Mid-nineteenth century Chinese maps controlled water and directed labour

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A section of the Miju River near Dengchuan, China.

A sequence of twelve maps from the mid-nineteenth century reveal that they were accurate enough for planning and executing middle-sized water control projects for the department of Dengchuan in southwest China according to University of Hertfordshire researchers and published in Water History.

The woodblock maps show the Miju River and the irrigation system that lay at the heart of the Dengchuan's farming economy. They include administrative details related to the compulsory mobilisation of the local labour for the annual clearance of mud – making them very unusual among Chinese maps depicting water control in this period.

Dr Darren Crook, a senior lecturer at the University of Hertfordshire's School of Life and Medical Sciences, said: "The clarity of these unusual maps help us to understand the environmental processes behind the recent formation of a long, spit-like delta of deposited sediment that juts out into the Erhai lake, the large mountain lake into which the Miju River empties. And they also assist with the dating and analysis of the environmental crisis during the late seventeenth century and much of the eighteenth, which caused the spit."

Population pressure during the late seventeenth century, and most of the eighteenth, increased the demand for agricultural land – forcing the use of unstable mountain soils on the slopes of the catchment just upstream of the section depicted in the maps. The result was a massive increase in the river's load of sediment. This made the level of the dykes downstream rise higher than the surrounding farmland.

Dr Crook continued: "The riverbank dykes were split into sections identified by distinctive names and assigned to local households. Each household was responsible for digging out the sediments accumulated at their own dyke – with each section dredging in sequence. Dredging upstream had to be completed first, and those downstream had to wait their turn."

Coordination on water control operations on this scale was essential – with large numbers of workers without machinery at their disposal. The researchers showed that the accuracy of these twelve sequential woodblock maps was adequate for planning and delivering water-control

projects in response to these environmental crises at that time.

More information: Bureaucratic control of irrigation and labour in late-imperial China: the uses of administrative cartography in the Miju catchment, Yunnan' by Darren Crook and Mark Elvin, *Water History* (ISSN 1877-7236), 2013, DOI: 10.1007/s12685-013-0091-1

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