

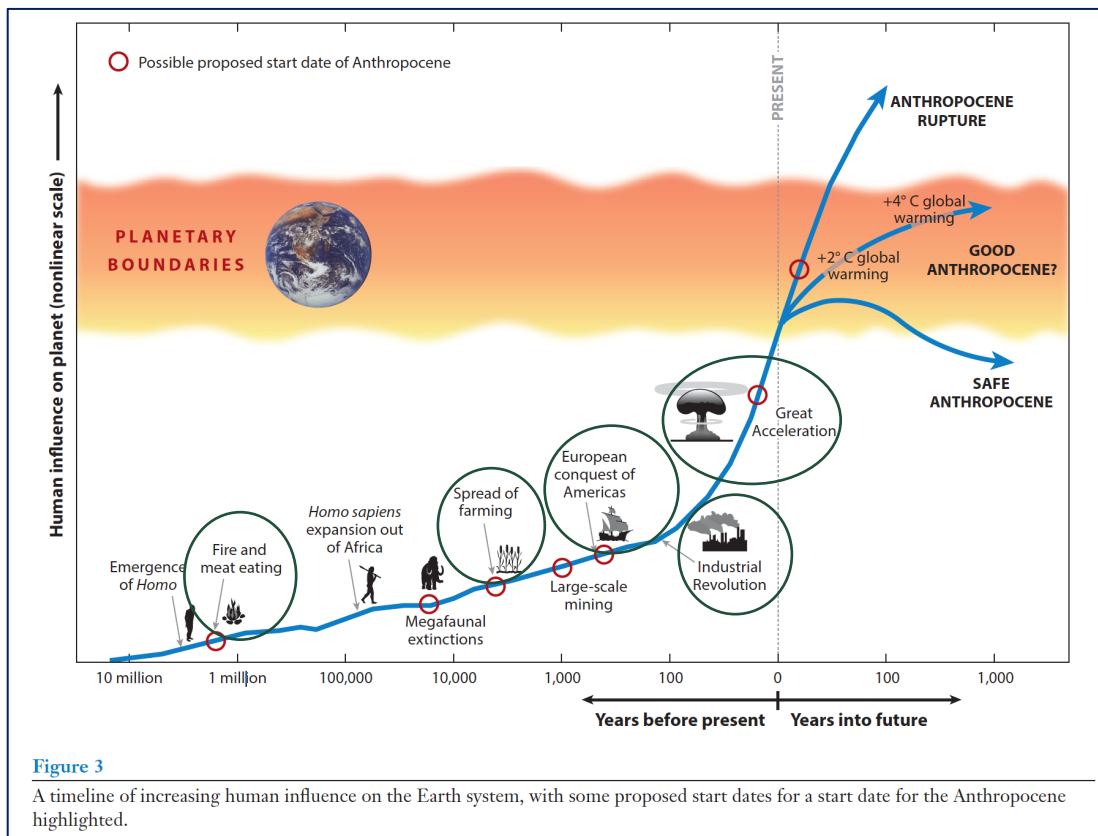
The "Golden Spike"

Evidence Sheets:

The Great Acceleration (Mid-20th Century)

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.

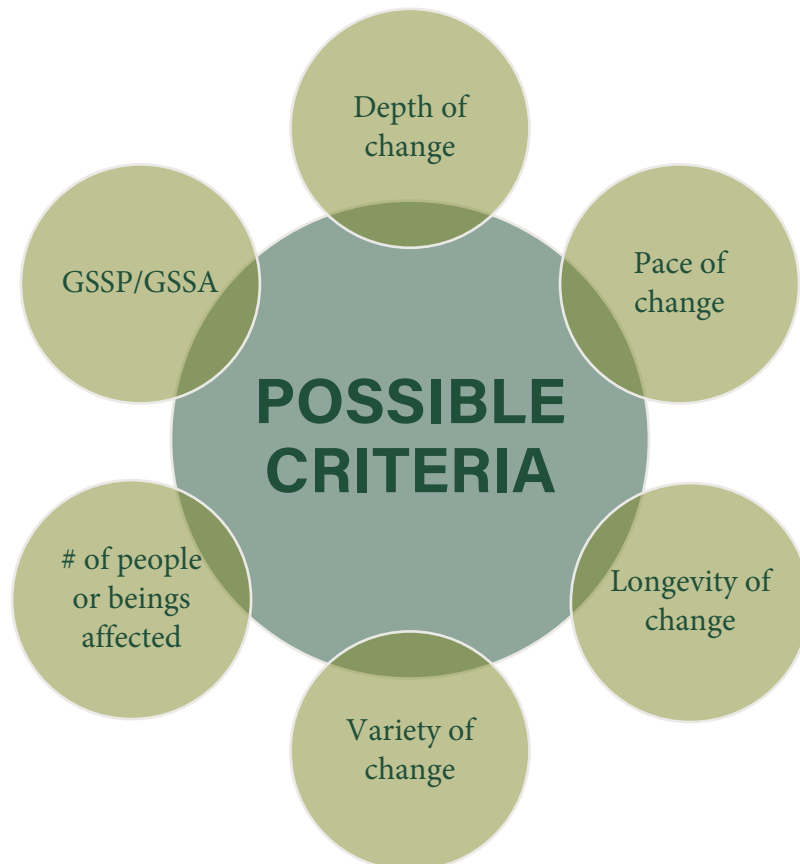
View an interactive timeline for more information by visiting the following link:

