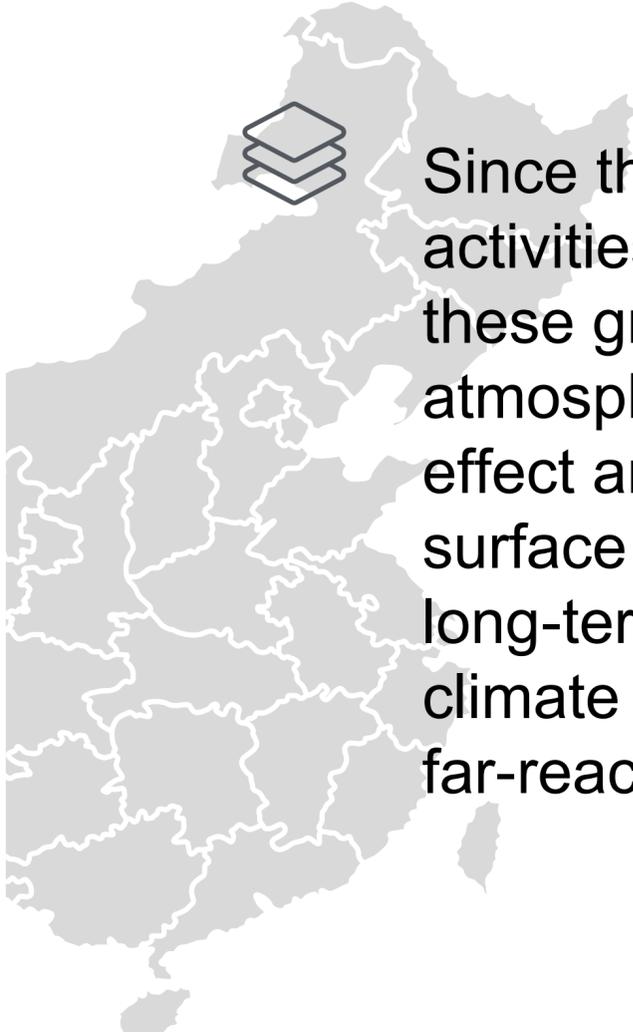


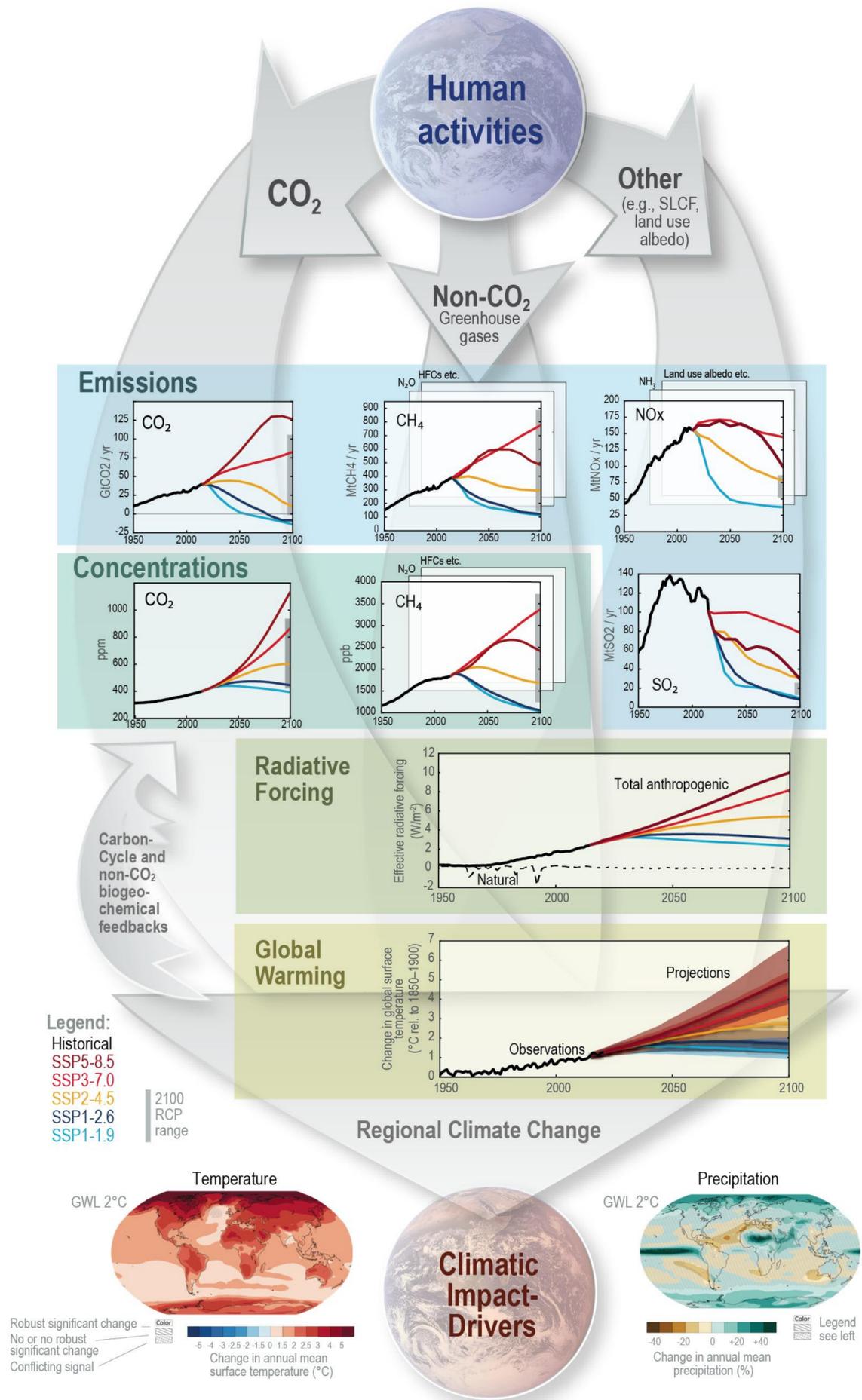


