

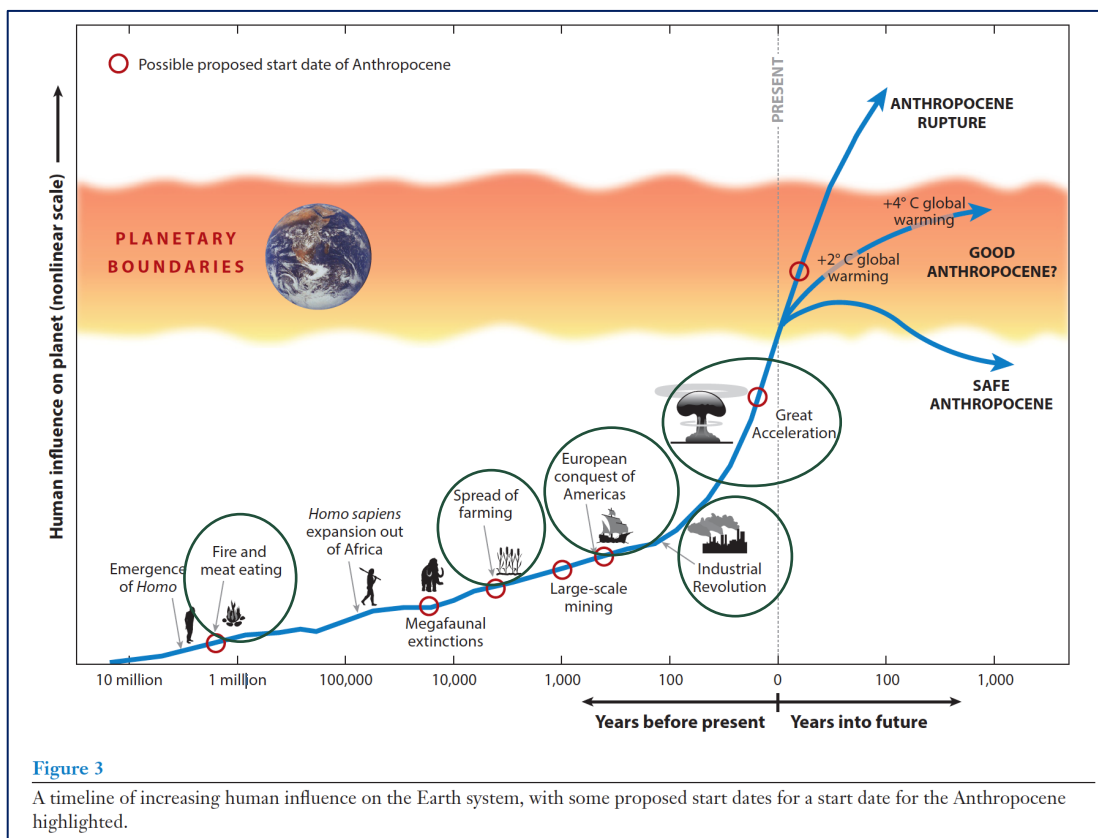
The “Golden Spike”

Evidence Sheets:

Beginning of Agriculture (7,000-8,000 Years Ago)

Depending on the criteria used, the beginning of the Anthropocene can be dated to different time periods:

- Human control over fire (1.8 million years ago)
- Beginnings of agriculture (7-8 thousand years ago)
- Colonization (Circa 1610)
- Industrialization (Circa 1800)
- The Great Acceleration (Mid-20th Century)



Source: Malhi, 2017, p. 90.

○ = Possible “Golden spike”



Group Task:

You have been assigned to a group to examine one of the time periods above. Your group's task is to build a convincing argument about why that date should be recognized as the beginning of the Anthropocene.

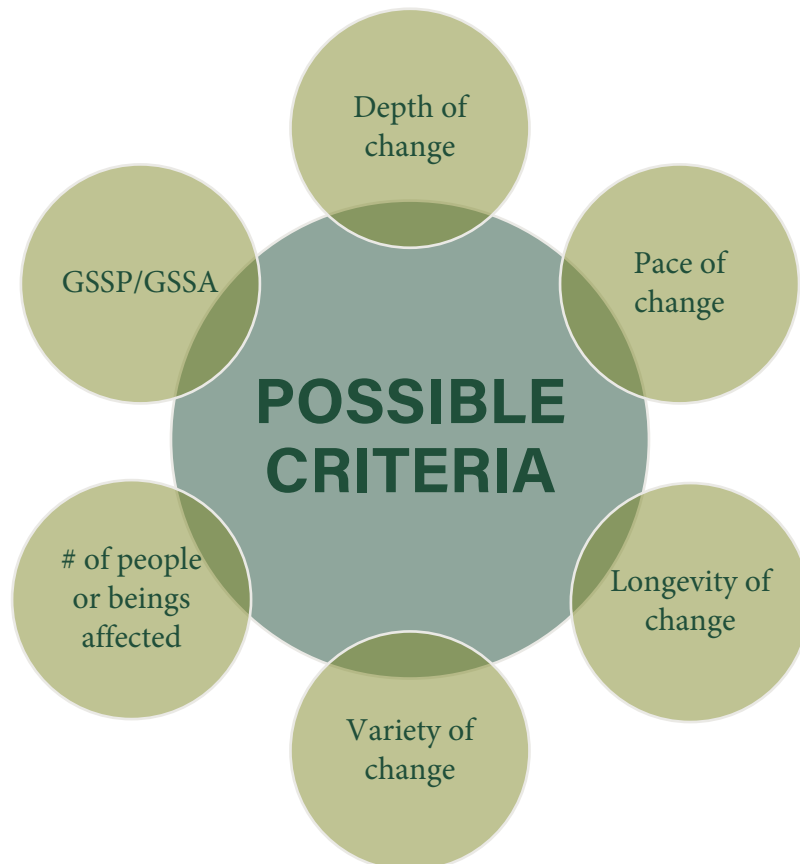
View an interactive timeline for more information by visiting the following link:

<https://tinyurl.com/54387b9f>

Examine the provided materials for your assigned time period (see the text, quotations, images and graphs below). You may also bring in your own information or sources (time permitting).

