

Long-term Environmental Change in Arctic and Antarctic Lakes

Volume 8

Edited by
Reinhard Pionte, Marianne S.V. Douglas
and John P. Smol



 Springer

Longterm Environmental Change In Arctic And Antarctic Lakes

Katrin Zwirgmaier



Longterm Environmental Change In Arctic And Antarctic Lakes:

Long-term Environmental Change in Arctic and Antarctic Lakes Reinhard Pienitz, Marianne S.V. Douglas, John P. Smol, 2007-11-08 Concerns about the effects of global climate change have focused attention on the vulnerability of circumpolar regions Long term historical data are needed to better understand the magnitude and direction of environmental change related to both natural and anthropogenic causes as well as to assess patterns of natural variability The paucity of instrumental data requires that proxy methods be used The abundance of lakes throughout the Arctic and Antarctic makes paleolimnological approaches especially powerful tools to assist interpretations of environmental change This book provides a synthesis of the broad spectrum of techniques available for generating long term environmental records from circumpolar lakes It also provides overviews of the geographic extent of paleolimnological work completed thus far in these regions It explores the diverse ways in which paleolimnology is used to address the pressing and emerging environmental issues of high latitude regions By providing both an introduction and in depth reviews this volume is of interest to students and advanced researchers alike who are studying earth atmospheric and environmental sciences Long-term Environmental Change in Arctic and Antarctic Lakes Reinhard Pienitz, Marianne S.V. Douglas, John P. Smol, 2005-05-03 Concerns about the effects of global climate change have focused attention on the vulnerability of circumpolar regions This book offers a synthesis of the spectrum of techniques available for generating long term environmental records from circumpolar lakes **Encyclopedia of Quaternary Science** ,2006-11-24 The quaternary sciences constitute a dynamic multidisciplinary field of research that has been growing in scientific and societal importance in recent years This branch of the Earth sciences links ancient prehistory to modern environments Quaternary terrestrial sediments contain the fossil remains of existing species of flora and fauna and their immediate predecessors Quaternary science plays an integral part in such important issues for modern society as groundwater resources and contamination sea level change geologic hazards earthquakes volcanic eruptions tsunamis and soil erosion With over 360 articles and 2 600 pages many in full color the Encyclopedia of Quaternary Science provides broad ranging up to date articles on all of the major topics in the field Written by a team of leading experts and under the guidance of an international editorial board the articles are at a level that allows undergraduate students to understand the material while providing active researchers with the latest information in the field Also available online via ScienceDirect 2006 featuring extensive browsing searching and internal cross referencing between articles in the work plus dynamic linking to journal articles and abstract databases making navigation flexible and easy For more information pricing options and availability visit www.info.sciencedirect.com 360 individual articles written by prominent international authorities encompassing all important aspects of quaternary science Each entry provides comprehensive in depth treatment of an overview topic and presented in a functional clear and uniform layout Reference section provides guidance for further research on the topic Article text supported by full color photos drawings tables and other visual material Writing level is

