

Not My Fault: Packing some geology, some common sense for vacation

Lori Dengler/For the Times-Standard
Posted May 30, 2018

For many of you, summer vacation is just around the corner. As a retired person, I have the luxury of taking mine a few weeks early. I am writing this from the Alsace region of France. We've spent time exploring towns and countryside, visiting cathedrals and museums and enjoying Alsatian wines. One thing all of these activities have in common is geology.

The buildings, the statues, the cobblestones and paving blocks (whether new or ancient) are almost all rosy pink. The great walls, flying buttresses and exquisite statuary of Strasbourg cathedral, the tallest building in Europe for over 200 years, are the same color. Look a little closer and you can see tiny grains of sand and bedding planes, which sometimes cross one another. Read the commentary and you are likely to see Vosges sandstone. What makes a rock good for both building and carving? Strength, uniformity, resilience to weathering and carvability. And it helps if the source of the rock isn't too far away.

The Vosges sandstone is one of the most important building materials of northern France. Made up of tiny grains of quartz, cemented by silica, it is nearly impermeable to weather and the uniformity makes it ideal for supporting the massive weight of buildings, but still amenable to the sculptor's chisel. I had never heard of this sandstone before this trip and knew little about the geologic story of the area. But a few quick Google searches and a beautiful geologic map in a wine cave I visited this week has allowed me to rough out an outline and a history of the region you won't find in any guidebook.

Quartz is a marvelous material. Born originally from the cooling of magma, it is the second most common mineral on the earth's surface and, unlike most minerals, stable whether buried tens of miles beneath the surface or rolled by ocean waves along the beach. The quartz grains in the Vosges sandstone probably began life in Precambrian times as the roots of long gone mountains. Raised to the surface when two continents slammed together in a colossal collision in the neighborhood of 400

million years ago, the Hercynian range was created, monumental mountains that rivaled today's Himalaya's. The subdued remnants of that range are today's Caledonian and Appalachian Mountains (separated about 100 million years later with the opening of the Atlantic).

Erosion attacked the uplifted range, shedding voluminous amounts of detritus. Rivers carried the rock grains, rounding and sorting them. During drier periods, winds blew materials into giant dunes. Over time, mineral grains were winnowed out leaving almost nothing behind but nice rounded quartz. The sediments were buried in deep enough basins for the slow process of cementation to set in, gluing the grains together into a solid mass.

By 220 million years ago, as dinosaurs were beginning their long reign on the earth's surface, the Vosges sandstone was pretty much complete. The more dynamic tectonic activity had moved on to other parts of the globe and the Vosges was left alone – no subsequent rifts or collisions to deform or morph it into other forms. Around fifty million years ago, the plain of Alsace dropped and the hills, which would become the Vosges Mountains, emerged. In the south of France, the encroachment of the African plate was beginning to be felt and the Alps were being born. But in Alsace, processes were more gentle. The ice ages came and went and other erosive processes worked away at the Vosges Mountains depositing blankets of thick sediments in the plain and creating the gravelly, well-drained slopes that are perfect for growing wine, a fact we were able to verify personally with a day spent on bicycles visiting wineries.

I'm sure I don't have all the facts and details right, but I give you this story as an illustration of how fun it is to be a geologist when travelling and to observe the rocks and landforms. A few Google searches, a guidebook, a map and a story emerges of the landscape beyond the short human history. And of course it is the geology that has influenced human activities and continues to shape the life and economy of the people here today.

There is another aspect being a geologist brings when on vacation. It's the reminder that geologic processes are always at work. Mother Nature doesn't take holidays. Many geologic processes are slow and relentless like those that produced and preserved the Vosges sandstone. Others are violent and short-lived and can have an immediate affect on the resident and vacationer alike.

The same precautions you take when you are home can be doubly important when you travel. Earthquakes can happen anywhere, and when the ground begins to shake,

Drop, Cover and Hold On is good advice whether you are in Eureka, Washington DC (yes there was a strong earthquake there in 2011), Japan or elsewhere. If you are near the coast, there is always a small but real risk of tsunami. The longer earthquake shaking lasts, the more likely a tsunami will follow. If you aren't sure if the shaking seemed long enough – when in doubt drill it out! Head inland or to higher ground and stay there until you are sure that there is no threat. The December 2004 Indian Ocean tsunami claimed 2100 lives from 43 countries, most of whom were holiday travelers. Every area has regional hazards. As I write this, a rare May hurricane has formed in the Caribbean, record flooding is in the forecast for Yellowstone and Kilauea continues to rumble.

When you travel, please share your itinerary with family or friends – let someone know where you are headed and when you plan to return. Always pay attention to your surroundings whether indoors or out – locate exits, count the doors so you can find your hotel stairs in the dark and note routes to higher ground while at the beach. At night, keep your most important documents and a flashlight in a pack or satchel near the door so you can grab it if you need to leave in a hurry. Being aware and prepared will give you the peace of mind to enjoy your vacation.

Lori Dengler is an emeritus professor of geology at Humboldt State University, an expert in tsunami and earthquake hazards. Questions or comments about this column, or want a free copy of the preparedness magazine "Living on Shaky Ground"? Leave a message at (707) 826-6019 or email Kamome@humboldt.edu <http://www.times-standard.com/opinion/20180530/lori-dengler-packing-some-geology-some-common-sense-for-vacation>