

Researcher investigates ancient geology to understand human development, climate change

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(PhysOrg.com) -- To figure out how ancient humans adapted to their environment and constructed civilizations, you need to know the environment in which they lived -- including climate change over thousands of years.

Daniel Deocampo, a Georgia State assistant professor of Geology, is investigating ancient lakes and volcanic ash to help scientists better understand the environment in which humans evolved, and eventually used ash and sediment to build infrastructure in ancient civilizations.

Deocampo is presenting his research during the Oct. 5-9 Joint Annual Meeting of several geological societies in Houston — part of the International Year of the Planet Earth. W. Crawford Elliott, chair of Georgia State's Department of Geosciences, will also present research at the conference.

Deocampo investigates how water, minerals and organisms interact. Part of his work, in conjunction with anthropologists and others, seeks to reconstruct the environment in which the earliest humans evolved, out of ancient lakes in east Africa.

Such research also gives scientists clues into climate change — helping researchers figure out how climate changed in the past — through examining fossil records indicating alternating times of humidity and

aridness, as well as the expansion and contraction of grasslands and forests, Deocampo said.

"When we reconstruct ancient climates, ultimately, we can test our current climate change models to the past," he said.

His research into volcanic ash that formed sedimentary rocks in Italy and California helps scientists better understand the ways ancient societies, including the Romans, used rocks to create mortar and concrete that, in some cases, was actually more durable than the modern varieties.

Over hundreds of years, Romans experimented with different volcanic ash layers to perfect the building materials which would be used to make the dome of the Pantheon, which lasted several millenia, as well as Mediterranean piers — key to Roman naval dominance in the region.

"By 100 A.D. or so, they had perfected it, and knew exactly which volcanic ash layer to use — which we think we've pinpointed," Deocampo said. "The ancient roman concrete is better than a lot of our modern concretes. It's interesting to see how these land use patterns affected the development of Western civilization."

Provided by Georgia State University

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