

The Great Flood(s)

Flood myths reflect 10,000 years of rising sea levels

Well before the Book of Genesis was written down, a similar story about a great flood was recorded in ancient Mesopotamia. In this earlier account, the gods had grown unhappy with humankind. They had made people out of clay to labor at building canals and raising crops to save the lesser gods from the drudgery. But humans, headstrong and irritating, had caused so much

trouble that the gods, led by Anu the king of the gods, decided to wash them away by flooding Mesopotamia. However, the lesser god, Hea, feeling sorry for the humans, came to a man named Adrakhasis (also “Atrahasis”) in his city on the Euphrates and told him to build a great boat, 600 cubits long and 60 wide, and to fill it with “thy grain, thy furniture, thy goods, thy wealth, thy woman slaves,

thy handmaids, and the sons of the people, the beasts of the field, and the wild animals of the field.” The door was sealed and a great storm began, driven by the gods of wind and rain. It lasted for seven days and nights. When the rain stopped, the people in the boat found a flooded world, with corpses floating on the water like reeds. The ship came to rest on Mt. Nizir. Adrakhasis sent out a dove, a sparrow, and a raven to find the land, and when the flood receded, he released all his animals to repopulate the world. He built an altar on the mountain and made a sacrifice to the gods, who all came round and were so impressed that they granted Adrakhasis immortality.



“Noah’s ark on the Mount Ararat,” oil on panel painting by Simone de Myle (1570)

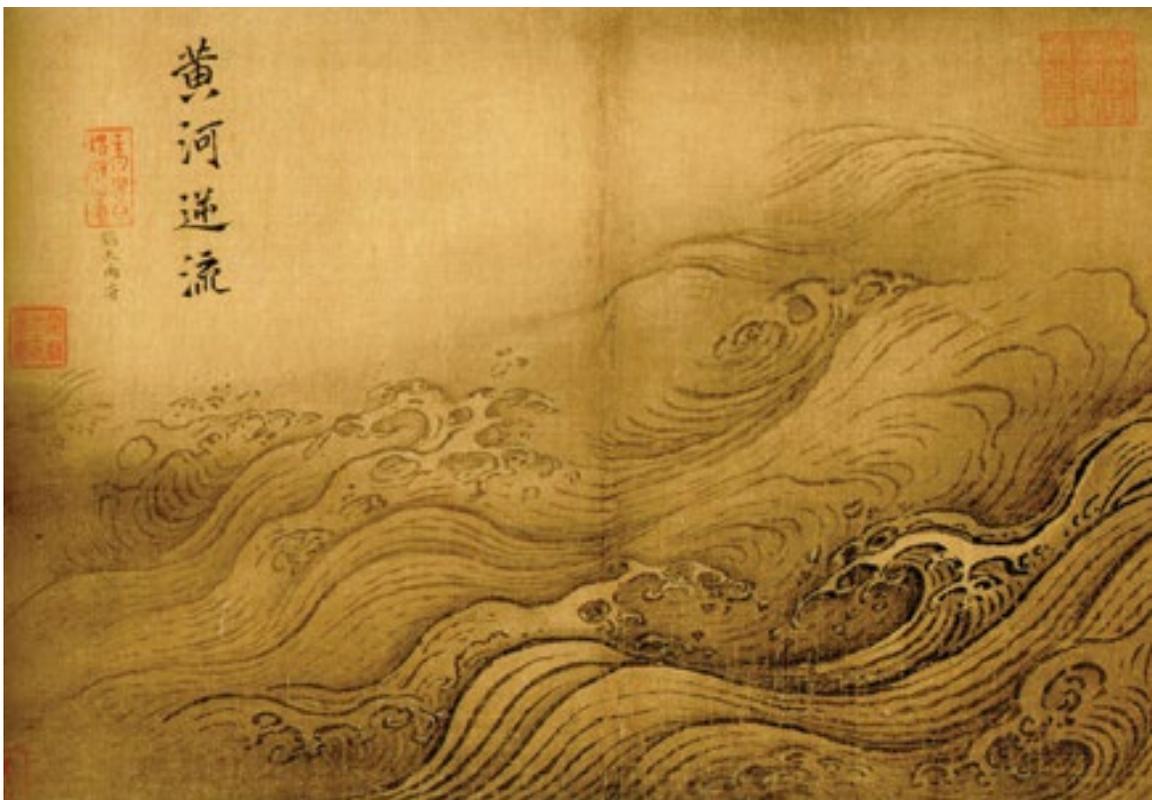
PUBLIC DOMAIN

This story is in cuneiform on Table XI of the Epic of Gilgamesh, written around 2100 BCE. The stories of the Epic deal with Gilgamesh, the legendary king of the great city of Uruk. Fragments of the story are found in Sumerian, Akkadian, Babylonian, and other Middle Eastern languages, and formed part of the Book of Genesis. Part history and part myth, the Epic of Gilgamesh and other contemporary stories describe the Mesopotamian river valley of the Tigris and Euphrates as a land of competing city-states, constantly at odds with one another and fighting for dominance in lower Mesopotamia. Neolithic farming villages had been out on the floodplain since 10,000 BCE. By 4000 BCE, however, complex societies had developed, subsisting on intensive, year-round cultivation of domesticated plants, such as wheat and barley.