suited to both the expert and non expert **Arctic Ecology** David N. Thomas, 2021-01-26 The Arctic is often portrayed as being isolated but the reality is that the connectivity with the rest of the planet is huge be it through weather patterns global ocean circulation and large scale migration patterns to name but a few There is a huge amount of public interest in the changing Arctic especially in terms of the rapid changes taking place in ecosystems and exploitation of resources There can be no doubt that the Arctic is at the forefront of the international environmental science agenda both from a scientific aspect and also from a policy environmental management perspective This book aims to stimulate a wide audience to think about the Arctic by highlighting the remarkable breadth of what it means to study its ecology Arctic Ecology seeks to systematically introduce the diverse array of ecologies within the Arctic region As the Arctic rapidly changes understanding the fundamental ecology underpinning the Arctic is paramount to understanding the consequences of what such change will inevitably bring about Arctic Ecology is designed to provide graduate students of environmental science ecology and climate change with a source where Arctic ecology is addressed specifically with issues due to climate change clearly discussed It will also be of use to policy makers researchers and international agencies who are focusing on ecological issues and effects of global climate change in the Arctic About the Editor David N Thomas is Professor of Arctic Ecosystem Research in the Faculty of Biological and Environmental Sciences University of Helsinki Previously he spent 24 years in the School of Ocean Sciences Bangor University Wales He studies marine systems with a particular emphasis on sea ice and land coast interactions in the Arctic and Southern Oceans as well as the Baltic Sea He also edited a related book Sea Ice 3rd Edition 2017 which is also published by Wiley Blackwell *Past Climate Variability through Europe and Africa* Richard W. Battarbee, Françoise Gasse, Catherine E. Stickley, 2007-11-06 This book provides a major synthesis of evidence for past climate variability at the regional and continental scale across Europe and Africa It focuses on two complementary time scales the Holocene approximately the last 11 500 years and the last glacial interglacial cycle approximately the last 130 000 years An overview of the climate system of the past has never been attempted before on this scale and as such the volume represents a benchmark for future research It is written by an expert group of climate change scientists and presents an insight into past climate variability that challenges climatologists who seek to explain climate dynamics of the past and provides climate modellers with a work of reference for data model comparison The book is an advanced but very readable text essential for all students and scientists interested in global environmental change **Earth Paleoenvironments: Records Preserved in Mid- and Low-Latitude Glaciers** L. DeWayne Cecil, Jaromy R. Green, Lonnie G. Thompson, 2006-04-11 Glaciers provide an unparalleled tool for studying global environmental change This book is the first of its kind concentrating on the paleoenvironmental record archived in mid and low latitude glaciers By concentrating mainly on the last 500 years of these records we can now see that laws enacted to protect our environment in Europe and North America are providing positive results Documenting global mid and low latitude paleoenvironmental records in glaciers this

volume forms a timely and essential complement to the wealth of literature on polar and Greenland ice sheet records This text is directed towards undergraduate and graduate university audiences and forms an ideal supplement in courses dealing with climate and global environmental change glaciology and natural resources management It is also suitable in helping teach application of innovative analytical and interpretive methods and would be an excellent example of the rapidly emerging discipline of Forensic Earth Science

Paleoclimatology Raymond S. Bradley, 2013-12-28 Paleoclimatology Reconstructing Climates of the Quaternary Third Edition winner of a 2015 Textbook Excellence Award Texty from The Text and Academic Authors Association provides a thorough overview of the methods of paleoclimatic reconstruction and of the historical changes in climate during the past three million years This thoroughly updated and revised edition systematically examines each type of proxy and elucidates the major attributes and the limitations of each Paleoclimatology Third Edition provides necessary context for those interested in understanding climate changes at present and how current trends in climate compare with changes that have occurred in the past The text is richly illustrated and includes an extensive bibliography for further research Winner of a 2015 Texty Award from the Text and Academic Authors Association A comprehensive overview of the methods of paleoclimate reconstruction and the record of past changes in climate during the last 3 million years Addresses all the techniques used in paleoclimatic reconstruction from climate proxies With full color throughout and thoroughly revised chapters on dating methods climate forcing ice cores marine sediments pollen analysis dendroclimatology and historical records Includes new chapters on speleothems loess and lake sediments More than 1 000 new references and 190 new figures Essential reading for those interested in how present trends in climate compare with changes that have occurred in the past

Encyclopedia of Ecology Brian D. Fath, 2018-08-23 Encyclopedia of Ecology Second Edition Four Volume Set continues the acclaimed work of the previous edition published in 2008 It covers all scales of biological organization from organisms to populations to communities and ecosystems Laboratory field simulation modelling and theoretical approaches are presented to show how living systems sustain structure and function in space and time New areas of focus include micro and macro scales molecular and genetic ecology and global ecology e g climate change earth transformations ecosystem services and the food water energy nexus are included In addition new international experts in ecology contribute on a variety of topics Offers the most broad ranging and comprehensive resource available in the field of ecology Provides foundational content and suggests further reading Incorporates the expertise of over 500 outstanding investigators in the field of ecology including top young scientists with both research and teaching experience Includes multimedia resources such as an Interactive Map Viewer and links to a CSDMS Community Surface Dynamics Modeling System an open source platform for modelers to share and link models dealing with earth system processes

