Geomorphology And Glacial History Of The Great Bend Area Of The Wabash Valley Indiana Guidebook Prepared For 16th Annual Meeting North Central Dept Of Geosciences Purdue University

This extensively revised, restructured, and updated edition continues to present an engaging and comprehensive introduction to the subject, exploring the world’s landforms from a broad systems perspective. It covers the basics of Earth surface forms and processes, while reflecting on the latest developments in the field. Fundamentals of Geomorphology begins with a consideration of the nature of geomorphology, process and form, history, and geomorphic systems, and moves on to discuss: structure: structural landforms associated with plate tectonics and those associated with volcanoes, impact craters, and folds, faults, and joints process and form: landforms resulting from, or influenced by, the exogenic agencies of weathering, running water, flowing ice and meltwater, ground ice and frost, the wind, and the sea; landforms developed on limestone; and landscape evolution, a discussion of ancient landforms, including palaeosurfaces, stagnant landscape features, and evolutionary aspects of landscape change. This third edition has been fully updated to include a clearer initial explanation of the nature of geomorphology, of land surface process and form, and of land-surface change over different timescales. The text has been restructured to incorporate information on geomorphic materials and processes at more suitable points in the book. Finally, historical geomorphology has been integrated throughout the text to reflect the importance of history in all aspects of geomorphology. Fundamentals of Geomorphology provides a stimulating and innovative perspective on the key topics and debates within the field of geomorphology. Written in an accessible and lively manner, it includes guides to further reading, chapter summaries, and an extensive glossary of key terms. The book is also illustrated throughout with over 200 informative diagrams and attractive photographs, all in colour. The book presents an up-to-date, detailed overview of the Quaternary glaciations all over the world, not only with regard to stratigraphy but also with regard to major glacial landforms and the extent of the respective ice sheets. The locations of key sites are included. The information is presented in digital, uniformly prepared maps which can be used in a Geographical Information System (GIS) such as ArcView or ArcGIS. The accompanying text supplies the information on how the data were obtained (geomorphology, geological mapping, air photograph evaluation, satellite imagery), how the features were dated (14C, TL, relative stratigraphy) and how reliable they are supposed to be. All references to the underlying basic publications are included. Where controversial interpretations are possible e.g. in Siberia or Tibet, this is pointed out. As a result, the information on Quaternary glaciations worldwide will be much improved and supplied in a uniform digital format. The information on the glacial limits is compiled in digital form by the coordinators of the project, and is available to the readers in the form of CD-ROMs, which are included with the book. * completely updated detailed coverage of worldwide Quaternary glaciations * information in digital, uniformly prepared maps which can be used in a GIS such as ArcView or ArcGIS * step-by-step guideline how to open and use ArcGis files * possibility to convert the shapefiles into GoogleEarth kmz-files, available on the included CD. * availability of chronological controls

