Researcher calls attention to vast, overlooked zone called 'aquaterra'

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(Phys.org) —Think how people everywhere would marvel at the discovery of a continent lost beneath the sea, one that just a few thousand years ago played home to human civilizations that history has entirely missed.

"The public would clamor for every shred of new insight on who those people were, how they lived and how they might be related to us," said Jerome Dobson, professor of geography at the University of Kansas. "Government programs would sponsor massive expeditions for exploration and scientific investigation. Geographers would rush to describe the land and people, cartographers would map it, and they, together with all earth sciences, would strive to understand every aspect of it."

Dobson wants the same kind of scholarly resources to be focused on a little-studied geographical feature that he said holds insights about the natural and human world that would rival those of a true-life Atlantis.

Dobson calls the area "aquaterra," a new name for the previously undefined lands that were repeatedly exposed and inundated as ice sheets advanced and retreated over the past 120,000 years. "It's like a vast millennial tide," he said, "as glaciers hold and release waters to the oceans, and it's the same timeframe as the rise of modern humans."

Although it's scattered around the globe, in total aquaterra occupies as much space as North America, according to Dobson. He describes

aquaterra and its potential for study in the latest issue of Geographical Review, published by the American Geographical Society.

"For some reason, no one seems to care much about the same amount of land scattered around the globe in intriguing, often strategic, places," Dobson said. "When scientists do mention aquaterra, they often call it a 'land bridge' as if ancient people only used it to get from one place we know today to another place we know today. This was not just a bridge. When sea level was low, aquaterra was a vast coastal plain with population densities at least as great as those in the lands above. There were houses, roads, villages and possibly cities. It was all coastal, all flat, and mostly tropical—clearly the best place to live during the ice ages."

Dobson underlines the importance of investigating aquaterra, which he describes as having a vertical relief of 400 feet and possessing the gamut of submerged landforms from tidal to wetland to upland—similar to coastal lands today. However, he said aquaterra should hold even more scientific and archeological treasures than modern coasts.

"First, sediments from glacial runoff during the ice ages would have deposited there, and some of those deposits may still be intact," Dobson said. "That's where scientists should look for evidence of biophysical processes occurring during the height of the ice ages. Second and most important, aquaterra is where we should look for evidence of the most advanced human cultures extant during the ice ages. Throughout history humans have settled the coasts in larger numbers than inland, and often our most advanced settlements have been seaside. Why would the pattern have been any different in pre-history?"

To better understand this untapped archeological and scientific resource, Dobson called on researchers to write grants and direct resources to systematically explore aquaterra—but he understands the general public will have to play a role.

"I'd like to see well-funded expeditions for exploration and research, but substantial support is unlikely in today's funding climate," he said. "Fortunately, however, new technologies are available to map and survey easier and cheaper than ever. I advocate a voluntary effort in which boaters and divers report observations to a central clearinghouse. It's called crowdsourcing and is part of the modern movement called popular geographics."

The effort would be huge, as aquaterra is composed of "the upper majority of the continental shelf and lower fringe of the current coastal plain of every continent and island"—parts of the globe that aren't readily accessible.

"Sonar sounding of ocean depths is easier in deep water than shallow," Dobson said. "Satellite gravimetry also encounters more vexing problems in continental shelf crust than deep oceanic crust. Plus, there's actually been more public interest in the mysteries of the deep than in the unknown shallows. Aquaterra may spark more interest in the shallow part."

Dobson has promoted aquaterra as fertile ground for research for almost 15 years, and, with his brother, has written two novels using aquaterra as a setting. He sees boosting aquaterra as the same thing as boosting human understanding.

"What's a university good for if we can't discover new ideas and excite people about them?" Dobson said. "Aquaterra holds the key to the greatest mystery of all: How did we humans evolve from the ice ages to today? In short, how did we get to be so smart?"

Provided by University of Kansas