Lochnagar Neil L. Rose, 2007-06-01 Previous volumes in this Developments in Paleoenvironmental Research DPER series have focussed on providing in depth descriptions of palaeoenvironmental techniques or have described the applications of

these approaches on various regional bases The former of these now provide an invaluable series of standard text books for scientists and students while the latter show how the application of palaeo techniques can be used across broad geographical scales In this current volume we have attempted something a little different Not only are a variety of palaeo techniques applied to a single small lake but we have tried to show how these methods and the data derived from them can be integrated synergistically with contemporary monitoring and predictive modelling The acidification and metals research provide two good examples of this Along with other upland lakes across the UK the early research work at Lochnagar was based on assessing the competing hypotheses for the causes of surface water acidification As a result palaeolimnological techniques were used to assess the timing and extent of pH changes over hundreds of years The subsequent establishment of the UK Acid Waters Monitoring Network UK AWMN then allowed a range of biological and chemical parameters to be assessed routinely in order to determine the rate at which the lakes and streams including Lochnagar were recovering following emissions reductions

Fungi of Antarctica Luiz Henrique Rosa, 2019-06-18 This book focuses on the fungi found in one of the most pristine regions on Earth Antarctica It discusses the fungal occurrence in all substrates of the region including soil seawater lake and marine sediments rocks ice and snow It also addresses the impact of climate changes on these organisms the genomic techniques developed to study them and how a number of compounds such as antibiotics and enzymes produced by the Antarctic fungi can be used in medicine agriculture and the chemical industry

Immerse yourself in heartwarming tales of love and emotion with Crafted by is touching creation, Tender Moments: **Longterm Environmental Change In Arctic And Antarctic Lakes** . This emotionally charged ebook, available for download in a PDF format (*), is a celebration of love in all its forms. Download now and let the warmth of these stories envelop your heart.

https://pinsupreme.com/files/Resources/Documents/primitive_secret_societies_1908.pdf

Table of Contents Longterm Environmental Change In Arctic And Antarctic Lakes

1. Understanding the eBook Longterm Environmental Change In Arctic And Antarctic Lakes
 - The Rise of Digital Reading Longterm Environmental Change In Arctic And Antarctic Lakes
 - Advantages of eBooks Over Traditional Books
2. Identifying Longterm Environmental Change In Arctic And Antarctic Lakes
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Longterm Environmental Change In Arctic And Antarctic Lakes
 - User-Friendly Interface
4. Exploring eBook Recommendations from Longterm Environmental Change In Arctic And Antarctic Lakes
 - Personalized Recommendations
 - Longterm Environmental Change In Arctic And Antarctic Lakes User Reviews and Ratings
 - Longterm Environmental Change In Arctic And Antarctic Lakes and Bestseller Lists
5. Accessing Longterm Environmental Change In Arctic And Antarctic Lakes Free and Paid eBooks
 - Longterm Environmental Change In Arctic And Antarctic Lakes Public Domain eBooks
 - Longterm Environmental Change In Arctic And Antarctic Lakes eBook Subscription Services
 - Longterm Environmental Change In Arctic And Antarctic Lakes Budget-Friendly Options

6. Navigating Longterm Environmental Change In Arctic And Antarctic Lakes eBook Formats
 - ePub, PDF, MOBI, and More
 - Longterm Environmental Change In Arctic And Antarctic Lakes Compatibility with Devices
 - Longterm Environmental Change In Arctic And Antarctic Lakes Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Longterm Environmental Change In Arctic And Antarctic Lakes
 - Highlighting and Note-Taking Longterm Environmental Change In Arctic And Antarctic Lakes
 - Interactive Elements Longterm Environmental Change In Arctic And Antarctic Lakes
8. Staying Engaged with Longterm Environmental Change In Arctic And Antarctic Lakes
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Longterm Environmental Change In Arctic And Antarctic Lakes
9. Balancing eBooks and Physical Books Longterm Environmental Change In Arctic And Antarctic Lakes
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Longterm Environmental Change In Arctic And Antarctic Lakes
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Longterm Environmental Change In Arctic And Antarctic Lakes
 - Setting Reading Goals Longterm Environmental Change In Arctic And Antarctic Lakes
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Longterm Environmental Change In Arctic And Antarctic Lakes
 - Fact-Checking eBook Content of Longterm Environmental Change In Arctic And Antarctic Lakes
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
14. Embracing eBook Trends
 - Integration of Multimedia Elements