The Engineering Group of the Geological Society Working Party brought together experts in glacial and periglacial geomorphology, Quaternary history, engineering geology and geotechnical engineering to establish best practice when working in former glaciated and periglaciated environments. The Working Party addressed outdated terminology and reviewed the latest academic research to provide an up-to-date understanding of glaciated and periglaciated terrains. This transformative, state-of-the-art volume is the outcome of five years of deliberation and synthesis by the Working Party. This is an essential reference for those on field trips, students field periglaciated terrains, students field geologists, students field geographers and students field geologists. The narrative style, and a comprehensive glossary and photo-catalogue of active and relict sediments, structures and landforms make this material relevant and accessible to a wide readership. The new Second Edition of Glacial Geology provides a modern, comprehensive summary of glacial geology and geomorphology. It has been thoroughly revised and updated from the original First Edition. This book will appeal to all students interested in the landforms and sediments that make up glacial landscapes. The aim of the book is to outline glacial landforms and sediments and to provide the reader with the tools required to interpret glacial landscapes. It describes how glaciers work and how the processes of glacial erosion and deposition which operate within them are recorded in the glacial landscape. The Second Edition is presented in the same clear and concise format as the First Edition, providing detailed explanations that are not cluttered with unnecessary detail. Additions include a new chapter on Glaciations around the Globe, demonstrating the range of glacial environments present on Earth today and a new chapter on Palaeoglaciology, explaining how glacial landforms and sediments are used in ice-sheet reconstructions. Like the original book, text boxes are used throughout to explain key concepts and to introduce students to case study material from the glacial literature. Newly updated sections on Further Reading are also included at the end of each chapter to point the reader towards key references. The book is illustrated throughout with colour photographs and illustrations. An expanded and updated version of The History of Geomorphology. Eminent contributors from each nation analyze and attempt to describe the evolution of national thought about landscapes. Line drawings and maps illustrate critical points in the various narratives. One of Springer’s Major Reference Works, this book gives the reader a truly global perspective. It is the first major reference work in its field. Paleoclimate topics covered in the encyclopedia give the reader the capability to place the observations of recent global warming in the context of longer-term natural climate fluctuations. Significant elements of the encyclopedia include recent developments in paleoclimate modeling, paleo-ocean circulation, in addition to the influence of geological processes and biological feedbacks on global climate change. The encyclopedia gives the reader an entry point into the literature on these and many other groundbreaking topics. A fascinating and informative exploration of periglacial processes, past and present, and their role in landscape evolution Periglacial Geomorphology presents a comprehensive introduction to the processes that operate in present periglacial environments and discusses the inferences that can be drawn about former periglacial environments from those processes. Organized into six parts, the book opens with the historical and scientific context of periglacial geomorphology and the nature of periglacial environments. Following chapters provide systematic coverage of the full range of topics germane to a thorough understanding of periglacial geomorphology, including: The physics of ground freezing and thawing, characteristics of permafrost, and the nature and origin of underground ice Characteristics, formation and significance of landforms, sediments, and structures associated with permafrost, permafrost degradation, and seasonal ground freezing and thawing Rock weathering in periglacial environments, periglacial processes operating on hillslopes, and the characteristic landforms produced by rock breakdown and slope processes in cold environments The operation of fluvial, aeolian and coastal processes in cold environments, and the resulting distinctive landforms and sediments The use of relict periglacial features to reconstruct past cold environments in midlatitude regions and the responses of periglacial environments to recent and predicted climate change Periglacial Geomorphology is an important resource for undergraduate and graduate students studying geomorphology or Quaternary science within the context of geography and geology degree programs. It will be of use to
all scientists whose research involves an understanding of cold environments, whether from a geographical, geological, ecological, climatological, pedological, hydrological, or engineering perspective.

This book, first published in 1992, contains the proceedings of the 22nd Binghamton Geomorphology Symposium, and highlights the quantity and diversity of periglacial geomorphic research being undertaken in Arctic and alpine environments. The articles explore a variety of geomorphic processes and examine the potential impacts of global change on the nature and extent of permafrost and seasonal ice phenomena.

This monograph reviews the nature of Quaternary environmental changes over the largest continent in the Southern Hemisphere. Moreover, since South America makes a transect across most climatic belts of an entire hemisphere, it provides a unique opportunity to examine the impact of changing Quaternary climates on a variety of environments. It also forms the basis for judging the synchrony or non-synchrony of Quaternary climatic changes between hemispheres and this has important implications for climatic modelling.

As South America has a dynamic tectonic regime along its western margin, 3 chapters discuss the geomorphological impact of Quaternary tectonics and volcanism. The following 6 chapters integrate evidence for Quaternary changes in the great alluvial basins of the Continent (Orinoco, Amazon, Parana): and in the contiguous highland massifs (Guyana, Brazil, Patagonia). As parts of the Andes have been high enough to support glaciers since the late Miocene, 5 chapters review the nature and consequences of Quaternary glacier fluctuations. The following 4 chapters select major process-form systems that impacted the continent during the Quaternary, including geocryogenic activity, palaeoaluvial development, palaeo-gravel formations and coastal changes. Three chapters provide the first major review of Quaternary vegetation changes in South America (primarily the Andes) deduced from palaeoecological data. The final chapter weaves most of the environmental threads together in an overall synthesis of the Quaternary of South America. The book is lavishly illustrated with photographs and line diagrams. As it provides a compendium of data and analyses about Quaternary changes for a whole continent, this book should appeal to a wide range of environmental disciplines.

Featuring an accessible, non-mathematical, but rigorous conceptual treatment—with numerous very simple explanatory illustrations—this introduction to the basic principles of geomorphology and geology serves as a portal to the more advanced literature in the field and to discussion and research of the local situation. Focusing on processes and history (not just descriptions), it helps readers understand how glaciers form and move, what effect they have, when and where they have affected the Earth, and the consequences of ice ages. Covers a full range of topics from glaciology, geology, and glacial geology, to the evolving cycles of climatic changes, and to present-day glacial and periglacial processes.

This book, first published in 1985, is a comprehensive guide to the main ideas in the history of geomorphology. It traces the development of thinking on landforms, from both the geographical and geological point of view, with especial emphasis upon fluvial geomorphology. Volume 1 treats the subject up to the first important statement of the cycle of erosion by W. M. Davis in 1889, and attempts to identify the most significant currents of geomorphic thought, integrating them into the broader contemporary intellectual frameworks with which they were associated. As well as dealing with such key figures as Werner, De Saussure, Hutton, Playfair, Buckland, lyell, Agassiz, Ramsay, Dana, Peschel, Powell, Gilbert and Davis, attention is also given to many less important contributions by American, British and continental workers. A spirited biographical treatment, attractively set off by contemporary portraits, diagrams and sketches, will make this book of great interest to the historian of science, and indeed to the general reader, as well as to the student and scholar in geomorphology, hydrology and any other earth science.