Flood myths are in numerous cultures. In India, from commentaries on Vedic texts from the sixth century BCE, there is a story of cautionary advice given to Manu, the first man, to build a boat and prepare for a huge flood, and it proved to be humankind's salvation. In Greek mythology, Zeus decided to flood the world to rid it of people, but in Homer's narrative, Prometheus, taking the humans' side, tells Deucalion to build a boat in anticipation. In Homer's account, the flood rages for nine days and nights, but in the end Deucalion's boat comes to rest on a mountain, and humanity is saved.

Stories of sunken civilizations also fit within narratives of the great flood. Kumari Kandam is the legendary lost Tamil kingdom somewhere in the

黄河逆流



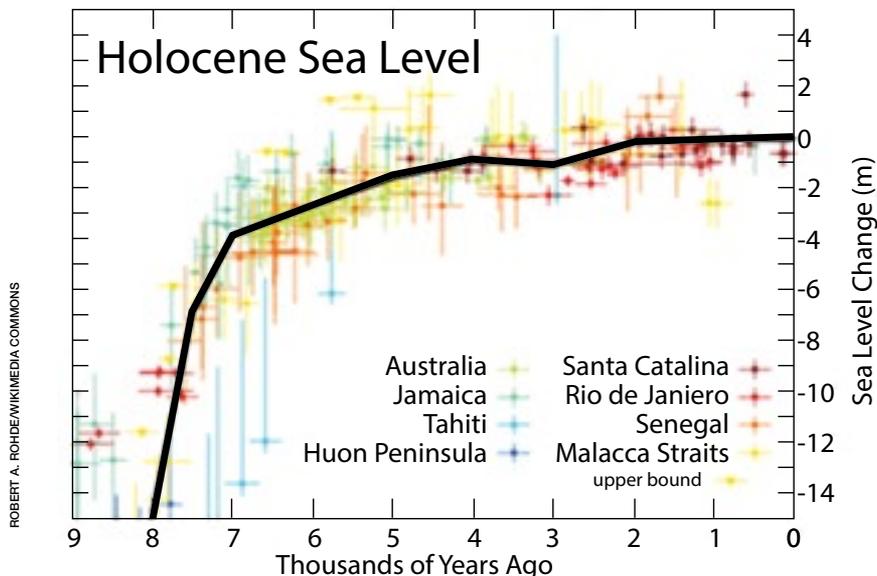
"The Yellow River Breaches its Course," ink and light color painting (1160-1225)

Indian Ocean. Mu is a mythical lost continent in the Pacific Ocean, and Buyun is a Russian island that is said to appear and disappear beneath the waves. The appearance of these places in myths does not mean they were not real places. Sea-level rise and the subsidence of land masses have inundated many human settlements. The Egyptian-Greek city of Thonis-Heraclion was a powerful port city for more than 1,000 years, but now lies submerged in the Mediterranean, seven kilometers (km) from the current shore.

One condition leading to city-state formations in southern Mesopotamia was the region's shrinking areal extent. After the end of the last ice age (ca 10,000 years ago), glacial meltwater caused Earth's sea level to creep upward, flooding coastal plains around the world. At the time of the Last Glacial Maximum (about 20,000 years ago), sea levels were roughly 125 meters (m.; 440 ft) below their current levels. The Persian Gulf was high and dry. It was a rich floodplain

as far south as the Straits of Hormuz, one thousand km from the present-day coast. The part that became inundated would double the size of today's Mesopotamian floodplain. As the sea level rose, the people who lived there were pushed to the northwest, across the shallow gulf, which compressed the population into an incubator of conflict and urban growth. But these conditions also led to the development of more and more complex economies and political institutions.

States developed in various places in the world, all about the same time. The factors that archaeologists think are most important in this transformation involve population growth and resource shortages: faced with competition for land for farming or grazing, people joined together for self-defense and to combine their labor. In order to be productive in active floodplains, large community efforts were sometimes necessary. Large groups dug canals, built water-control features, erected walls, and



Changes in sea level during the Holocene, the time following the end of the most recent glacial period

accomplished other earth-moving projects that were larger than a single village could handle. It took a level of management to build and regulate such efforts. To live in dense cities, people developed economies based on trade, which given the scale of the cities required administrative institutions to make them work. They developed intensive forms of agriculture to get more food from smaller amounts of land, and became specialized in their roles as farmers, herders, fishers, craftspeople, soldiers, builders, traders, priests, and bureaucrats. In an increasingly contentious political environment, a community could not survive without walled cities and warriors. As archaeologists have considered the driving force behind these developments, sea level change has always been considered, but today it looks even more relevant.

Sea-level change was not a factor in the development of every primary state (a state that came into being without any historical predecessors). Sometimes it was irrelevant—for example, with the development of the complex societies of the Andes or the Mississippi Valley. But, generally, there was some dynamic at work that led to a situation in which many people were competing for scarce resources.

In archaeology, we have increased our focus on how much things like climate and sea-level change might have affected societies in the past.