- Interactive and Gamified eBooks

Longterm Environmental Change In Arctic And Antarctic Lakes Introduction

Free PDF Books and Manuals for Download: Unlocking Knowledge at Your Fingertips In today's fast-paced digital age, obtaining valuable knowledge has become easier than ever. Thanks to the internet, a vast array of books and manuals are now available for free download in PDF format. Whether you are a student, professional, or simply an avid reader, this treasure trove of downloadable resources offers a wealth of information, conveniently accessible anytime, anywhere. The advent of online libraries and platforms dedicated to sharing knowledge has revolutionized the way we consume information. No longer confined to physical libraries or bookstores, readers can now access an extensive collection of digital books and manuals with just a few clicks. These resources, available in PDF, Microsoft Word, and PowerPoint formats, cater to a wide range of interests, including literature, technology, science, history, and much more. One notable platform where you can explore and download free Longterm Environmental Change In Arctic And Antarctic Lakes PDF books and manuals is the internet's largest free library. Hosted online, this catalog compiles a vast assortment of documents, making it a veritable goldmine of knowledge. With its easy-to-use website interface and customizable PDF generator, this platform offers a user-friendly experience, allowing individuals to effortlessly navigate and access the information they seek. The availability of free PDF books and manuals on this platform demonstrates its commitment to democratizing education and empowering individuals with the tools needed to succeed in their chosen fields. It allows anyone, regardless of their background or financial limitations, to expand their horizons and gain insights from experts in various disciplines. One of the most significant advantages of downloading PDF books and manuals lies in their portability. Unlike physical copies, digital books can be stored and carried on a single device, such as a tablet or smartphone, saving valuable space and weight. This convenience makes it possible for readers to have their entire library at their fingertips, whether they are commuting, traveling, or simply enjoying a lazy afternoon at home. Additionally, digital files are easily searchable, enabling readers to locate specific information within seconds. With a few keystrokes, users can search for keywords, topics, or phrases, making research and finding relevant information a breeze. This efficiency saves time and effort, streamlining the learning process and allowing individuals to focus on extracting the information they need. Furthermore, the availability of free PDF books and manuals fosters a culture of continuous learning. By removing financial barriers, more people can access educational resources and pursue lifelong learning, contributing to personal growth and professional development. This democratization of knowledge promotes intellectual curiosity and empowers individuals to become lifelong learners, promoting progress and innovation in various fields. It is worth noting that while accessing free Longterm Environmental Change In Arctic And Antarctic Lakes PDF books and manuals is convenient and cost-effective, it is vital to respect copyright laws and intellectual

property rights. Platforms offering free downloads often operate within legal boundaries, ensuring that the materials they provide are either in the public domain or authorized for distribution. By adhering to copyright laws, users can enjoy the benefits of free access to knowledge while supporting the authors and publishers who make these resources available. In conclusion, the availability of Longterm Environmental Change In Arctic And Antarctic Lakes free PDF books and manuals for download has revolutionized the way we access and consume knowledge. With just a few clicks, individuals can explore a vast collection of resources across different disciplines, all free of charge. This accessibility empowers individuals to become lifelong learners, contributing to personal growth, professional development, and the advancement of society as a whole. So why not unlock a world of knowledge today? Start exploring the vast sea of free PDF books and manuals waiting to be discovered right at your fingertips.