This volume provides a global treatment of historical and regional geomorphic work as it developed from the end of the nineteenth century to the hiatus of the Second World War. The book deals with the burgeoning of the eustatic thought, the concepts of isostasy and epeirogeny, and the first complete statements of the cycle of erosion and of polycyclic denudation chronology. This book, first published in 1985, is a comprehensive guide to the main ideas in the history of geomorphology. It traces the development of thinking on landforms, with material ranging from the ancient world to the present day. The main areas covered are the Renaissance, the explosive growth of the Natural Sciences in the nineteenth century and the impact of the Second World War. The papers and theories of specialists like James Hutton, John Playfair and W.M. Davies are presented and discussed and the final chapters reflect on future change, based on the past and speculation on possible developments. Balance is maintained between the dual importance and dominance of English and North American contributions to the subject, and quite substantial research was undertaken to provide a more complete approach to some areas hitherto neglected.

Beginning with the ancient world, this book traces the evolution of geomorphology to modern times. This book, first published in 1985, conveys the flavours of geomorphology and the bases of its ideas. It portrays the positive features of pluralism in geomorphology, and focuses on processes operative and their associated landforms; the distinctive geological settings of karst, volcanicity and tectonic activity; and technological advances.

This book is the fourth volume in the definitive series, The History of the Study of Landforms or The Development of Geomorphology. Volume 1 (1964) dealt with contributions to the field up to 1890. Volume 2 (1973) dealt with the concepts and contributions of William Morris Davis. Volume 3 (1991) covered historical and regional themes during the 'classic' period of geomorphology, between 1880 and 1950. This volume concentrates on studies of geomorphological processes and Quaternary geomorphology, carrying on these themes into the second part of the twentieth century, since when process-based studies have become so dominant. It is divided into five sections. After chapters dealing with geological controls, there are three sections dealing with process and form: fluvial, glacial and other process domains. The final section covers the mid-century revolution, anticipating the onset of quantitative studies and dating techniques. The volume's objective is to describe and analyse many of the developments that provide a foundation for the rich and varied subject matter of contemporary geomorphology. The volume is in part a celebration of the late Professor Richard Chorley, who devised its structure and...
contributed a chapter.

Glaciers and Glaciation is the classic textbook for all students of glaciation. Stimulating and accessible, it has established a reputation as a comprehensive and essential resource. In this new edition, the text, references and illustrations have been thoroughly updated to give today's reader an up-to-the-minute overview of the nature, origin and behaviour of glaciers and the geological and geomorphological evidence for their past history on earth. The first part of the book investigates the processes involved in forming glacier ice, the nature of glacier-climate relationships, the mechanisms of glacier flow and the interactions of glaciers with other natural systems such as rivers, lakes and oceans. In the second part, the emphasis moves to landforms and sediment, the interpretation of the earth's glacial legacy and the reconstruction of glacial depositional environments and palaeoglaciology.

Northeastern British Columbia was occupied by the Cordilleran (CIS) and the Laurentide (LIS) ice sheets, however, the timing and extent remains contentious. The late Quaternary and Holocene history of this area is examined by exploring geomorphic, stratigraphic, geochemical and geochronologic components of glacial, deglacial, paraglacial and non-glacial landforms. New tools, such as GIS, LiDAR, and new geochronologic methods, such as optical dating are used to understand the Quaternary geology and geomorphology of the region. Bedrock topography represents the base of the Quaternary section and modelling shows that paleovalleys, common in this region, host extensive Neogene sedimentary records. Stratigraphy from the Murray and Pine valleys indicate glaciation prior to the Mid-Wisconsinan (MIS 3) and during the Late Wisconsinan (MIS 2). Glacial landforms record Late Wisconsinan ice-sheet coalescence and reflect the complex interaction of the LIS and CIS margins. During deglaciation, the LIS and CIS separated and glacial Lake Peace (GLP) formed. Shoreline features enable reconstruction of lake and ice configurations. Four phases of GLP are preserved. Optical ages from Phase II indicate GLP occupied the area some time between ca. 16 - 14 ka yrs ago. The apparent tilt on the shorelines provides a measure of isostatic adjustments and suggests asynchronous retreat of first the LIS, then the CIS. The transition from paraglacial to boreal conditions was driven by climate change and is recorded by vegetation succession and cessation of paraglacial processes. Optical ages from stabilized dunes and radiocarbon ages from organics date the transition between 12 - 11.5 ka yrs ago with full boreal conditions established by 10 ka yrs ago. The Holocene is dominated by erosional processes, however some systems are aggrading. A case study on a floodplain demonstrates that resistivity (Ohmmapper) surveys provide a grain-size proxy to supplant GPR studies, which is essential for geophysical fluvial architectural analysis. In the study, the discrepancy between planform style (classic meander model) and subsurface geophysical surveys (indicative of vertical accretion associated with braided and wandering fluvial styles) reiterates cautions that planform may not always be a functions of depositional process and one may not be used to predict the other. Provides a benchmark study of southern African landscape evolution during the Quaternary, for researchers, professionals and policymakers.

