Imagine aliens land on the planet a million years from now and look into the geologic record.

What will these curious searchers find of us?
They will find what geologists, scientists, and other experts are increasingly calling the Anthropocene, or new age of mankind. The impacts that we humans make have become so pervasive, profound, and permanent that some geologists argue we merit our own epoch. That would be a new unit in the geologic time scale that stretches back more than 4.5 billion years, or ever since the Earth took shape.

Modern humans may be on par with the glaciers behind various ice ages or the asteroid that doomed most of the dinosaurs.
What is an epoch?
Most simply, it's a unit of geologic time. There's the Pleistocene, an icy epoch that saw the evolution of modern humans. Or there's the Eocene, more than 34 million years ago, a hothouse time during which the continents drifted into their present configuration.

Changes in climate or fossils found in the rock record help distinguish these epochs and help geologists tell deep time. So what will be the record of modern people's impact on the planet?
It doesn't rely on the things that may seem most obvious to us today, like sprawling cities. Even New York or Shanghai may prove hard to find buried in the rocks a million years from now. But humans have put new things into the world that never existed on Earth before, like plutonium and plastics. In fact, the geologists known as stratigraphers who determine the geologic timescale, have proposed a start date for the Anthropocene around 1950.

That's when people started blowing up nuclear bombs all around the world and scattering novel elements to the winds. Those elements will last in the rock record, even in our bones and teeth for millions of years. And in just 50 years, we've made enough plastic, at least 8 billion metric tons, to cover the whole world in a thin film.

People's farming, fishing, and forestry will also show up as a before and after in any such strata because it's those kinds of activities that are causing unique species of plants and animals to die out. This die-off started perhaps more than 40,000 years ago as humanity spread out of Africa and reached places like Australia, kicking off the disappearance of big, likable, and edible animals.

This is true of Europe and Asia, think woolly mammoth, as well as North and South America, too. For a species that has only roamed the planet for a few hundred thousand years, Homo sapiens has had a big impact on the future fossil record. That also means that even if people were to disappear tomorrow, evolution would be driven by our choices to date.

We're making a new homogenous world of certain favored plants and animals, like corn and rats. But it's a world that's not as resilient as the one it replaces. As the fossil record shows, it's a diversity of plants and animals that allows unique pairings of flora and fauna to respond to environmental challenges, and even thrive after an apocalypse.

That goes for people, too. If the microscopic plants of the ocean suffer as a result of too much carbon dioxide, say, we'll lose the source of as much as half of the oxygen we need to breathe. Then there's the smudge in future rocks.

People's penchant for burning coal, oil, and natural gas has spread tiny bits of soot all over the planet. That smudge corresponds with a meteoric rise in the amount of carbon dioxide in the air, now beyond 400 parts per million, or higher than any other Homo sapiens has ever breathed. Similar soot can still be found in ancient rocks from volcanic fires of 66 million years ago, a record of the cataclysm touched off by an asteroid at the end of the late Cretaceous epoch. So odds are our soot will still be here 66 million years from now, easy enough to find for any aliens who care to look. Of course, there's an important difference between us and an asteroid. A space rock has no choice but to follow gravity.
We can choose to do differently. And if we do, there might still be some kind of human civilization thousands or even millions of years from now. Not a bad record to hope for.

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