

## Tigris and Euphrates Rivers.

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The Tigris and the Euphrates are two large rivers that flow from the mountains of Anatolia through Iraq. The Tigris (in Arabic, Dijlah) and Euphrates (in Arabic, al-Furat) rivers have defined the region historically known as Mesopotamia. The Greek toponym “Mesopotamia” and its comparable Arabic term, *bayn nahrayn* (between two rivers), express the importance of the two rivers and their tributaries in shaping the cultural, social, and spatial dimensions of cities and towns within the region.

### Geography.

The Tigris rises from melted snow in the Taurus Mountains of eastern Turkey and flows primarily in a southeasterly direction until it joins the Euphrates to form what is known in Arabic as the Shatt al-'Arab (Bank of the Arabs) and in Persian as the Arwand Rud (the Sublime River) near the village of al-Qumah in southern Iraq. The united streams of the Tigris and Euphrates continue onward to empty into the Persian Gulf. The Tigris flows for a distance of about 1,180 miles (1,900 kilometers). The Euphrates is formed by the junction of two arms, the Karasu, which originates in the high mountains of eastern Turkey north of the city of Erzurum, and the Murad-suyu, which rises in the volcanic Aladag and Tendürük mountains north of Lake Van. The Euphrates measures 1,430 miles (2,300 kilometers) from the confluence of the Karasu and Murad-suyu to the Iraqi city of Basra.

The Euphrates flows southeasterly across Syria and Iraq for its entire length. Prior to the 1990s the Euphrates divided into many channels at the southern Iraqi city of Basra, where it formed extensive marshlands. The marshes were largely drained by the government of Saddam Hussein (1979–2003) as part of a program to drive out the local populations living in the marshlands. The Euphrates is very difficult to navigate upstream from the Iraqi city of Hit, where rapids and shoals make transportation challenging for all but shallow-draft boats. From Hit to the delta in the Persian Gulf, the Euphrates loses a major portion of its waters to irrigation canals and Lake Hammar.

### Flooding and Water Use.

Historically, the populations along the Tigris and Euphrates rivers have used irrigation to develop agriculture that, in turn, sustained many cities and towns. Efforts to maintain an irrigation system in the alluvial valleys of the Tigris and Euphrates were made as early as Babylonian times. There are specific geographical features that necessitated irrigation for agrarian development in the region. The Tigris and Euphrates rivers have little distance between the headwaters and the alluvial plains to retain water when abundant and discharge it back into falling rivers at the time when it is most needed. Since ancient times the irrigation system in the area was to confine the floodwaters to one bank of each river and protect that bank against inundation. The other bank would allow the floods to waste their energies, which in turn would allow certain fields to be cultivated.

The city of Baghdad is located at the conjunction of the Tigris and Diyala rivers. As a result of irregularities in the flow of tributaries, the city has throughout the historical record been prone to flooding. In more recent times, to control the frequency of floods in Baghdad, water has been diverted from the Tigris to the Euphrates in locations where the Euphrates has less alleviation. Efforts have been made in the modern period to develop irrigation works to stabilize the course of the Tigris, to prevent annual flooding of the countryside and of the city of Baghdad itself, and to regulate and conserve water for summer irrigation.

In premodern times, issues surrounding the control of the Tigris and Euphrates rivers by employing canal and irrigation systems were often the source of great government concern. The history of floods in Baghdad has attracted considerable attention from chroniclers. Chroniclers writing in Arabic reported countless floods in the city as early as a.h. 186/802 c.e., such that the Abbasid leadership felt the need to control the movement of the Tigris and the Euphrates as well as to supervise and register the levels of the rivers during the flooding season. Internal disagreements among various regimes governing the region in the premodern period often caused authorities to neglect the canal system. Politically motivated neglect frequently led the two rivers to overflow their banks, causing deaths and extensive damage to the infrastructure. As a result of breached dams and torrential rain, there were at least

eight floods of considerable size in the first half of the seventh/thirteenth century alone.

The year a.h. 654/1256 c.e. ushered in the largest and most destructive flood of the late Abbasid period. The flood added to the damage caused to Baghdad in the previous year when a number of mosques had been destroyed, including al-Jami' al-Mansur and the portions of Masjid al-Qamariyah in West Baghdad. The flood also pulled down the Khudara' tomb and a number of neighboring ribats (monasteries). On the eastern side of the city many mosques and ribats were destroyed, including Jami' al-Mahdi in al-Rusafah, Jami' al-Sultan, Jami' al-Qasr, and Ribat Dar al-Dhahab. The dormitories of al-Madrasah al-Nizamiyah and portions of al-Madrasah al-Mustansiriyah were also damaged. The flood of the Euphrates in particular submerged a vast area including Nahr 'Isa, Nahr al-Malik, al-Anbar, al-Hillah, al-Kifah, and Qusan. The flood of a.h. 654/1256 c.e. lasted for fifty days and nearly engulfed all of al-'Iraq. According to the chronicler Ibn al-Fuwati, the destruction caused by the flood was not repaired until the intervention of Diya' al-Din, the uncle of the well-known historian 'Ala' al-Din 'Ata' Malik al-Juwayni, in a.h. 664/1266 c.e.

In the modern period there has been considerable controversy over rights and the use of the two rivers. Turkey completed the construction of the first of a proposed twenty-two dams, the Atatürk Dam, in 1990, with additional plans for the building of hydroelectric power plants using water diverted from the Tigris and Euphrates rivers. The project has been a source of tension between Turkey and the neighboring countries of Syria, Iraq, and Iran, who are concerned that Turkey will prevent water from reaching their respective countries. The scarcity of water in the region makes issues of water use the source of political and economic volatility. Turkey and Syria have experienced direct conflict over the quantity of water to be used from the Euphrates River. The Euphrates provides the only reliable source of running water to Syria. In 1973, Syria completed the Tabaqah Dam, which forms a reservoir, Lake Assad, that diverts water for hydroelectric production and the irrigation of cotton fields. Turkish plans for constructing multiple large-scale dams have led Syria to fear becoming completely dependent on Turkish control of the river.

Tension between Syria and Iraq appeared during the late 1960s and early 1970s over Syria's filling of Lake Assad, which greatly reduced the flow of the Euphrates into Iraq. Ultimately, Saudi Arabia brokered an agreement between Syria and Iraq over water use, signed in 1975. Iraq operates seven dams; after the overthrow of Saddam Hussein's regime in Iraq in 2003, water use in the region emerged as a central issue. In particular, the lingering fear that Turkey will use most of the water from the Euphrates before it reaches Iraq and the potential long-term effect of Turkey's water development project have reignited conflict over the control of the two rivers.

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