Editor's note: The Pliocene is the period of the geologic timescale that spans the era from approximately 5.331 to 2.588 million years ago. It preceeds the Pleistocene and is subsequent to the Miocene Epoch.

Introduction
The picture below shows a modern herd of zebra grazing on an African savanna. Grazing mammals, such as members of the perissodactyl and artiodactyls diversified in the Miocene and Pliocene (5.3 to 1.8 million years ago) as grasslands and savanna spread across most continents.
The Pliocene was a time of global cooling after the warmer Miocene. The cooling and drying of the global environment may have contributed to the enormous spread of grasslands and savannas during this time. The change in vegetation undoubtedly was a major factor in the rise of long-legged grazers who came to live in these areas.

Additionally, the Panamanian land-bridge between North and South America appeared during the Pliocene, allowing migrations of plants and animals into new habitats. Of even greater impact was the accumulation of ice at the poles, which would lead to the extinction of most species living there, as well as the advance of glaciers and ice ages of the Late Pliocene and the following Pleistocene.
Subdivisions of the Pliocene

The chart at page left shows the major subdivisions of the Neogene, the last portion of the Tertiary Period, including the Pliocene. The Pliocene Epoch is part of the Cenozoic Era.

Tectonics and paleoclimate of the Pliocene

The epoch was marked by a number of significant tectonic event that created the landscape of today. One such event was the joining of the tectonic plates of North and South America. This joining was brought about by a shift of the Caribbean plate, which moved slightly eastwards and formed a land bridge across the Isthmus of Panama. The connection between North and South America had a significant impact on flora and fauna in two respects. The first of these occurred on land: the creation of a land bridge enabled species to migrate between the two continents. This led to a migration of armadillo, ground sloth, oppossum, and porcupines from South to North America and an invasion of dogs, cats, bears and horses in the opposite direction. Second, the joining of the two tectonic plates also led to changes in the marine environment. An environment with species that had been interacting for billions of years now became separated into the Atlantic and Pacific oceans. This in turn had a significant impact on the evolution of the species which became isolated from each other.

During the Pliocene the tectonic plates of India and Asia also collided, which formed the Himalayan Mountains. In America, the Cascades, Rockies, Appalachians, and the Colorado plateaus were uplifted, and there was activity in the mountains of Alaska and in the Great Basin ranges of Nevada and Utah. The end of the Pliocene was marked in North America by the Cascadian revolution, during which the Sierra Nevada was elevated and tilted to the west. In Europe as well many mountain ranges built up, including the Alps, which were folded and thrusted.

Over the course of the Pliocene, the global climate became cooler and more arid. The beginning of the epoch saw numerous fluctuations in temperature, which gave way to the general cooling trend towards the end of the Pliocene. This long term cooling, in fact, started in the Eocene and continued up to the ice ages of the Pleistocene. During the Pliocene, large polar ice caps started to develop and Antarctica became the frozen continent that it is today.

It is uncertain what caused this cooling of the climate from the beginning to the end of the Pliocene period. Changes in the amount of heat transported by oceans has been suggested as one possible explanation; higher concentrations of greenhouse gases in the atmosphere may also have contributed. It is also possible that the raising of the Himalayan Mountains, caused by plate collisions between India and Asia, accelerated the cooling process.

Generally though, the climate of the Pliocene is thought to have been much warmer than it is today. The warmest phase was in the middle of the epoch, the interval between three and four
million years ago. The climate was especially mild at high latitudes and certain species of both plants and animals existed several hundred kilometers north of where their nearest relatives presently exist. Less ice at the poles also resulted in a sea level regarded to have been about 30 meters higher than it is today.

Accompanying the general cooling trend of the Pliocene was, as already mentioned, an increased aridity. This led to a number of noteworthy changes in the environment. The Mediterranean Sea dried up completely and remained plains and grasslands for the next several million years. Another environmental change was the replacement of many forests by grasslands. This in turn favored grazing animals at expense of browsers. Generally these grazers also got larger and developed larger teeth suitable for a diet of grass. Also, the longer legs they developed enabled them to walk long distances to new feeding grounds and to detect and escape predators. It was also during this time that some apes came down from trees and started to exist on the plains in Africa. In fact, it is generally believed that Australopithecus evolved in the late Pliocene.

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