FAQs About Longterm Environmental Change In Arctic And Antarctic Lakes Books

1. Where can I buy Longterm Environmental Change In Arctic And Antarctic Lakes books? Bookstores: Physical bookstores like Barnes & Noble, Waterstones, and independent local stores. Online Retailers: Amazon, Book Depository, and various online bookstores offer a wide range of books in physical and digital formats.
2. What are the different book formats available? Hardcover: Sturdy and durable, usually more expensive. Paperback: Cheaper, lighter, and more portable than hardcovers. E-books: Digital books available for e-readers like Kindle or software like Apple Books, Kindle, and Google Play Books.
3. How do I choose a Longterm Environmental Change In Arctic And Antarctic Lakes book to read? Genres: Consider the genre you enjoy (fiction, non-fiction, mystery, sci-fi, etc.). Recommendations: Ask friends, join book clubs, or explore online reviews and recommendations. Author: If you like a particular author, you might enjoy more of their work.
4. How do I take care of Longterm Environmental Change In Arctic And Antarctic Lakes books? Storage: Keep them away from direct sunlight and in a dry environment. Handling: Avoid folding pages, use bookmarks, and handle them with clean hands. Cleaning: Gently dust the covers and pages occasionally.
5. Can I borrow books without buying them? Public Libraries: Local libraries offer a wide range of books for borrowing. Book Swaps: Community book exchanges or online platforms where people exchange books.
6. How can I track my reading progress or manage my book collection? Book Tracking Apps: Goodreads, LibraryThing, and Book Catalogue are popular apps for tracking your reading progress and managing book collections. Spreadsheets: You can create your own spreadsheet to track books read, ratings, and other details.

7. What are Longterm Environmental Change In Arctic And Antarctic Lakes audiobooks, and where can I find them? Audiobooks: Audio recordings of books, perfect for listening while commuting or multitasking. Platforms: Audible, LibriVox, and Google Play Books offer a wide selection of audiobooks.
8. How do I support authors or the book industry? Buy Books: Purchase books from authors or independent bookstores. Reviews: Leave reviews on platforms like Goodreads or Amazon. Promotion: Share your favorite books on social media or recommend them to friends.
9. Are there book clubs or reading communities I can join? Local Clubs: Check for local book clubs in libraries or community centers. Online Communities: Platforms like Goodreads have virtual book clubs and discussion groups.
10. Can I read Longterm Environmental Change In Arctic And Antarctic Lakes books for free? Public Domain Books: Many classic books are available for free as they're in the public domain. Free E-books: Some websites offer free e-books legally, like Project Gutenberg or Open Library.

Find Longterm Environmental Change In Arctic And Antarctic Lakes :

primitive secret societies 1908

primary care core values

princesa ana

primary english 6 tb ghana

primero las damas biblioteca guadalupe loaeza

princeton handbook of multicultural poeties

primitive psychic power

~~priestley companion the~~

primis management

primary sources early americas

prince and the lily

pri science 2 tb ghana

prince valium a love story

pri school maths 4 tb revised

princess elizabeth are you a traitor coming alive s.

Longterm Environmental Change In Arctic And Antarctic Lakes :

