

THE OCEAN HAS shaped human history in deep and surprising ways. In a cave off the coast of South Africa, a pile of mussel, whelk, and giant periwinkle shells attests to the beginning of our romance with the sea—the remains of the earliest recorded human seafood meal, 167,000 years ago. Since then, the sea has provided trade routes and fueled empires. But the ocean's impor-

WATERWORLD

HOW THE OCEANS MADE US WHO WE ARE

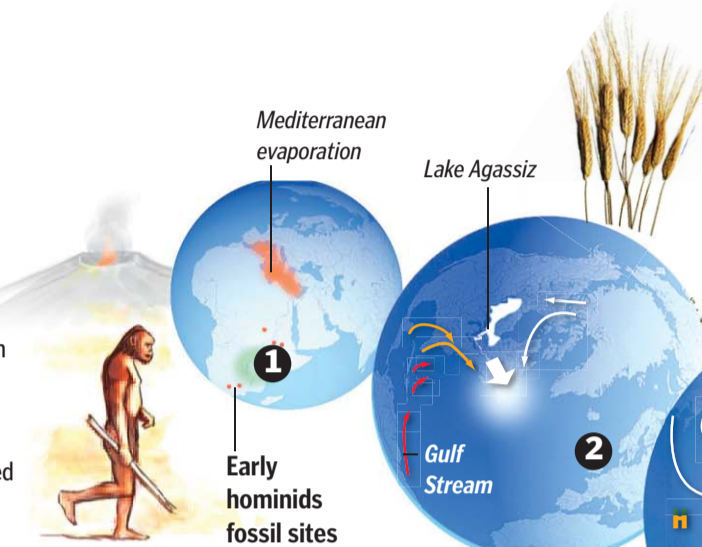
tance to our story is greater still: With its powerful effect on the planet's climate, the sea influenced human evolution in the forests of Africa, and today continues to touch us wherever we dwell, whether in mountains, deserts, or cities. World Oceans Day, June 8, gives us a chance to consider the ways the ocean has transformed who we are and how we live.

TEXT BY DEBORAH CRAMER GRAPHIC BY JAVIER ZARRACINA

1. THE EVOLUTION OF HUMANS

Between 6 million and 3 million years ago

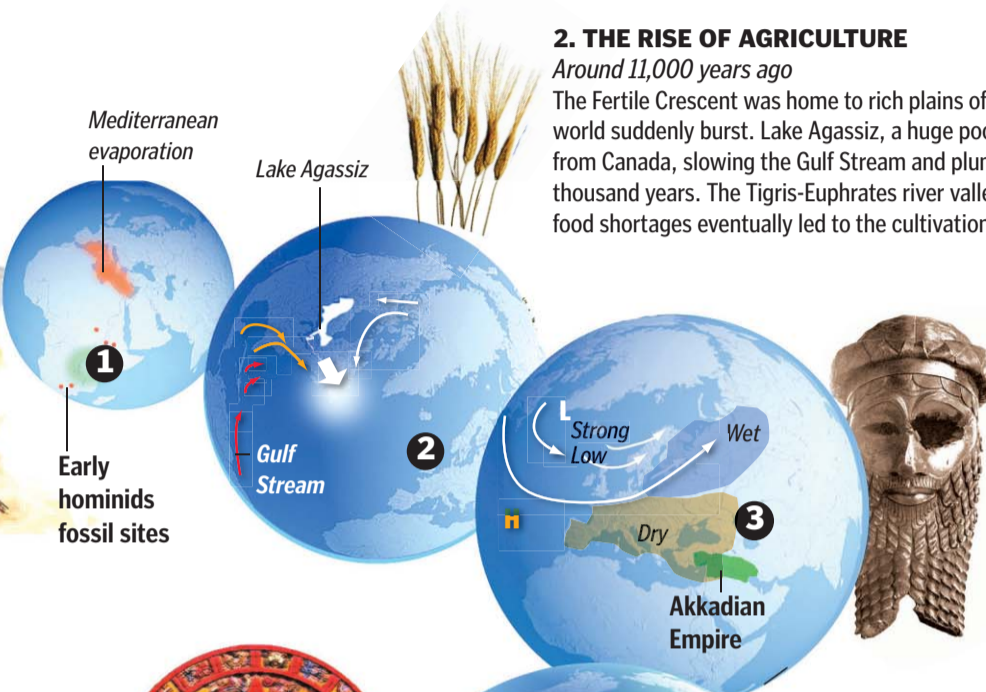
Sea changes – including the temporary evaporation of the Mediterranean, a newly emerging ocean basin in East Africa, and the end of a million-year-long El Niño in the Pacific – periodically dried out the thick tropical forests of Africa. Hominids moving upright to find food and shelter elsewhere survived the grueling climate change and evolved into humans.



2. THE RISE OF AGRICULTURE

Around 11,000 years ago

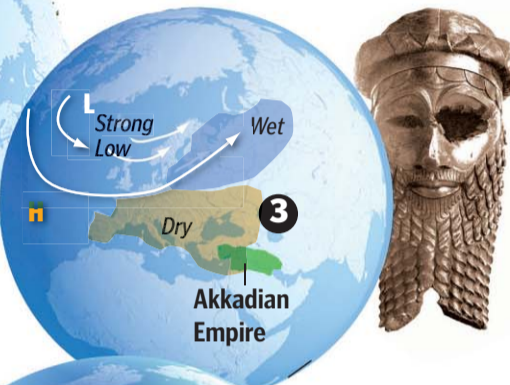
The Fertile Crescent was home to rich plains of wild wheat and rye, until an ice dam on the other side of the world suddenly burst. Lake Agassiz, a huge pool of glacial meltwater, flooded the Arctic and North Atlantic from Canada, slowing the Gulf Stream and plunging the northern hemisphere back into an ice age for another thousand years. The Tigris-Euphrates river valley cooled, and anthropologists widely believe that the ensuing food shortages eventually led to the cultivation of wild cereal grasses and the birth of agriculture.