Tablet with the flood story from the *Epic of Gilgamesh*, Old Babylonian period (2100-1600 BCE)

The longer-term view is that despite periods of relative stasis, sea levels have generally been rising for the last 20,000 years. That increase declined to a slower level about 6,000 years ago, but now we have entered another period of rapid sea-level rise. The

shallow coastal shelves are now well mapped and we can see how much land was lost as sea levels rose. In many parts of the world, the story is the same as in Mesopotamia: rising seas pushed people into smaller and smaller areas.

On the eastern edge of Asia, where the Yangtze and Qiantang rivers empty into the East China Sea near Shanghai, there was another incubator for urban development. At the Last Glacial Maximum, what is now Shanghai looked out over a vast alluvial floodplain 500 km wide and stretching 1,400 km along the coast of eastern China. At the glacial maximum, one could walk from Shanghai to southern Korea and Japan, crossing wide rivers in mid-valley. Like the flooded Persian Gulf, this rich floodplain was well suited to a Neolithic way of life, with small villages subsisting on wild and domesticated plants and animals and the resources of the wetlands.

Today, the flooded deltas of the Qiantang and Yangtze rivers extend out 100 km from the coast and are only a few meters deep. The current floodplain is dotted with low alluvial islands and a few rocky hilltops surrounded by the East China Sea. It was probably here, or places like it, that rice (*Oryza sativa*) was domesticated between 12,000 and 8,000 years ago. It would have been an ideal environment for both wet and dry rice production.

Between the Qiantang and Yangtze rivers is the center of the Liangzhu civilization, which emerged between 3300 and 2300 BCE. The walled city of Liangzhu has been compared to Venice because of its extensive canal system, even within the city walls. A huge central palace complex was built on an earthen platform 15 m above the rest of the city. The platform contained large granaries, including one that excavators found still held 13,000 kg of rice. The rammed earth walls enclosed 290 hectares (ha; 494 acres), compared

to Uruk's 450 ha (or Central Park in New York City, which is about 340 ha). The population of Liangzhu is estimated to have been around 35,000. The elite of Liangzhu and contemporary sites traded in jade, silks, lacquer ware, and ivory. Grave deposits show clear status delineations between commoner and elite tiers of society. Liangzhu's influence is seen for hundreds of kilometers up and down the Chinese coast, and the impact of their technology and artistic style is seen in later Chinese complex societies.

Recent archaeological research suggests that Liangzhu civilization may have been disrupted or destroyed by rising sea levels. The low-lying society is known for its extensive canals, dams, levees, and other water control features, but at about 2500 BCE there are signs of massive ocean flooding events. Researchers have found that hurricane storm surges or tsunamis inundated many of the Liangzhu sites, destroying dams and canals and swamping their fields with salt water. At the site of Yushan, such an event took place around 2560 BCE. Up and down the coast there is evidence of widespread flooding between 2560–2440 BCE. The sediment record from this period shows that microorganisms from brackish swamps or marine environments replaced freshwater species in many contexts. This flooding episode marks the decline of Liangzhu's influence on the coast and Yangtze river valley. It was nearly one thousand years before there were societies of similar complexity and organization in what is now China, but when they did emerge, they employed ideas and stylistic elements from Liangzhu culture.

There are many flood myths in Chinese history, and a lot of archaeological evidence that the flooding events were real. The most important stories differ from the Mesopotamian flood myths in that they are not based on the idea that the gods were trying to get rid of humans. One version, recorded in the works of the Confucian scholar Mencius (*Mengzi*, ca.



This red-granite, five-meter-high statue of the god Hapy lies among the ruins of the ancient Egyptian-Greek port city of Thonis-Heraclion, which is now submerged seven kilometers off the coast of Egypt

372–ca. 289 BCE) does not see the flood as a divine punishment, but rather as an aspect of nature that had to be domesticated. In the “Book of Documents,” or *Shūjing*, one of the Five Classics of Chinese literature, there is this description of the flood: “Like endless boiling water, the flood is pouring forth destruction. Boundless and overwhelming, it overtops hills and mountains. Rising and ever rising, it threatens the very heavens. How the people must be groaning and suffering!” Mencius’s account of the Great Flood involves the sage emperor Yao (traditionally believed to have ruled ca. twenty-fourth century BCE). In Yao’s time the empire was constantly threatened by floods, making it difficult for people to live a settled life. Yao delegated the job of taming the floods to his relative Yü, who worked for eight years, dredging the Nine Rivers (including the Yangtze and Yellow), clearing channels to the sea, and raising dikes along them so that the people of the Central Kingdoms could be safe from flood. In appreciation, Emperor Yao offered the

title of emperor to Yü, who became the first emperor of the Xia Dynasty, which while perhaps more a matter of legend than history, is traditionally dated to 2205–1766 BCE. Although his reign is somewhat mythical, he is still called the first emperor of civilized historical time.

Humans have had at least 10,000 years of experience dealing with catastrophic environmental challenge. Floods and great storms are deeply inscribed in our mythology and built into our system of political organization. The lesson from the myths appears to be that some political leaders, or societies, heeded the warning signs of impending disaster and prepared

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