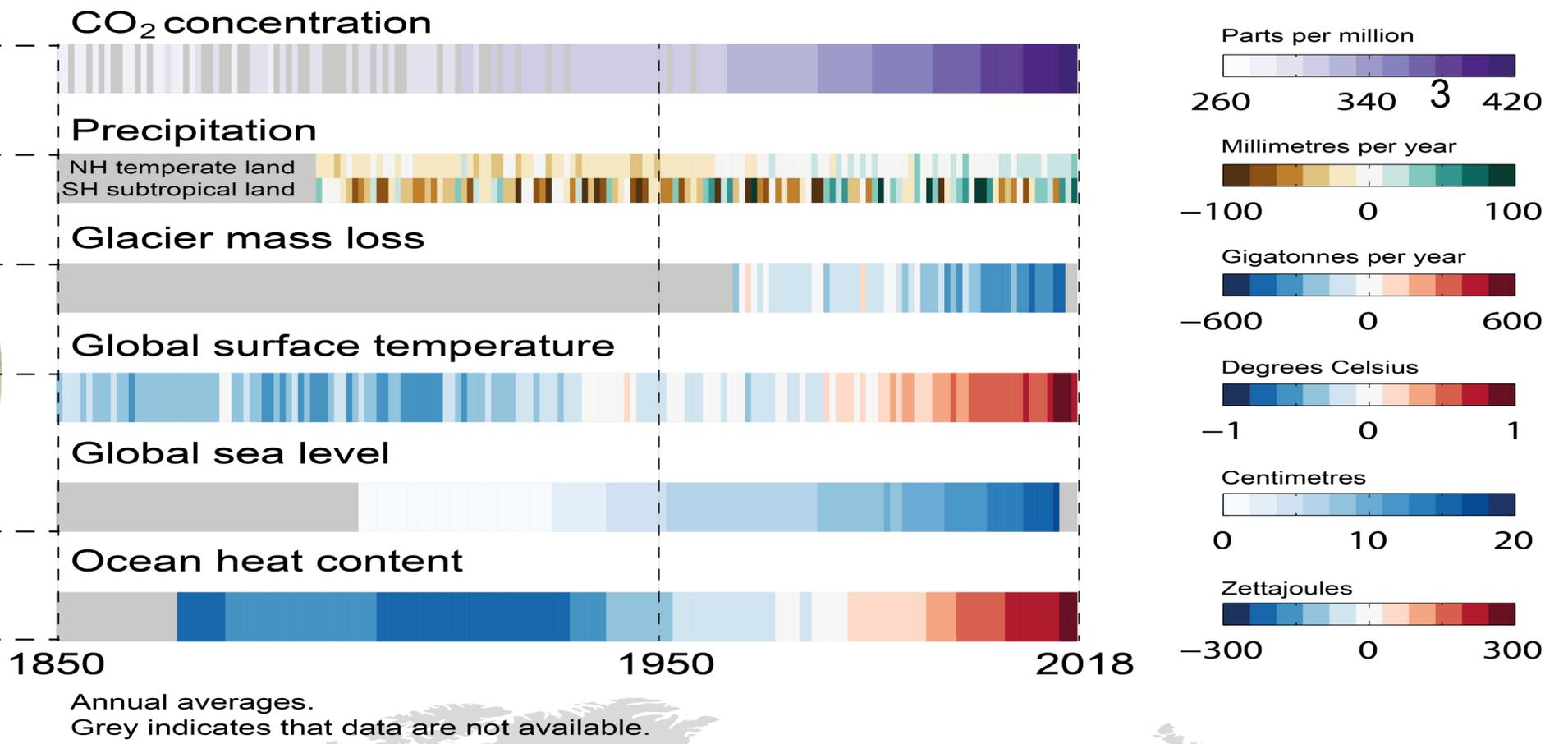