BUS 475 Final Exam Answers 1 BUS 475 Final Exam Answers 1. Course: Finance Seminar (3 credits) (BUS 430). 9 ... solutions section of the balance sheet? a. 0 Money b. 0 Accounts payable c ... SOLUTION: Bus 475 final exam answers BUS 475 Final Exam Answers 1. Which of the following is NOT an element of manufacturing overhead? a. 0 Factory employee's salary b. 0 Depreciation on the ... Bus 475 final exam answers May 1, 2013 — Bus 475 final exam answers - Download as a PDF or view online for free. BUS 475 Capstone Final Examination Part 1 Answers Sep 13, 2016 — Perceive the answer of latest BUS Capstone Final Exam Part 1 Questions provided by the Transweb E Tutors online for free. BUS 475 Capstone Final Exam Part 1 (100% Correct ... BUS 475 Capstone Final Exam Part 1 (100% Correct Answers) - Free download as PDF File (.pdf), Text File (.txt) or read online for free. Bus 475 Answer Guide of 2016 Update for ... Feb 28, 2017 — Find complete bus 475 capstone part 2 answers and bus 475 final exam answer key free. About the Assignmentehelp : World-class Online ... BUS 475 Capstone Final Exam Answers | PDF | Stocks BUS 475 Capstone Final Exam Answers. <http://homework-elance.com/downloads/bus> ... Answer Key Chapter 3. Hector. Facebook - DCF Valuation. BUS 475 Final Exam Answers-Set 1. LATEST 2020(100% ... Dec 8, 2020 — 1) Which one of the following items is not generally used in preparing a statement of cash flows? A. Adjusted trial balance B. Comparative ... BUS 475 Final EXAM LATEST 2023-2024 ACTUAL ... Nov 16, 2023 — FNP ANCC BOARDS EXAM 2023-2024 ACTUAL QUESTIONS AND ANSWERS GRADED A You have a 50-year-old female patient who is complaining of vision loss. BUS 475 Final Exam Questions and Answers (Revised ... BUS 475 - 100 Questions and Answers Latest (100%Verified by Expert). 1) The income statement and balance sheet columns of Pine Company's worksheet reflects ... Australian National Curriculum Checklists For Progression Points Knowledge at the Crossroads? Australian Bird Names. Teaching for Numeracy Across the Age Range. Australian Curriculum English. K-2 Number Activities. Australian curriculum checklist This bundle of editable Australian Curriculum Assessment Checklists for Year 3 will make your planning and assessment simple and ... National Literacy and Numeracy Learning Progressions In the Australian Curriculum, learning area content describes the knowledge, understanding and skills that are to be taught in each year or band of years. National Literacy Learning Progression The progression has not been designed as a checklist and does not replace the Australian Curriculum: English. Each sub-element has been mapped to the year level ... Australian Curriculum Mathematics Assessment Checklists ... Progression Point by the end of the term/year. Each checklist is broken up into the ACARA Australian Curriculum Mathematics Content Strands and Sub Strands ... Australian curriculum assessment checklist ... assessment checklist linked to AusVELs progression points for reading and viewing. Subjects: Reading. Grades: 2nd - 6th. Types: Assessment. Year 4 Maths National Curriculum Assessment Checklist Track pupil knowledge against the Maths National Curriculum for year 4 with this handy checklist, which includes Ready-to-Progress criteria on a separate ... National Literacy Learning Progression The progression amplifies the literacy skills in the. Australian Curriculum: English,

particularly in the Language and Literacy strands, and is organised by ... Australian Curriculum Mathematics Assessment Checklists Australian Curriculum ~ Australian Assessment: These Australian Curriculum Mathematics Checklists are designed to make your assessment A LOT easier! Pages - Literacy learning progressions The need to develop national Literacy and Numeracy Progressions was identified by all Australian education ministers in December 2015. The Australian Curriculum ... Medical Assisting, 9th Edition - 9780357502815 MindTap for Blesi's, Medical Assisting: Administrative & Clinical Competencies, 9th Edition is the digital learning solution that powers students from ... Medical Assisting: Administrative and Clinical Competencies This comprehensive text helps you develop the critical knowledge, skills, and behaviors to succeed as an entry-level medical assistant. Medical Assisting: Administrative & Clinical Competencies ... Strengthen your knowledge base as well as the critical skills and behaviors needed to become a successful entry-level medical assistant with Blesi's MEDICAL ... Medical Assisting, Administrative and Clinical Competencies Over 20 new administrative and clinical procedures that include notes, rationales, and charting examples; New chapter on medical terminology; Electronic health ... Comprehensive Medical Assisting Administrative and ... Divided into three sections, chapters start with general topics, including therapeutic communications, coping skills, and professionalism. Administrative ... Medical Assisting, 8th Edition - 9781337909815 MEDICAL ASSISTING: ADMINISTRATIVE AND CLINICAL COMPETENCIES UPDATE, Eighth Edition, delivers the critical cognitive (knowledge base), psychomotor (skills) and ... Medical Assisting, Administrative and Clinical Competencies Description: This comprehensive text helps you develop the critical knowledge, skills, and behaviors to succeed as an entry-level medical assistant. Medical Assisting: Administrative & Clinical Competencies Strengthen your knowledge base as well as the critical skills and behaviors needed to become a successful entry-level medical assistant with Blesi's. Workbook to Accompany Medical Assisting This entry-level medical assistant workbook is part of a proven comprehensive learning system that covers all of the administrative, clinical, and general ... Bundle: Medical Assisting: Administrative & Clinical ... Buy Bundle: Medical Assisting: Administrative & Clinical Competencies (Update), 8th + MindTap Medical Assisting, 4 terms (24 months) Printed Access Card ...