1. Record Nr. UNINA9910583337803321

Autore	DiPietro Joseph A
Titolo	Geology and Landscape Evolution : General Principles Applied to the United States
Pubbl/distr/stampa	San Diego : , : Elsevier, , 2018 ©2018
ISBN	9780128111918 0128111917
Edizione	[2nd ed.]
Descrizione fisica	1 online resource
Disciplina	551.40973
Soggetti	Landscapes - United States - History Landscape changes - United States - History Landscape assessment - United States - History United States Geography
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Front Cover -- Geology and Landscape Evolution -- Copyright Page -- Contents -- Preface -- Abbreviations -- Conversions -- I. Keys to Understanding Landscape Evolution -- 1 The Tortoise and the Hare -- How Slow Is Slow? -- Maps, Cross-Sections, and Scale -- Physiographic Regions and Provinces -- Interior Plains and Plateaus -- Appalachian Mountain System -- Coastal Plain -- Cordilleran Mountain System -- Components, Forcing Agents, Mechanisms, and Landscape Response -- Geology, Landscape, and Tectonics -- Geologic Time Scale -- Questions -- 2 River Systems -- Divides -- Mississippi River System -- Atlantic Seaboard-Gulf Coast River System -- St. Lawrence River System -- Rio Grande-West Texas River System -- Colorado River System -- Columbia River System -- California River System -- Great Basin River System -- Hudson Bay River System -- Comparison of River Systems With Physiographic Provinces -- Questions -- 3 Component: The Rock/Sediment Type -- Weathering, Erosion, and Deposition -- The Four Rock/Sediment Types -- Sedimentary Rock -- Crystalline Rock -- Volcanic Rock -- Unconsolidated Sediment -- The Rock Cycle -- Rock Hardness and Differential Erosion -- Influence of Bedrock on Landscape

