observations. Boasting an extensive bibliography, over 120 figures, and end-of-chapter review questions, it is an ideal resource for students and researchers of the cryosphere.

Cover image: Glacier in Iceland in winter
(ansonmiao / E+ / Getty Images)



Online Resources

www.cambridge.org/globalcryosphere2

- Solutions for the end of chapter review questions
- Downloadable figures from the book

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Preface	page ix
Acknowledgments	xi
1 Introduction	1
1.1 Definition and extent	1
1.2 The role of the cryosphere in the climate system	4
1.3 The organization of snow and ice observations and research	5
1.4 Remote sensing of the cryosphere	7
Part I The terrestrial cryosphere	13
2A Snowfall and snow cover	15
2.1 History	15
2.2 Snow formation	16
2.3 Snow cover	20
2.4 Snow cover modeling in land surface schemes of GCMs	28
2.5 Snow interception by canopy	31
2.6 Sublimation of snow	33
2.7 Snow metamorphism	35
2.8 <i>In situ</i> measurements of snow	38
2.9 Remote sensing of snowpack properties, snow cover area, and snow water equivalent	41
2.10 Snowmelt modeling	54
2.11 Recent observed changes in snowpack and snow cover	74
2B Avalanches	87
2.12 History	87
2.13 Avalanche characteristics	88
2.14 Avalanche models	95
2.15 Trends in avalanche conditions	99

3	Glaciers and ice caps	102
3.1	History	102
3.2	Definitions	105
3.3	Glacier characteristics	106
3.4	Mass balance	117
3.5	Remote sensing	118
3.6	Glacier flow and flow lines	121
3.7	Scaling	129
3.8	Glacier modeling	130
3.9	Ice caps	131
3.10	Glacier hydrology	132
3.11	Changes in glaciers and ice caps	142
4	Ice sheets	168
4.1	History of exploration	168
4.2	Mass balance	171
4.3	Remote sensing	172
4.4	Mechanisms of ice sheet changes	176
4.5	The Greenland Ice Sheet	177
4.6	Antarctica	188
4.7	Overall ice sheet changes	196
4.8	Ice sheet models	198
4.9	Ice sheet and ice-shelf interaction	201
4.10	Ice sheet contributions to sea level changes	202
5	Frozen ground and permafrost	207
5.1	History	207
5.2	Frozen ground definitions and extent	209
5.3	Thermal relationships	212
5.4	Vertical characteristics of permafrost	215
5.5	Remote sensing	219
5.6	Ground ice	222
5.7	Permafrost models	225
5.8	Geomorphological features associated with permafrost	229
5.9	Changes in permafrost and soil freezing	231
5.10	Arctic infrastructure	236

6 Freshwater ice	239
6.1 History	239
6.2 Lake ice	240
6.3 Changes in lake ice cover	250
6.4 River ice	253
6.5 Ice-jam floods	265
6.6 Trends in river ice cover	266
6.7 Icings	267

Part II The marine cryosphere 275

7 Sea ice	277
7.1 History	277
7.2 Sea ice climatology and characteristics	280
7.3 Ice drift and ocean circulation	307
7.4 Sea ice models	312
7.5 Leads, polynyas, and pressure ridges	317
7.6 Ice thickness	323
7.7 Trends in sea ice extent and concentration from paleo and NSIDC data	325

8 Ice shelves and icebergs	344
8.1 History	344
8.2 Ice shelves	346
8.3 Ice streams	353
8.4 Conditions beneath ice shelves	356
8.5 Ice shelf buttressing	357
8.6 Icebergs	358
8.7 Ice islands	370

Part III The cryosphere past and future 373

9 The cryosphere in the past	375
9.1 Introduction	375
9.2 Snowball Earth and ice-free Cretaceous	378
9.3 Phanerozoic glaciations	378
9.4 Late Cenozoic polar glaciations	379
9.5 The Quaternary	382
9.6 The Holocene	391

10 The future cryosphere: Impacts of global warming	397
10.1 Introduction	397
10.2 General observations	401
10.3 Recent warming and cryospheric changes	403
10.4 Climate projections	405
10.5 Projected changes to Northern Hemisphere snow cover	407
10.6 Projected changes in land ice	412
10.7 Projected permafrost changes	414
10.8 Projected changes in freshwater ice	416
10.9 Projected sea ice changes	418
10.10 Projected glacier changes	420
Part IV Applications	427
11 Applications of snow and ice research	429
11.1 Snowfall	429
11.2 Freezing precipitation	431
11.3 Avalanches	432
11.4 Ice avalanches	434
11.5 Winter sports industry	435
11.6 Water resources	435
11.7 Hydropower	436
11.8 Snowmelt floods	437
11.9 Freshwater ice	438
11.10 Ice roads	441
11.11 Sea ice	442
11.12 Glaciers and ice sheets	442
11.13 Icebergs	445
11.14 Permafrost and ground ice	446
11.15 Seasonal ground freezing	448
References	451
Index	563

Color plates between pages 372 and 373