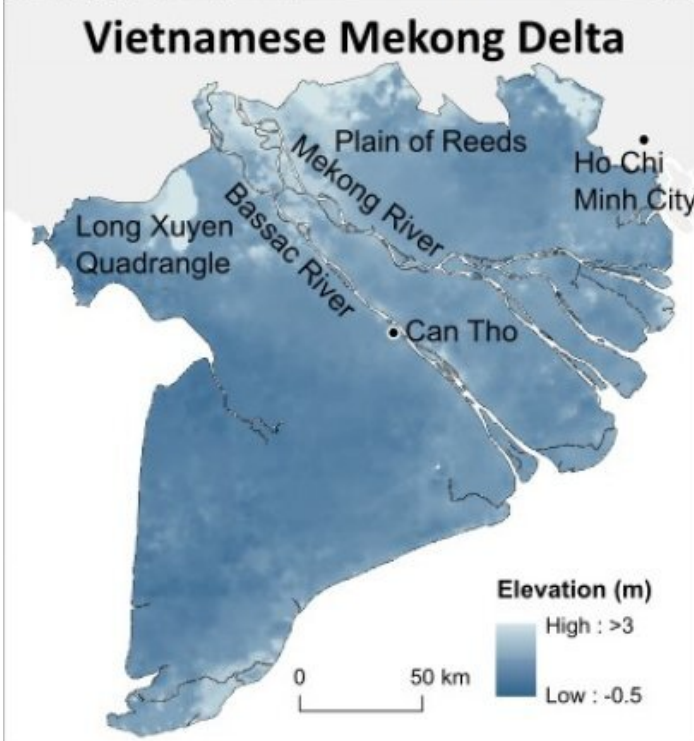
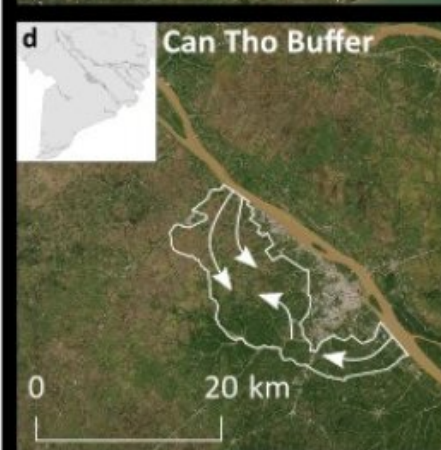
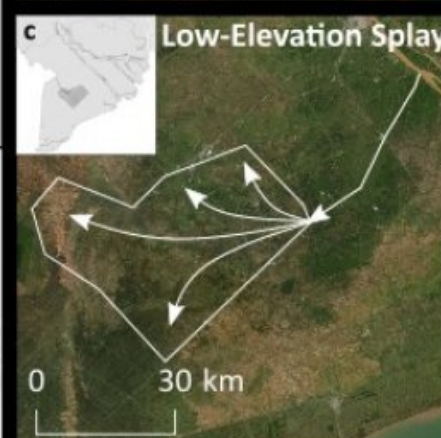
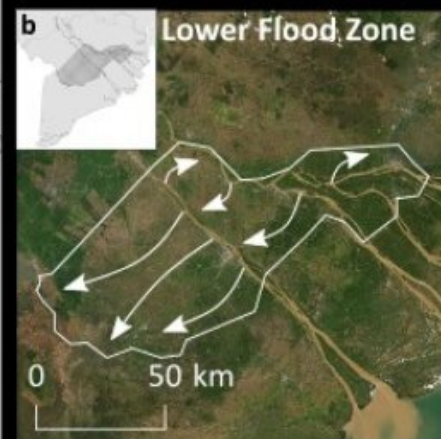
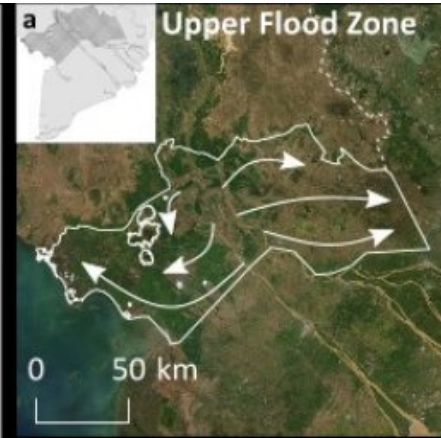
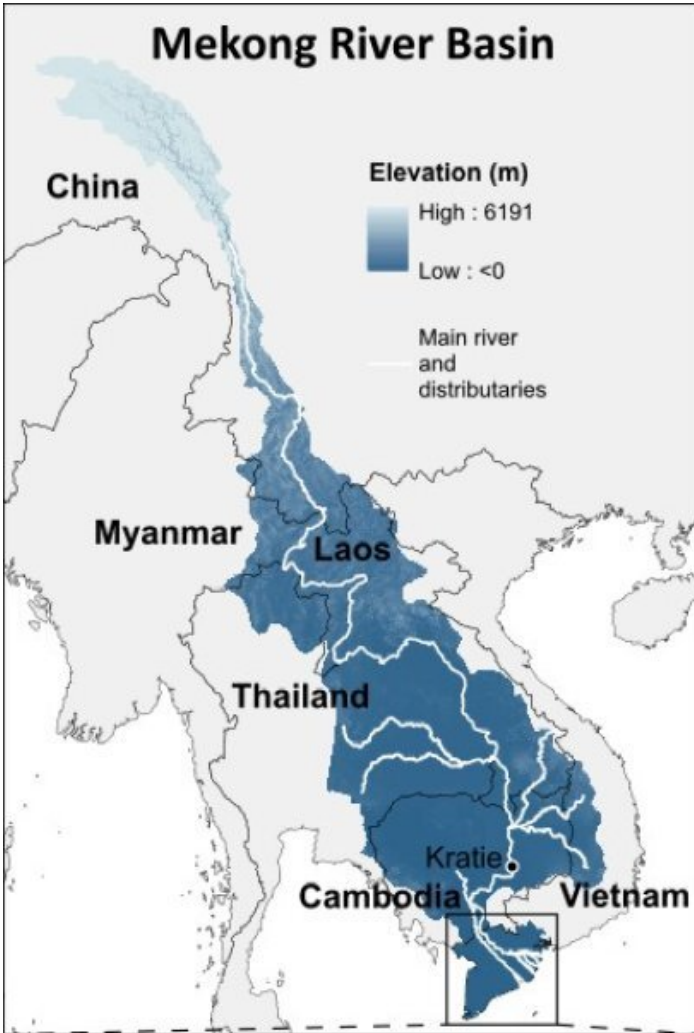