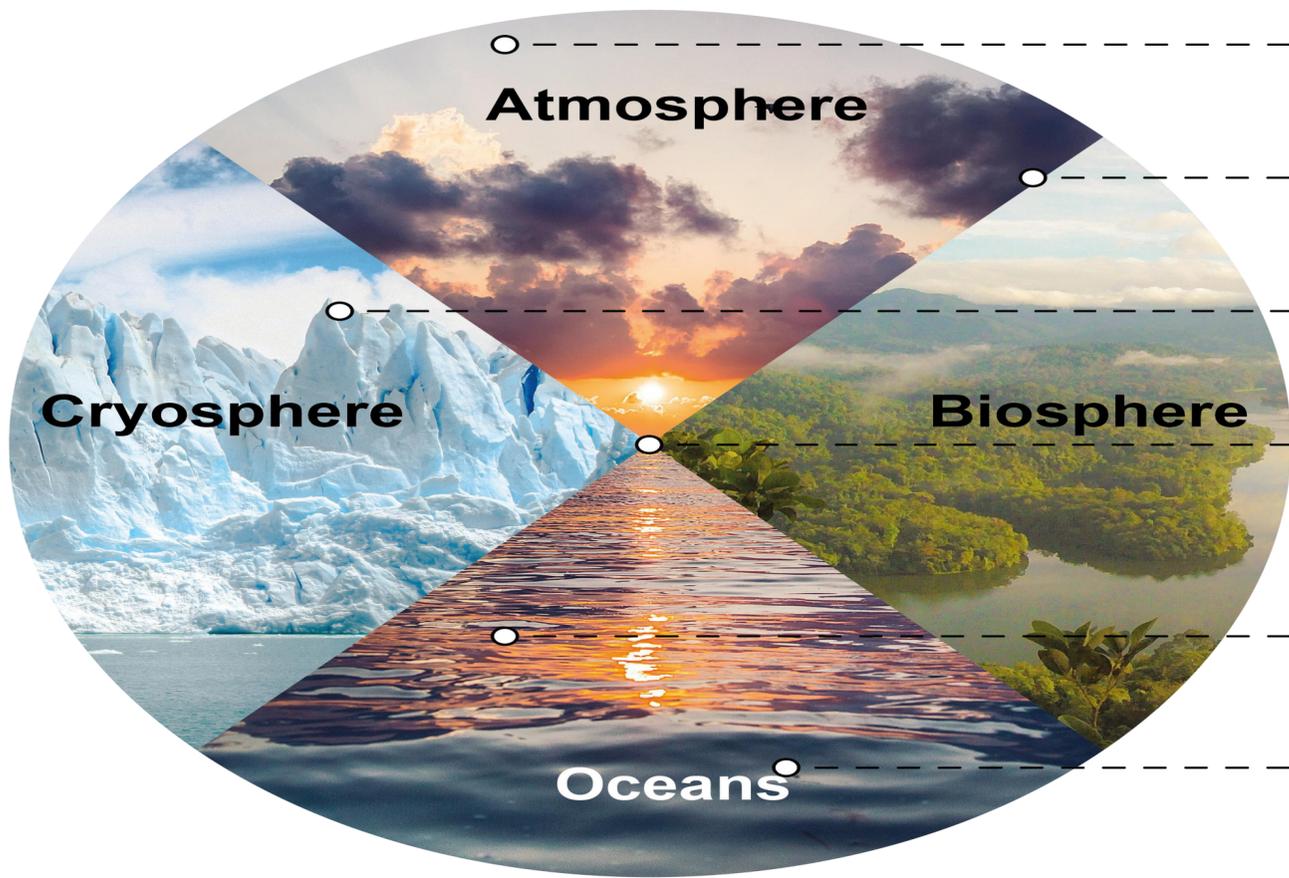
Emission Scenarios,
future climates

