



How Geology Affects Our Lives

Let's consider how much geology impacts us as humans.

It affects our culture, infrastructure, development, and history worldwide.

- **Military Influence**
 - Hilly dolomite rock terrain helped the Union army win the Civil War Battle of Antietam
 - The United States Military Geology branch was created during World War II in to find rock and mineral resources for weapons production, and developed airborne magnetic surveying
- **Cultural History**
 - Peru's Inca Empire created Machu Picchu thanks to the abundance of easy-to-carve granite rock
 - Tectonic plate collisions under what is now Italy helped transform limestone into the gleaming white marble that characterized the Roman Empire
- **Contemporary Resources**
 - *Agrogeologists* study mineral-rich rocks to aid in food production for the Earth's growing population
 - Diatomite deposits are integral to the U.S beer industry; the rock is used to filter beer
 - Geologic resources provide materials for computers, cellphones, and processors

Further reading

Agrogeology – Geology for Global Development

<http://www.gfgd.org/key-themes/agrogeology>

Brown, AG, LS Basell, & KW Butzer. 2011. *Geoarchaeology, climate change, and sustainability*. Boulder, CO: Geological Society of America.

A broad survey of recent advances in geoarchaeology with particular attention to environmental change, including the use of geological techniques to answer archaeological questions from lower Paleolithic hunting to the location of Homer's Ithaca.

Civil War Geology

<http://www.smithsonianmag.com/history/civil-war-geology-123489220/?page=2&no-ist>

Diatomite and Diatomaceous Earth

<http://geology.com/rocks/diatomite.shtml>

Duracinsky, JM. History of the Military Branch of the US Geological Survey

<http://web.mst.edu/~rogersda/umrcourses/ge342/USGS%20Military%20Branch%20History.pdf>

Force, ER. 2015. *Impact of tectonic activity on ancient civilizations: recurrent shakeups, tenacity, resilience, and change*. Lanham, MD: Lexington Books.

Force's book observes a remarkable spatial correspondence of zones of active tectonism (i.e. plate boundaries in the earth's crust) with the most complex cultures of antiquity (great ancient civilizations). An expectation of change seems to be a feature such tectonic cultures shared, and led to an acceleration of development. These dynamics continue today.

Geology in Everyday Life

<http://www.geologieportal.ch/internet/geologieportal/en/home/topics/dailylife.html>

James, LA, SL Rathburn, & GR Whitticar. 2009. *Management and restoration of fluvial systems with broad historical changes and human impacts*. Boulder, CO: Geological Society of America.

Rivers serve as the arteries of environmental systems, the lateral connections that convey pulses of water, sediment, and nutrients down through valley networks. Management of surface-water resources has become increasingly urgent as concerns escalate over global environmental change, water scarcity, food production, resource sustainability, and biodiversity. Thus, the science of rivers and the human dimensions of river management now receive unprecedented study. The papers in this volume bridge classic late-twentieth-century fluvial geomorphology with modern concepts of river management and restoration. They apply perspectives of integrated watershed science, anthropogenic impacts, and historical changes to a modern fluvial geomorphology.

Oppenheimer, C. 2011. *Eruptions that shook the world*. Cambridge, UK; New York: Cambridge University Press.

What does it take for a volcanic eruption to really shake the world? Did volcanic eruptions extinguish the dinosaurs? Did they help humans to evolve and conquer the world, only to decimate their populations with a super-eruption 73,000 years ago? Did they contribute to the ebb and flow of ancient empires, the French Revolution and the rise of fascism in Europe in the 19th century? These are some of the claims made for volcanic cataclysm. Volcanologist Clive Oppenheimer explores rich geological, historical, archaeological and palaeoenvironmental records (such as ice cores and tree rings) to tell the stories behind some of the greatest volcanic events of the past quarter of a billion years. A spellbinding exploration of the history's greatest volcanic events and their impacts on the history of humankind

The Rock Whisperer: Earthbound, Scitable blog

http://www.nature.com/scitable/blog/earthbound/the_rock_whisperer

The Rocks of Machu Picchu and other Inca sites to see in Peru. Exploring the Earth: the earth science behind some amazing places

<http://exploringtheearth.com/2015/06/30/machupicchu/>

Stager, C. 2011. *Deep future: the next 100,000 years of life on Earth*. New York: Thomas Dunne Books.

Imagine a planet where North American and Eurasian navies are squaring off over shipping lanes through an acidified, ice-free Arctic. Centuries later, their northern descendants retreat southward as the recovering sea freezes over again. And later still, future nations plan how to avert an approaching Ice Age by burning what remains of our fossil fuels. These are just a few of the events that are likely to befall Earth and human civilization in the next 100,000 years. A paleoclimatologist makes predictions about how environmental choices in the twenty-first century will affect life on the planet throughout the distant future, drawing on geological history to argue that global cooling poses a more significant threat.

Wohl, EE. 2011. *A world of rivers: environmental change on ten of the world's great rivers*. Chicago: University of Chicago Press.

This book explores the confluence of human and environmental change on ten great rivers of the world ranging from the Murray-Darling in Australia and the Yellow River in China to Central Europe's Danube and the United States' Mississippi. Wohl shows how pollution, such as in the Ganges and in the Ob of Siberia, has affected biodiversity in the water. He stresses the importance of conservation and restoration to help reverse the effects of human carelessness and hubris. What these diverse rivers share is a critical role in shaping surrounding landscapes and biological communities, and Wohl's book ultimately makes a strong case for the need to steward positive change in the world's great rivers.