European Glacial Landscapes: Maximum Extent of Glaciations brings together relevant experts on the history of glaciers and their impact on the landscape of the main regions of Europe. In some regions the largest recorded glaciations occurred before the Last Glacial Cycle, in one of the major glacial cycles of the Middle Pleistocene. However, the best-preserved evidence of glaciation in the landscape is from the Last Glacial Cycle (Late Pleistocene). The book also analyses these older glacial landforms that can sometimes still be seen in the landscape today. This analysis provides a better understanding of the succession of Pleistocene glaciations and the intervening interglacial periods, examining their possible continental synchrony or asynchrony of past glacier behaviour. The result of this analysis gives important new insights and information on the origin and effects of climatic and geomorphological variability across Europe. European Glacial Landscapes: Maximum Extent of Glaciations examines the landscapes produced by glaciers throughout Europe, the geomorphological effects of glaciations, as well as the chronology and evolution of the past glaciers, with the aim of understanding the interrelationship between glacial expansion and climate changes on this continent. This book is a valuable tool for geographers, geologist, environmental scientists, researchers in physics and earth sciences. Provides a synthesis that highlights the main similarities or differences, through both space and time, during the maximum recorded expansions of Pleistocene glaciers in Europe Features research from experts in glacial geomorphology, palaeo-glaciology, palaeo-climatology and palaeo-oceanography on glacial expansion in Europe Includes detailed color figures and maps, providing a comprehensive comparison of the glacial landscapes of European Pleistocene glaciers Process and Form in Geomorphology marks a turning point in geomorphological research. Stoddart has brought together a team of the leading international experts to offer important new studies into the processes, theory and history of landforms, and to present a framework for taking research forward into the new millennium. Illustrated throughout, Process and Form in Geomorphology takes up the challenges of the research agenda set by Richard Chorley and offers fresh insights into his unique contribution.

Principles of Glacial Geomorphology and GeologyPearson College Division

These papers deal with various aspects of the histories of geomorphology and Quaternary geology in different parts of the world. They include: the origin of the term 'Quaternary', histories of ideas and debates relating to aspects of fluvioglacial geomorphology, glacial geomorphology and glaciation, desert dunes and the geology of Australia, penelplains in China, a palaeo-Tokyo Bay in Japan, together with biographies of Charles Cotton, Valerija ?epulyt? and ?eslovas Pakuckas that highlight their respective contributions to the disciplines of geomorphology and Quaternary geology.

This volume provides a global treatment of historical and regional geomorphic work as it developed from the end of the 19th century - which saw the burgeoning of the eustatic theory, the concepts of isostasy and epeirogeny, and the first complete statements of the cycle of erosion and of polycyclic denudation chronology - to the hiatus of World War 2.
The book is subdivided into global and Davisian influences and historical and regional geomorphology. It sets out to describe and analyze many of the developments which have given rise to the rich and varied subject-matter of contemporary geomorphology. Taking advantage of new technological advances in Quaternary geology and geomorphology, this volume showcases new developments in glacial geology. Honoring the legacy of Frank Leverett and F.B. Taylor's 1915 USGS monograph of the region, this book includes 12 chapters that cover diverse topics ranging from hydrogeology, near-surface geophysics, geotectonics, and vertebrate paleontology to glacial geomorphology and glacial history. Several papers make use of detailed but nuanced shaded relief maps of digital elevation models of LiDAR data; these advances are brought into historical perspective by visiting the history of geologic mapping of Michigan. Looking forward, interpretations of the shaded relief maps evoke novel processes, such as regional evolution of subglacial and supraglacial drainage systems of receding glacial margins. The volume also includes assessment of chronological issues in light of greater accuracy and precision of radiocarbon dating of plant fossils using accelerator mass spectrometry versus older techniques. Full text e-book available as part of the Elsevier ScienceDirect Earth and Planetary Sciences subject collection.