Develop your argument and record your ideas on the Activity Sheet. Select the most relevant criteria for your time period, from the choices offered below. You may also want to anticipate the arguments of other groups and offer counter-arguments.

Be prepared to present your argument to the class in a brief 2-minute summary!



Beginning of Agriculture (7,000-8,000 Years Ago)

Human transformation of the biosphere (region of the Earth occupied by living organisms) is often portrayed as a recent disturbance due to industrialization and population growth, but there is a much longer history of significant human intervention. The evidence gathered to date suggests that the effects of early agriculture became widespread thousands of years before the industrial era. These changes began with the domestication of crops and livestock thousands of years ago in widely scattered regions around the globe. The development of agriculture caused long-lasting anthropogenic (human-caused) environmental impacts as it replaced natural vegetation, exhausted nitrogen in the soil, increased extinction rates, and altered biogeochemical cycles (flow of chemical elements and compounds between living organisms and the physical environment).

Many agricultural innovations spread widely across continents between 7,000-8,000 years ago, and cultivated plant remains have been discovered and radiocarbon-dated. For example, in the fertile crescent region of the eastern Mediterranean, wheat, barley, peas, and lentils, as well as cattle, sheep, goats, and pigs, were domesticated and spread west across most of Europe by about 7,000 years ago. Around the same time, millet, soybeans, rice, and pigs were domesticated in China and spread to almost every region of southern Asia.

Historical and archaeological data also reveal greater forest clearance in preindustrial times because early farmers used more land per capita than those in recent centuries. This early deforestation, along with other impacts of agricultural activities, resulted in high levels of greenhouse-gas emissions. Therefore, preindustrial temperature changes caused by humans could be more than double the warming caused by the industrial era.

“One of the central facts of human history is the early importance of the part of Southwest Asia known as the Fertile Crescent... That area appears to have been the earliest site for a whole string of developments, including cities, writing, empires, and what we term (for better or worse) civilization. All those developments sprang, in turn, from the dense human populations, stored food surpluses, and feeding of nonfarming specialists made possible by the rise of food production in the form of crop cultivation and animal husbandry. Food production was the first of those major innovations to appear in the Fertile Crescent” (Diamond, 1999, p. 135).



“Deforestation during preindustrial times was larger than during the industrial era; preindustrial greenhouse-gas emissions were smaller, but substantial; and the net anthropogenic effect on global temperature was probably larger in preindustrial than industrial time. Given the size of these early changes, defining 1850 as the start of the Anthropocene does not make sense, despite the marked acceleration of many anthropogenic effects after that time” (Ruddiman, 2013, p. 65).

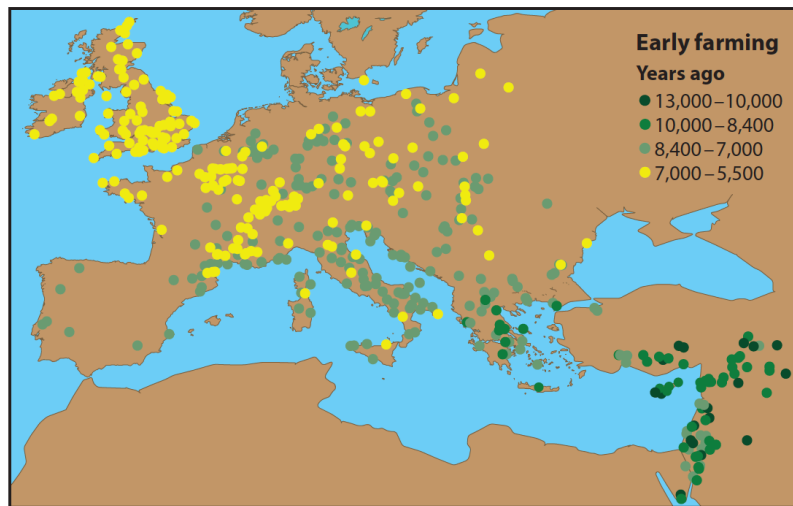


Figure 3

The radiocarbon-dated time of arrival of the fertile crescent crop package in southwest Asia and Europe (after Zohary & Hopf 1993).

Source: Ruddiman, 2013, p. 48.

“This was a global event, with multiple independent origins of farming in Africa, Eurasia, the Americas, and New Guinea, and it increased in spread and intensity throughout the subsequent 10,000 years, with bursts of intensification associated with the development of urban civilizations. Although most effects of farming were local, other effects may have had drawn-out regional and even global consequences through deforestation and modification of ecosystems” (Malhi, 2017, p. 91).

“Agriculture had multiple independent origins...Thus, the increasing presence of fossil pollen from domesticated plants in sediment is too local and lacking in global synchrony to form a GSSP marker” (Lewis & Maslin, 2015, p. 174).