Climate Change

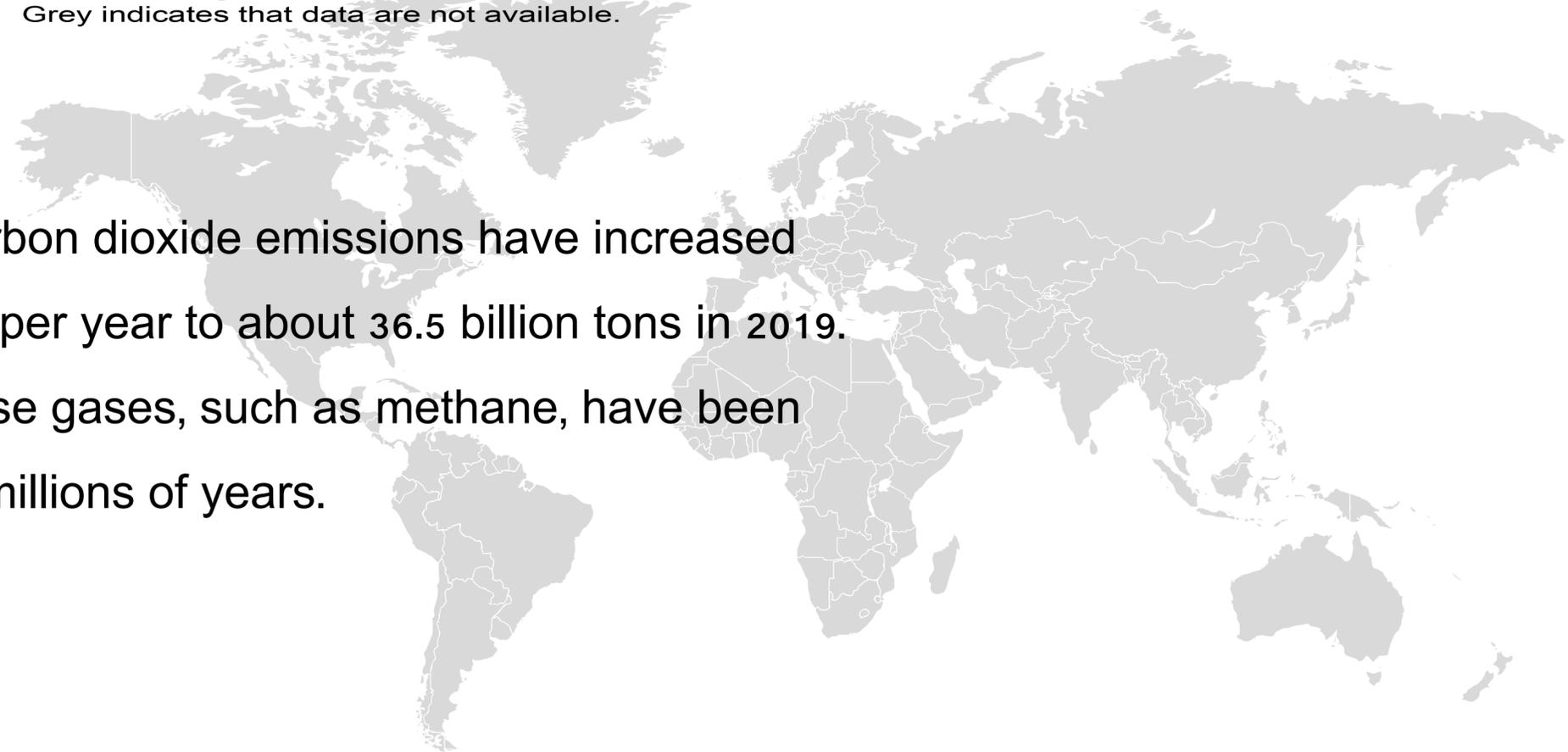


Since the industrial age, human activities have continued to emit these greenhouse gases into the atmosphere, causing the greenhouse effect and a steady rise in the Earth's surface temperature. This will have a long-term impact on the global climate and ecosystem, becoming a far-reaching and lasting challenge.





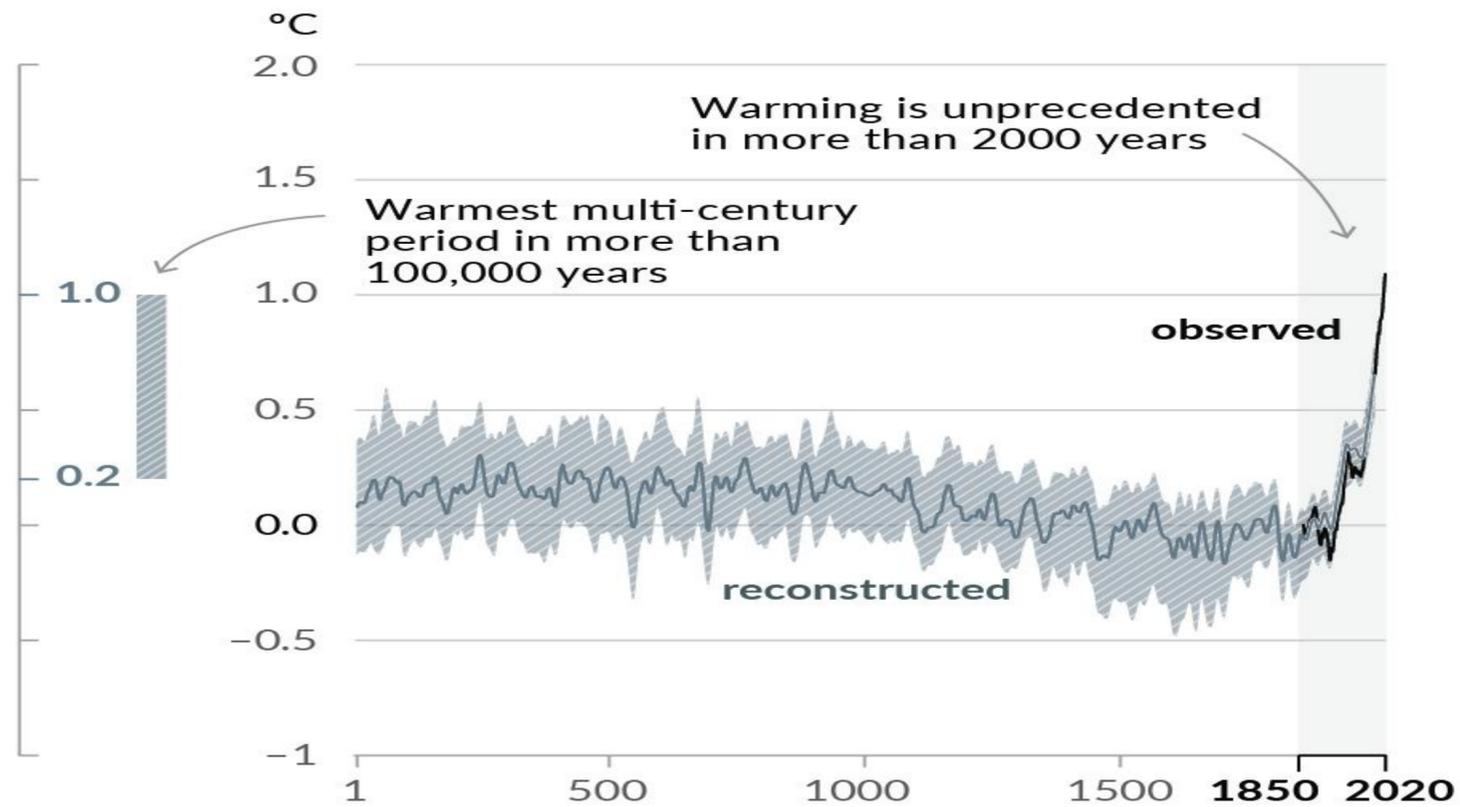
Since the Industrial Revolution, global carbon dioxide emissions have increased about 30-fold, from about 600 million tons per year to about 36.5 billion tons in 2019. At the same time, emissions of greenhouse gases, such as methane, have been increasing beyond the levels of the past millions of years.



