**(3:4) Climate Tipping Points**

Source: Robert McSweeney, 2020, October 2. “Nine ‘tipping points’ that could be triggered by climate change,” *Carbon Brief*.

Questions to Consider: These environmental “tipping points” could be the result of global warmer and climate change, but they can also lead to increased greenhouse gas emissions and even more rapid climate change.

1. What would be the short-term impact of each of these tipping points?

2. What is the long-term threat of climate reaching a “tipping point”?

1. Shutdown of the Atlantic Meridional Overturning Circulation. The Atlantic Gulf Stream current brings warm water and weather to Europe and makes Northern Europe habitable. Release of cold fresh water into the Atlantic Ocean from the melting of the Greenland ice cap could shift Atlantic currents. This current has weakened by about 15% since the mid-20th century.

2. Disintegration of the West Antarctic ice sheet. This ice sheet holds enough ice to raise global sea levels by over 10 feet, dramatically affecting coastlines around the world.

3. Amazon rainforest dieback. Evaporation from the Amazon rainforest is responsible for generating a significant portion of the Earth’s cloud cover and rain.

4. West African monsoon shift. Monsoons bring rainfall to West Africa and the Sahel. A shift in rain patterns would destroy agriculture and make this area uninhabitable.

5. Melting Permafrost. Permanently frozen ground in the Northern Hemisphere holds vast amounts of carbon from dead plants and animals that accumulated over thousands of years and stored carbon dioxide and methane. Permafrost may contain twice as much carbon as there currently is in the Earth’s atmosphere.

6. Coral reef die-off could interrupt the global food chain.

7. Indian monsoon shift. India, with a population of 1.3 billion people, receives [around 70%](https://earthobservatory.nasa.gov/images/145703/unusual-monsoon-season-causes-flooding-in-india) of its annual rainfall from seasonal monsoons. A shift in monsoon rains would devastate India, Bangladesh, and Southeast Asia.

8. Disintegration of the Greenland ice sheet. The Greenland ice sheet is the second largest on Earth. It holds enough water to raise global sea levels by 24 feet. Melting of the Greenland ice sheet is already accelerating.

9. Boreal Forest fires. Boreal Forests are found in the cold climates of the northern hemisphere high latitudes and account for a third of the Earth’s forests. The trees in Boreal forests may store more than a third of the terrestrial carbon.