-- Landscape in Sedimentary Rocks -- Landscape in Crystalline Rocks -- Landscape in Volcanic Rocks -- Landscape in Unconsolidated Sediment -- Karst Landscape -- Distribution of Rock/Sediment Type Among the 26 Physiographic Provinces -- Questions -- 4 Component: The Structural Form -- Structural Form: The Style of Rock Deformation -- Folds -- Vertical Joint Sets -- Faults -- Fault Reactivation -- Brittle and Ductile Faults -- Influence of Dipping Layers on Landscape -- Vertical to Steep-Dipping Rock Layers -- Horizontal to Gently Dipping Rock Layers -- Response of Dipping Layers to Erosional Lowering -- Cuestas and Hogbacks.
Topographic Form and Structural Form -- Recognition of Active Faults -- Structure-Controlled and Erosion-Controlled Landscape -- Questions -- 5 Forcing Agent: The Tectonic System -- The Four Forcing Agents -- Tekton, the Carpenter, the Builder -- Climate, the Sculptor -- Isostasy, the Equalizer -- Sea Level, the Baseline -- The Tectonic Plate -- Plate Boundaries -- Movement of Tectonic Plates -- Rifting and Passive Continental Margins -- Active Continental Margins -- Tectonic Accretion -- Orogeny -- Unconformities -- The Atlantic Passive Continental Margin -- The Pacific Active Continental Margin -- Thermal Plumes and Hot Spots -- Thermal Plumes in the United States -- Questions -- 6 Forcing Agent: The Climate System -- Present-Day Climate Zones -- Controls on Climate -- Latitude -- Proximity to Large Water Bodies -- Global Wind Patterns -- The Tilt of the Earth's Axis of Rotation -- Mountains -- Questions -- 7 Forcing Agent: Isostasy -- Tectonic versus Isostatic Uplift -- Elevation of Continents and Ocean Basins -- Mountain Building and Preservation -- Tectonic Loads -- Thermal Isostasy -- Glaciers -- Deposition -- Erosion -- Questions -- 8 Forcing Agent: Sea Level Change -- Cause of Sea Level Change -- Measuring Sea Level and Sea Level Changes -- Sea Level Changes over the Past 100 Million Years -- Oxygen Isotope Record over the Past 67 Million Years -- Influence of Earth's Orbital Parameters on Glaciation -- Oxygen Isotope Record over the Past 1.8 Million Years -- Sea Level over the Past 150,000 Years -- Recent Temperature History -- Sea Level Response to Recent Temperature History -- The History of Co2 in the Atmosphere -- Questions -- 9 Mechanisms That Impart Change to Landscape -- Uplift and Subsidence -- Surface Uplift/Subsidence and Bedrock Uplift/Subsidence -- How Does Uplift/Subsidence Occur? -- Present-Day Uplift/Subsidence Rates.
Measuring Ancient Uplift Rates and Elevation -- Erosion, Deposition, and Rivers -- Graded Rivers and Base Level -- Base Level Changes -- Knickpoint Migration -- Changes in Discharge and Sediment Supply -- The Lower Mississippi River Valley During the Most Recent Glacial Advance -- Present-Day Erosion Rates -- Controls on Rates of Erosion -- Rates of Deposition -- Exhumation -- Erosional Exhumation -- Calculating Rates of Erosional Exhumation -- Tectonic Exhumation -- Volcanism -- Questions -- 10 Evolution of Landscape -- Landscape Grows Old -- Landscape at Topographic Steady-State -- Steady-State as the End-Product of Growing Old -- Rejuvenation -- Reincarnation -- Reincarnation While Growing Old -- Reincarnation due to Volcanism and Tectonic Stress -- Reincarnation due to Glaciation -- Reincarnation due to Burial Beneath Unconsolidated Sediment -- Summary -- Questions -- II. Structural Provinces -- 11 Structural Provinces, Rock Successions, and Tectonic Provinces -- Structural Provinces -- Rock Successions -- The North American Crystalline Shield -- Precambrian Sedimentary/Volcanic Rocks -- The Interior Platform -- The Miogeocline -- Accreted Terranes -- The Atlantic Miogeocline -- Tectonic Provinces -- Hinterland Tectonic Provinces -- Foreland Tectonic Provinces -- The Reactivated Western Craton and the Atlantic