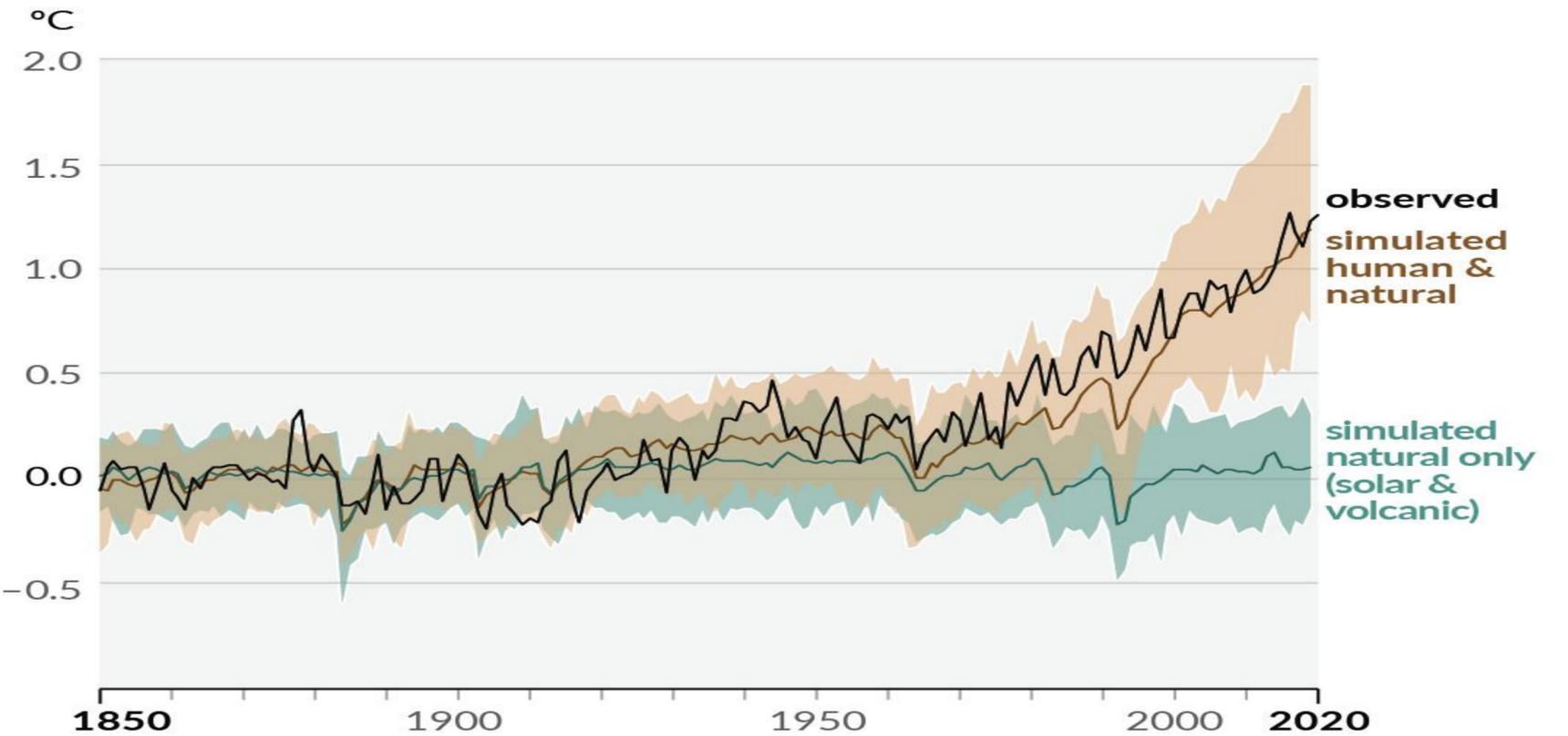
Human influence has warmed the climate at a rate that is unprecedented in at least the last 2000 years

Changes in global surface temperature relative to 1850–1900

(a) Change in global surface temperature (decadal average) as **reconstructed** (1–2000) and **observed** (1850–2020)



(b) Change in global surface temperature (annual average) as **observed** and simulated using **human & natural** and **only natural** factors (both 1850–2020)