3. THE DECLINE OF THE WORLD'S FIRST EMPIRE

4,200 years ago

The Akkadian Empire once flourished in the Tigris-Euphrates valley, its prosperity supported by barley grown in the fertile rain-fed floodplain. Then the distant Labrador Sea chilled, winds moving across the Atlantic strengthened, and moisture-bearing storms from the ocean tracked further north, causing water levels in the Tigris and Euphrates rivers to drop. A once wealthy civilization could no longer feed itself.



4. COLLAPSE OF THE MAYA

Before the year 1,000

The Classic Maya built a powerful society with sophisticated cities and a rich cultural life. War, overpopulation, deforestation, and soil erosion helped hasten its end, and so did the ocean. Because the Yucatan lacks permanent rivers and large lakes, water is supplied seasonally, by monsoon rains blowing in from the sea. When Atlantic winds, currents, and sea surface temperatures held the rain to the south, causing multiyear droughts on land, the Mayan reservoirs and canals could no longer support its maize-based agriculture.



5. EUROPE WARMS, THEN FREEZES

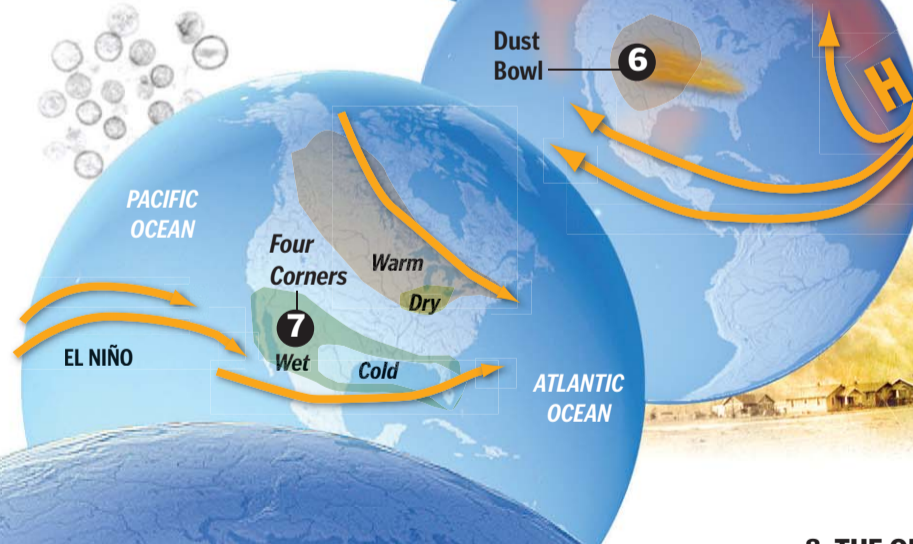
800-1800 A.D.

Medieval Europe was transformed when the temperature of the North Atlantic rose, bringing warm air and melting the Arctic ice pack. Wineries flourished in England; farmers began moving up into the Scottish hills; and Norse voyagers led by Eric the Red settled in newly accessible Greenland, even raising livestock during the short summers. But the warmth didn't last: The North Atlantic eventually chilled, plunging Europe into the Little Ice Age. The Norse colony in Greenland became extinct after 500 years of settlement; on the continent, grapevines withered, rivers froze, and glaciers engulfed Alpine villages. Cool, rainy summers led to massive crop failures and widespread starvation.

7. A DEADLY DISEASE IN THE AMERICAN SOUTHWEST

1993

In the Four Corners region of New Mexico, Arizona, Colorado, and Utah, at least 14 people died of a mysterious lung infection. Transmitted by deer mice droppings, its ultimate cause was the warm water pool from the Pacific Ocean known as El Niño. When El Niño and its accompanying rains appeared in the eastern Pacific off the coast of California, the desert of the Four Corners bloomed. Mice multiplied on the cornucopia of nuts, berries, and seeds, coming into greater contact with humans and exposing them to the new virus. When El Niño waned, rodent populations dwindled, and the number of cases declined.



6. THE DUST BOWL

The 1930s

A slight cooling in the surface waters of the Pacific Ocean and a slight warming in the Atlantic altered the troposphere and wind circulation, suppressing rainfall over the Great Plains. The resulting six-year drought devastated American farming. Dust storms tore up millions of acres of the Great Plains, blowing away the fragile topsoil, blackening the sky, and forcing hundreds of thousands of people to abandon their homes and livelihoods.



8. THE OPENING OF THE ARCTIC

Now

For 400 years, the Arctic ice cap blocked European ships from crossing the North Pole, the shortest trade route between Asia and Europe. Explorers' journeys ended in mutiny, starvation, and death amid thick pack ice. In 2009, two German cargo ships made the transit in a few weeks. Global warming is melting Arctic sea ice, opening summer shipping routes through the Arctic. The balance of world power will change, as countries bordering the Arctic begin to take advantage of the open passage and the oil resources now becoming accessible on the sea floor.