Marginal Basin -- Distribution of Rock Successions and Tectonic Provinces -- The Great Unconformity -- Questions -- 12 Glacial Landscape -- Effect Of Glaciation On Landscape -- Landscape Development in Areas of Continental Glaciation -- Landscape Development in Areas of Alpine Glaciation -- A Daughter Of The Snows: Glacial Landscape In The United States -- The Glacial Erosion Boundary In The United States -- The Glacial Erosion Boundary Across North America -- Moraines -- Proglacial Lakes -- Lake Agassiz -- Marine Incursions.
Drumlin Fields -- Kame-Kettle Fields -- Eskers -- Sand Dune Fields -- Loess Deposition -- Area South Of The Glacial Limit -- The Teays River -- The Missouri River -- Pluvial Lakes Of The Cordillera -- Questions -- 13 Sediment and Nearly Flat-Lying Sedimentary Layers -- Landscape in Nearly Flat-Lying Layers -- Bench-and-Slope Landscape -- Erosional Mountains -- Monoclinal Slopes and Hogback Ridges -- The Coastal Plain -- Barrier Islands -- New England -- New Jersey to North Carolina -- South Carolina to Florida -- The Mississippi Embayment -- Texas -- Ancient Shorelines of the Coastal Plain -- The Western Margin of Nearly Flat-Lying Sedimentary Layers -- The Great Plains -- The Missouri Plateau -- The High Plains -- The Nebraska Sand Hill Region and Ogallala Aquifer -- The Central High Plains -- The Llano Estacado -- The Colorado Piedmont, Pecos Valley, Plains Border, and Edwards Plateau -- The Wyoming Basin -- Uplift of the Wyoming Basin and Northern Great Plains -- The Colorado Plateau -- Incised Meanders -- Bench-and-Slope Landscape -- Mogollon Rim -- Uplifts and Monoclines -- Fractures and Impact Features -- Arches National Park -- Zion National Park -- Bryce Canyon National Park -- Meteor Impact Features -- Sedimentary-Cored Anticlinal and Domal Mountains -- Central Lowlands -- Ozark Plateau -- Salem and Springfield Plateaus -- Boston Mountains -- Uplift History -- The Interior Low Plateaus -- Bench-and-Slope Landscape -- Deformed Rocks of the Shawnee Hills -- Mammoth Cave -- The Appalachian Plateau -- Allegheny Plateau -- Cumberland Plateau -- Comparison of the Pottsville and Cumberland Escarpments -- Questions -- 14 Crystalline-Cored Mid-Continent Anticlines and Domes -- Adirondack Mountains -- St. Francois Mountains -- Wichita, Arbuckle, and Llano Structural Domes -- Wichita Mountains -- Arbuckle Mountains -- Llano Uplift.
Landscape Development -- Western Margin of Crystalline-Cored Anticlines and Domes -- Intrusive Domal Mountains -- The Southern Rocky Mountains -- The Front Range -- Sawatch Mountains -- Rio Grande Rift in Central Colorado -- Landscape History of the Southern Rocky Mountains and Colorado Plateau -- Cause of Accelerated Erosion in the Southern Rocky Mountains and Colorado Plateau -- First There Is a Mountain -- Anticlinal Mountains of the Middle Rockies -- Wind River Range -- Beartooth Mountains -- Bighorn Mountains -- The Black Hills -- Water Gaps in the Rocky Mountains -- Superior Upland -- Geologic Overview -- Superior Province -- Penokean Province -- Iron Formations -- Sudbury Meteorite Impact Event -- Barron and Baraboo Quartzite -- Keweenawan Rift System -- Questions -- 15 Foreland Fold and Thrust Belts -- Structural Form of Foreland Thrust Faults -- Comparison With the Crystalline-Cored Anticlinal Structure -- Cordilleran Fold and Thrust Belt -- Northern Rocky Mountains -- Eastern Segment of the Northern Rocky Mountains -- Western Segment of the Northern Rocky Mountains -- The Rocky Mountain Trench -- The Idaho-Wyoming Fold and Thrust Belt -- Overview: Appalachian-Ouachita Fold and Thrust Belt -- Valley and Ridge Fold and Thrust Belt -- The Great Valley -- Northern Appalachian Fold and Thrust Belt -- Geology of the Southern Hudson River Valley -- Central Appalachian Fold and Thrust Belt --

Southern Appalachian (Tennessee) Fold and Thrust Belt -- The Western Thrust Belt -- The Central Thrust Belt -- Fault Zones on the Cumberland Plateau -- Distribution of Appalachian Foreland Deformation -- Ouachita Fold and Thrust Belt -- Arkansas River Valley-Northern Mountains -- The Fourche Mountains -- The Central Mountains -- Athens Plateau -- Marathon Basin Fold and Thrust Belt -- Water Gaps in the Valley and Ridge and Ouachita Mountains -- Questions.
16 Hinterland Deformation Belts.

Sommario/riassunto

Geology and Landscape Evolution: General Principles Applied to the United States, Second Edition, is an accessible text that balances interdisciplinary theory and applications within the physical geography, geology, geomorphology and climatology of the United States. The vast diversity of terrain and landscape across the United States makes this an ideal tool for geoscientists worldwide who research the country's geological and landscape evolution. The book provides an explanation of how landscape forms, how it evolves and why it looks the way it does. This new edition is fully updated with greater detail throughout and additional figures, maps, drawings and photographs. Rather than limiting the coverage specifically to tectonics or to the origin and evolution of rocks with little regard for the actual landscape beyond general desert, river and glacial features, this book concentrates specifically on the origin of the landscape itself, with specific and exhaustive reference to examples from across the United States.