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## The Anthropocene Geoarchaeology of the Yellow River

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China's Yellow River, which gains its name from the extraordinary amount of yellow-brown silt it entrains, was not always so yellow. Current historical and geological evidence suggest that the Yellow River experienced several periods of human-induced transformation that have not only changed the color of the Yellow River's water, but also fundamentally altered the river's hydrological properties, specifically by increasing the Yellow River's propensity for catastrophic floods. In this paper, I argue that the long history of soil erosion and Yellow River floods is a defining characteristic of China's incipient Anthropocene period and can be understood through the application of geoarchaeological methods and frameworks. Specifically, I focus on how extreme Yellow River flood events at Kaifeng, a former capital of dynastic China, have shaped the city's urban resilience in the wake of a flood that killed over 300,000 people in AD 1642. Recent geoarchaeological excavations have discovered evidence that reveals the AD 1642 Yellow River flood destroyed Kaifeng's inner city, entombing the city and its inhabitants within meters of silt and clay. I argue that the geology of the Yellow River floods and the socio-political context of Kaifeng shaped the city's resilience to extreme flood events. Through this example, the long-term consequences of China's early Anthropocene are brought out in sharp relief. Flood events like at Kaifeng not only represent significant hydrological shifts in the Yellow River, but also had dramatic social consequences as numerous Yellow River floods have coincided with the collapse major Chinese dynasties. In conclusion, I suggest that a deeper understanding of the origins and long-term development of the Yellow River as a coupled human and natural system is fundamental to designing more sustainable solutions to managing the Yellow River and other large, muddy, rivers around the world.