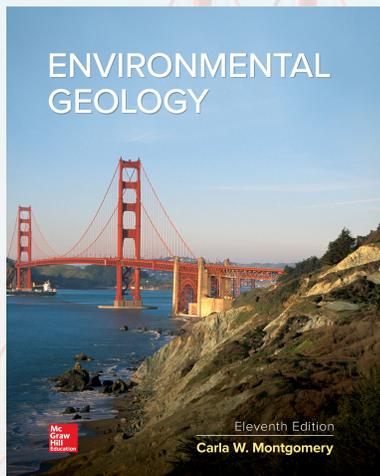


New Features You'll See in *Environmental Geology*, 11e



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New to This Edition —

Illustrations—Geology is a visual subject, and photographs, satellite imagery, diagrams, and graphs all enhance students' learning. Accordingly, this edition includes more than one hundred new or improved photographs/images and nearly sixty new figures, and revisions have been made to dozens more.

- 1 Chapter 1**—Population data and projections have been updated.
- 2 Chapter 2**—Case Study 2 updated to reflect the current status of the Libby vermiculite site cleanup.
- 3 Chapter 3**—Case Study 3 expanded to highlight some remaining questions about the details of plate tectonics.
- 4 Chapter 4**—New major earthquakes have been added. The phenomenon of slow-slip earthquakes is introduced. Treatment of induced seismicity, especially as related to fracking, is expanded, as is discussion of the

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- hazard represented by the Cascadia subduction zone. Earthquake hazard maps are updated. Results of appeals in the trials connected with the l'Aquila, Italy, earthquake are noted.
- 5 Chapter 5**—Fractional crystallization as a means of modifying magma composition is added. New information on Yellowstone caldera presented. The deadly 2018 pyroclastic flows at Volcán de Fuego are described. Case Study 5.1 now includes the Kilauea activity that threatened Pahoia in 2014, and the more-extensive and varied activity of 2018.
- 6 Chapter 6**—Information on more-recent flood events added. Discussions of flash floods, and of the role of hurricanes in inland flooding, expanded. New material on flood warnings.
- 7 Chapter 7**—Updated with expanded coverage of Hurricane/Superstorm Sandy, including a connection between the damage and climate change, and addition of material on Hurricanes Harvey, Irma, and Maria. Storm tide added to discussion of storm surge.
- 8 Chapter 8**—Images and discussion of the recent Big Sur, Oso, and Bingham Canyon slides added; coverage of the Attabad slide and Yosemite rockfalls expanded; the Montecito slide added as an illustration of the role of wildfires in increasing slide hazards.
- 9 Chapter 9**—New data on the dwindling of alpine glaciers presented. Vulnerability of areas around the globe to desertification is illustrated.
- 10 Chapter 10**—New/updated information on Arctic sea-ice cover, global temperatures, atmospheric CO₂ levels, effects of permafrost melting, heat storage in the oceans. New material on recent trends in temperature and precipitation in the contiguous United States and on the latest Australian heat wave. New section on geoengineering.
- 11 Chapter 11**—U.S. water-use and groundwater-storage figures updated; new data on soil moisture added. Updates on recent subsidence in the San Joaquin valley and on the state of the Aral Sea. New Case Study 11 focuses on the Colorado River and includes information on the drought-enhanced depletion of Lake Mead.
- 12 Chapter 12**—Updated data on U.S. soil erosion by wind and water and expanded discussion of changes over the past several decades. Patterns of soil composition across the contiguous 48 states presented.
- 13 Chapter 13**—All tables of U.S. and world mineral reserves, resources, production, and consumption updated. Expanded coverage of U.S. import dependence, overall and in connection with materials in mobile devices. Case Study 13.1 updates the role of China in world REE supply and the status of the U.S. Mountain Pass mine.
- 14 Chapter 14**—All data on U.S. and world reserves, and U.S. production and consumption, of fossil fuels updated. Expanded discussion of hydraulic fracturing, including its impact on gas

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reserves; expanded treatment of the Deepwater Horizon accident. Current status of the debate on oil leasing in the Arctic National Wildlife Reserve noted.

15 Chapter 15—World energy production by source and consumption projections updated. Current status of the Fukushima cleanup and the effects of the accident on global use of nuclear fission power discussed, with updated figures on power reactors worldwide. Current U.S. use of renewable energy presented, noting the expanding use of wind power and the effects of western drought on hydropower availability.

16 Chapter 16—Updates on U.S. and selected other countries' waste-disposal strategies, including recycling; status of radioactive-waste disposal worldwide. New data on numbers of National Priorities List Superfund sites in the United States and on sites with cleanup completed.

17 Chapter 17—Chapter partially reorganized for better flow. New information on industrial sources of water-pollutant discharge and on water pollution detections in groundwater from municipal wells nationwide. Expanded/ updated coverage of mercury in fish and shellfish, and fish consumption advisories in U.S. lakes and streams.

18 Chapter 18—Updates on U.S. emissions by type and source, with separate treatment of fine particulates, and

information on the global effects of fine particulates on health. New data on U.S. air quality and trends, and pH, sulfate, and nitrate in precipitation. Improved presentation of global ozone distribution by season; current status of the Antarctic ozone hole, recent ozone depletion over the Arctic. Case Study 18 includes expanded coverage of radon as an indoor air-pollution hazard, and regional variations in that hazard.

19 Chapter 19—The Paris Agreement, including key provisions and the status of U.S. involvement, added together with related data on changes in global CO₂ emissions since 2000, and China's rapidly rising share. Expanded discussion of Arctic land claims for potential resource development. Updated data on ozone-depleting substances and the Montreal Protocol, and Environmental Impact Statement filings. New information on the financial pressures on the federal flood-insurance program in light of recent severe storms. Status of the Keystone XL pipeline project updated in Case Study 19.

20 Chapter 20—New/updated information on U.S. land cover/ use and changes since 1982; U.S. population-density map updated to reflect the latest census. New Case Study 20.2 on the Oroville Dam spillway incident of 2017.