<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!



The Great Acceleration (Mid-20th Century)

Since the mid-20th century, human impact on the Earth and the biosphere (region of the Earth occupied by living organisms) has escalated. This escalation since 1945 has been so fast that it is commonly referred to as the “Great Acceleration.” The Great Acceleration was driven by a redirection of wartime industrial economies to mass production of everyday consumer goods, alongside a rapid spread of industrialization to areas beyond Europe and North America. Population growth also exacerbated the situation, creating far-reaching impacts on the environment

Human activity is drastically altering the diversity, distribution, abundance, and interactions of life on Earth. There has been substantial biodiversity loss due to habitat destruction, overharvesting, and climate change. Human-caused atmospheric change has become the most important factor impacting Earth systems (e.g. the carbon cycle, the nitrogen cycle).

There is abundant evidence that recent human activity is leaving stratigraphic (geological or rock-embedded) imprints required to provide a start date for the Anthropocene. However, many of these deposits are only a few decades old and often are not clearly delineated. As a result, there may be many different timings in different areas of the world. One set of indicators is new materials created by humans, for example, aluminum and plastics. Ice core samples in the Antarctic also indicate a rapid increase in atmospheric carbon dioxide and methane, as well as nitrogen and phosphorous due to mining.

Perhaps the clearest set of markers of the Great Acceleration is associated with the radioactive fallout from atmospheric nuclear weapons testing, as they are unique to the modern era and occur around the globe. The first atmospheric detonation was the Trinity atomic device on 16 July 1945 at Alamogordo, New Mexico. For this reason, that date has been suggested as the start of the Anthropocene. However, these early tests only left local fallout rather than global impacts.

“From an Earth system sciences perspective, the key feature of the Anthropocene is that human domination has led to the emergence of feedback between human and nonhuman systems at a planetary scale, such that actions on energy use, land use, food consumption, and trade have consequences for the basic functioning of the planet and can potentially destabilize planetary function” (Malhi, 2017, p. 84).



"Within the last three human generations, three-quarters of the human-caused loading of the atmosphere with carbon dioxide took place. The number of motor vehicles on Earth increased from 40 million to 850 million. The number of people nearly tripled, and the number of city dwellers rose from about 700 million to 3.7 billion. In 1950 the world produced about 1 million tons of plastics but by 2015 that rose to nearly 300 million tons. In the same time span, the quantities of nitrogen synthesized (mainly for fertilizers) climbed from under 4 million tons to more than 85 million tons" (McNeill & Engelke, 2014, p. 4).

"One disadvantage is that although nuclear explosions have the capacity to fundamentally transform many aspects of Earth's functioning, so far they have not done so, making the radionuclide spike a good GSSP marker but not an Earth-changing event. A further possible limitation in selecting such a recent date is that some deposits, notably some marine sediments, do not accumulate and stabilize over time spans as short as the past 50 years, making clear datable changes and correlation among some stratotypes sometimes difficult to discern" (Lewis & Maslin, 2015, p. 175).

"While this date [the mid-twentieth century] is quite convincing because it groups together all of the obvious horrors of the twentieth century, from the atomic bomb, to petrochemicals, to overconsumption and waste (particularly of non-biodegradable substances such as plastics and concrete), due to the globality of these problems, this date doesn't significantly differentiate between countries, ideologies, or ways of life. Instead, we are all grouped together...While this may be an accurate depiction of the past seventy years, it does little to register the very real differences between peoples, governments, and geographies in their complicity with these processes." (Davis & Todd, 2017, p. 766).