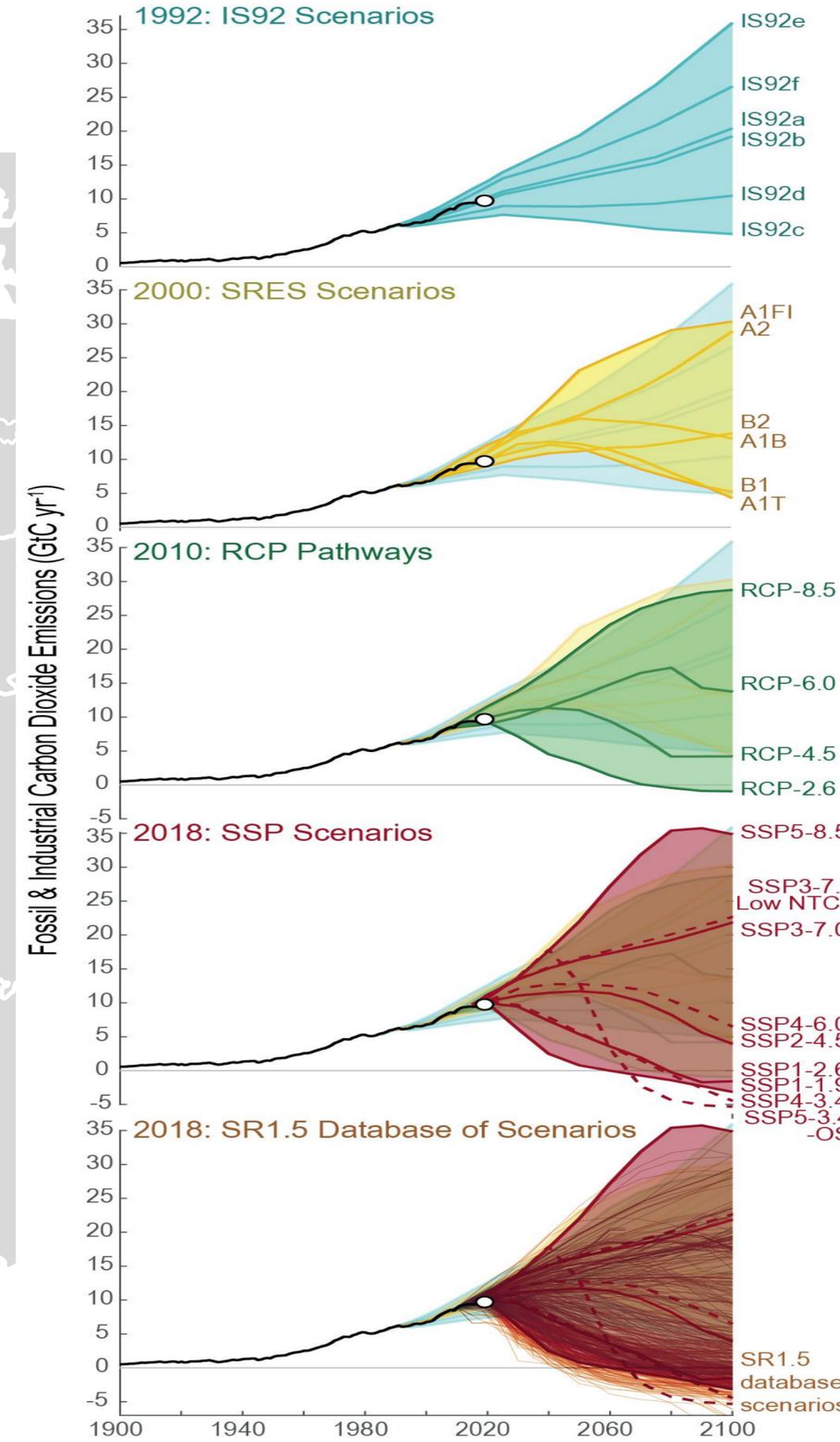


According to the National Aeronautics and Space Administration (NASA), 2019 was the second warmest year on record for average global temperatures. In addition, global sea levels are rising by about 3.3 millimeters per year.

