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UCSB Water-Mapping Project Could Help Efforts to Restore Lost Iraqi Wetlands

For thousands of years, the almost 5 million acres of wetlands formed by the confluence of the Tigris and Euphrates rivers in southern Iraq formed the Mesopotamian Marshlands, the largest marsh in western Asia.

The marsh was the ancestral home to Iraq's 400,000 Marsh Arabs and host to thousands of species of plants and animals. Some believe it to be the site of the Biblical Garden of Eden.

But in the past 20 years, the marsh has fallen victim to upstream development and the machinations of war and politics that have reduced it to just 10 percent of its former size. Environmental officials from around the world say restoration of the marshlands must be a high priority of the new Iraqi government.

A University of California, Santa Barbara geographer has developed a new technique for monitoring changes in wetland size that could be helpful in documenting the restoration of the Mesopotamian Marshlands.

Leal Mertes, a professor in UCSB's Department of Geography, has come up with a system that uses data collected by NASA satellites to map both open water and inundated vegetation.

Mertes discusses her system and her observations of the Mesopotamian Marsh region over the past several years in "Synoptic Monitoring of Water's Return to Mesopotamian Marshlands," an article published in the Aug. 17 issue of "EOS," the weekly newsletter of the American Geophysical Union.

The cultural history of the marsh, which occupies the southeastern portion of Iraq on the Iranian border and drains into the Persian Gulf, goes back to 5,000 B.C. or earlier, Mertes said.

During thousands of years, the marsh withstood multiple impacts---until the last decades of the 20th century, when water use and politics resulted in destruction of nearly 90 percent of the marsh area.

Mertes' data comes from NASA's Moderate Resolution Imaging Spectroradiometer (MODIS) and documents and analyzes light reflected off the earth's surface. In comparing data collected in 2002, 2003 and 2004 with data from 1976 and 1977, Mertes notes that the marshlands were six times larger in 1976 and 1977 than in 2002 and 2003.

In 1976 and 1977 the wetlands were largest during the April and May flood season. In 2002 and 2003, the water was highest during planned dam releases in February of each of those years.

The data clearly shows spikes in the presence of water occurring during the time of the major military activities in 2003.

Mertes said her data shows that rehabilitating the wetlands will require more than just putting the water back because canals and other structures have altered the course of waterways through the wetlands.

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