The Mekong Delta in Vietnam is sinking. Can sediment save it?

January 13 2022



Where Vietnam's Mekong Delta is situated. Credit: Modified from Dunn & Minderhoud, 2022

In Vietnam's Mekong Delta, home to about 17 million people, large areas of land have been poldered for the cultivation of crops such as rice and shrimp. At the moment, the delta is on average less than a meter above sea level. But due to accelerated land subsidence, mainly caused by groundwater extraction, a shortage of river sediment, and rising sea levels, researchers from Wageningen University & Research and Utrecht University predict that by 2050 large parts of the delta will have fallen below sea level if nothing changes soon. What can Vietnam do to stay above water?

Relative sea-level rise

Using new computer models, the researchers looked at how the delta will develop over the next 30 years, taking into account predictions for [land subsidence](#), sea-level rise and sediment shortages. "We saw that the delta will likely sink very fast compared to sea level," says Frances Dunn, researcher at Utrecht University and one of the two authors of the new study, which was published in *Nature Communications Earth and Environment* earlier this week.

"The delta sinks as a natural process, but in recent years land subsidence has been drastically accelerated by humans due to unsustainable groundwater extraction," adds Philip Minderhoud, assistant professor at Wageningen University & Research and second author of the study.

"This combination of land subsidence and sea-level rise is what we call 'relative sea-level rise,' and this is what people in the delta experience."

Dunn adds, "For the future of the people who live and earn their living there, these high rates of relative [sea-level rise](#) are worrying."

Local sediment strategy

One strategy to compensate for land subsidence and raise the delta is to accumulate sediment at certain locations in the delta. "For example, we looked at what would happen if you focused on sedimentation around the city of Can Tho," Dunn illustrates. "Even then, you can only protect one side of the city with sediment because there is a river on the other side of the city, and the rest of the delta sinks more because it won't receive any river sediment."

Local sedimentation does not seem to be the cure-all solution for Vietnam. "There is simply too little sediment available to compensate for how fast the delta sinks relative to sea level," says Minderhoud. However, the researchers say that such a sedimentation strategy could be combined with measures to prevent human-induced land subsidence and strategies to retain organic material coming from—for example—rice [agriculture](#), as opposed to fluvial [sediment](#) which is carried in by the river. In this way, Vietnam can considerably delay future relative sea level rise, giving the delta crucial time to adapt.

More information: Frances E. Dunn et al, Sedimentation strategies provide effective but limited mitigation of relative sea-level rise in the Mekong delta, *Communications Earth & Environment* (2022). [DOI: 10.1038/s43247-021-00331-3](#)

Provided by Wageningen University

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