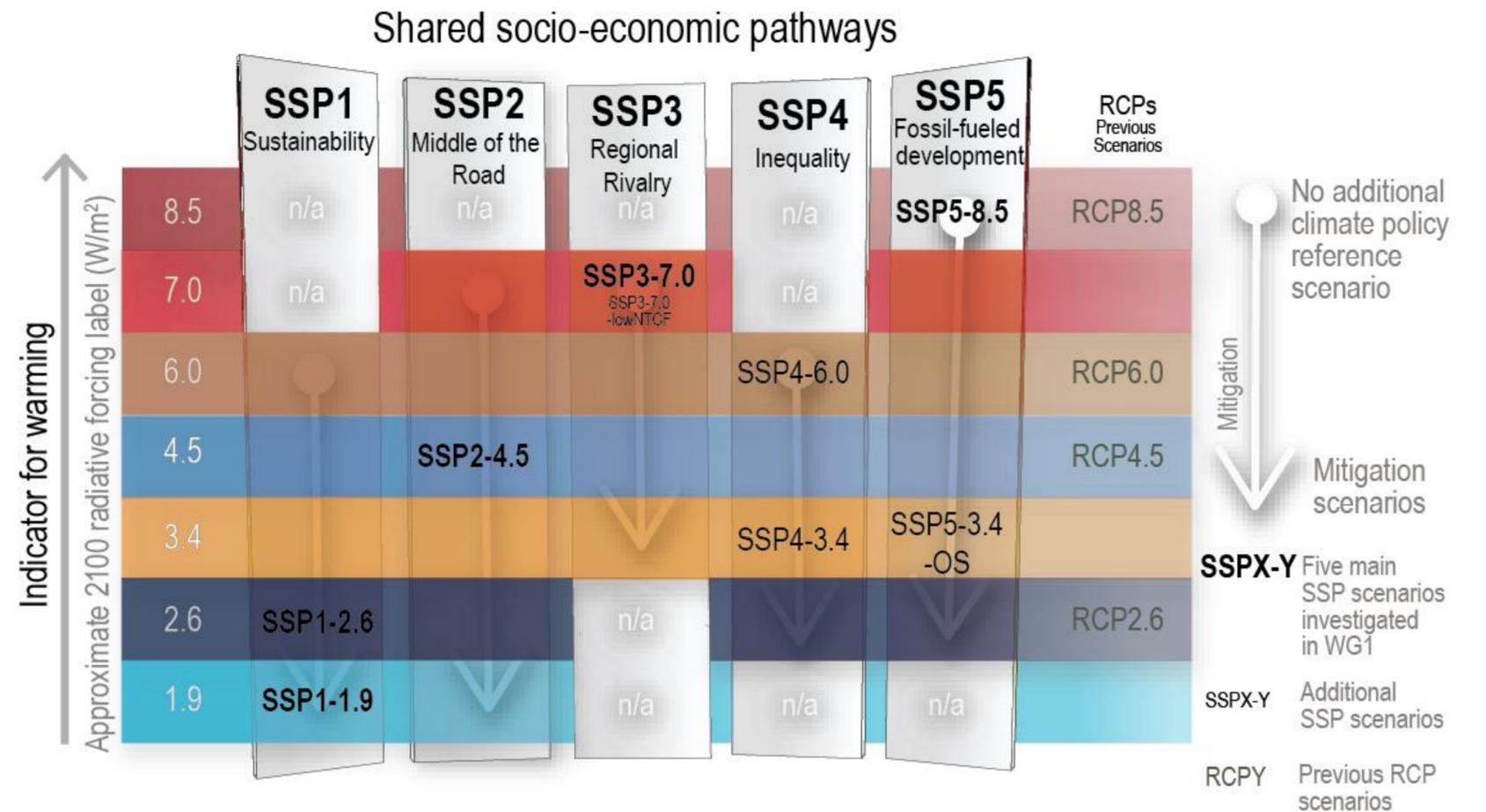
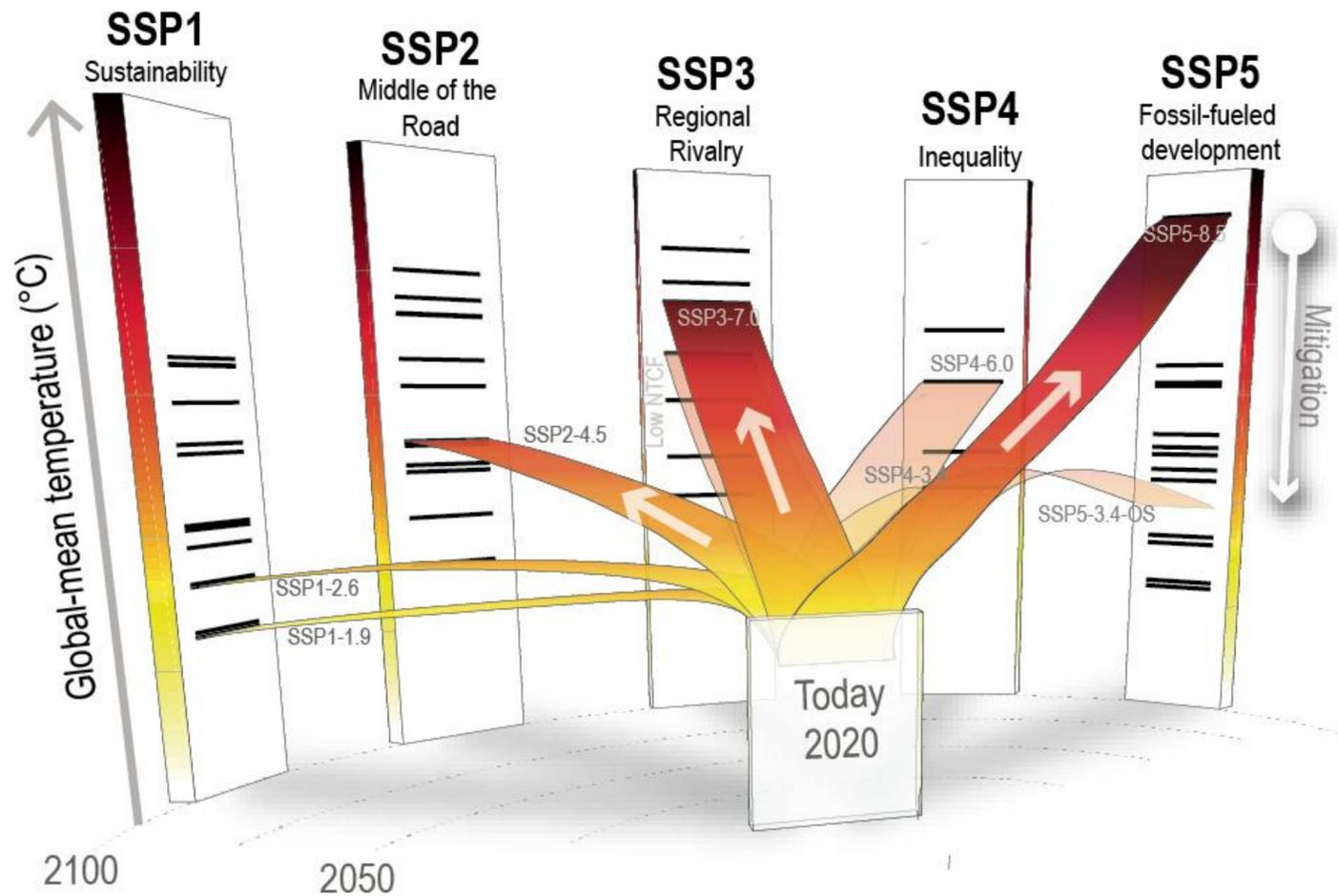
Concept of emission scenarios



