

Scientists correct Amazon water level gauges from space

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Previously, gauges used to measure changes in water level in the Amazon were not on the same reference level. This meant water levels could not be directly compared, limiting the use of the gauges in research, especially understanding and modelling water flows and flooding.

Amanda Hall, a PhD student in Geographical Sciences at the University of Bristol and lead author of the study, said: "When we first calculated the river slope, the water seemed to be flowing uphill. So we used data from ICESat to calibrate the [Amazon](#) gauges to the same level, allowing us to make direct comparisons between the gauges and get accurate readings of actual water levels."

The research, published today in the American Geophysical Union's journal *Water Resources Research*, is the first study to use ICESat elevation data to make the necessary adjustments to the water levels at each gauging station, to ensure they are all on the same initial level.

The technique was carried out for six Amazon gauges upstream of Manaus, Brazil where the river is known as the Solimões. The corrections to the gauges were large and ranged from -7.82m to 13.37m.

Accurately estimating water levels and river slope in the Amazon is essential for understanding the exchange of water with the floodplain and other processes, such as the transport of sediments and the release of greenhouse gasses from Amazon wetlands into the atmosphere.

The method developed by the Bristol scientists can be applied to other unlevelled gauges in areas where ICESat data are available.

"ICESat elevations can also be used to find water levels in places where there are no gauges at all," said Amanda Hall. "This is significant in terms of modelling remote river basins, where gauges don't exist or are difficult to access. We can now get accurate [water levels](#) for model comparison where there were none before."

Provided by University of Bristol

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