Emission scenarios are a tool used to explore potential future outcomes in various areas like society, economy, and technology. They aim to predict how greenhouse gas (GHG) emissions might change in the future, but they don't offer a single, definite view. Instead, they show a range of possible paths based on assumptions about factors like society, economics, technology, and energy use.



Shared Socio-Economic Pathways



Importance of emission scenarios

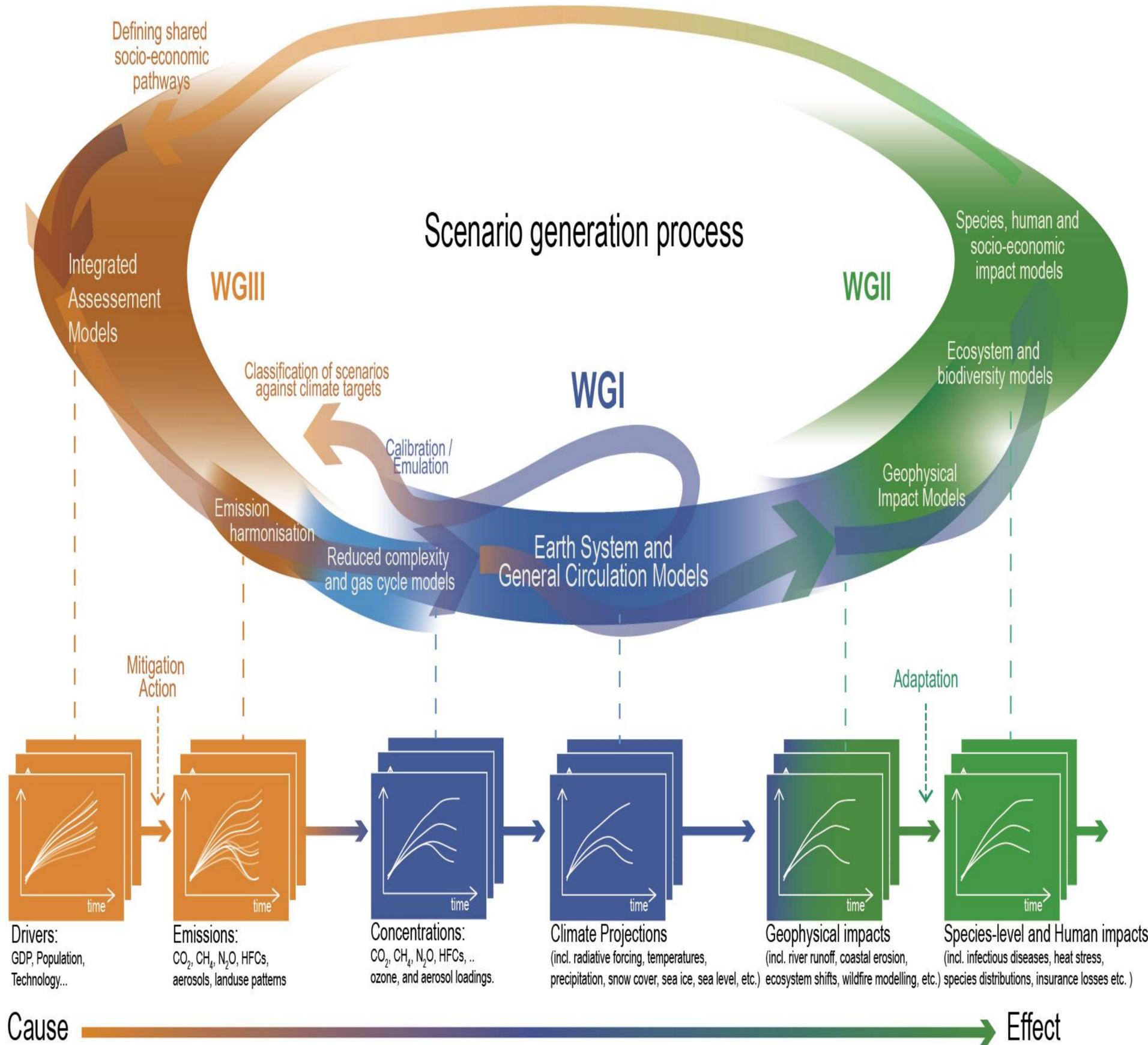


Emission scenarios provide an important reference for policymakers. They help policymakers to compare the potential effects of various climate policies and measures to address different climate change challenges. They enable policymakers to formulate policies in a more targeted manner to guide the achievement of climate change mitigation and the promotion of sustainable development goals.

How to create emission scenarios

Models

Data



Basic data collection



Assumptions and Parameter Setting



Model construction and operation



Emission scenario development