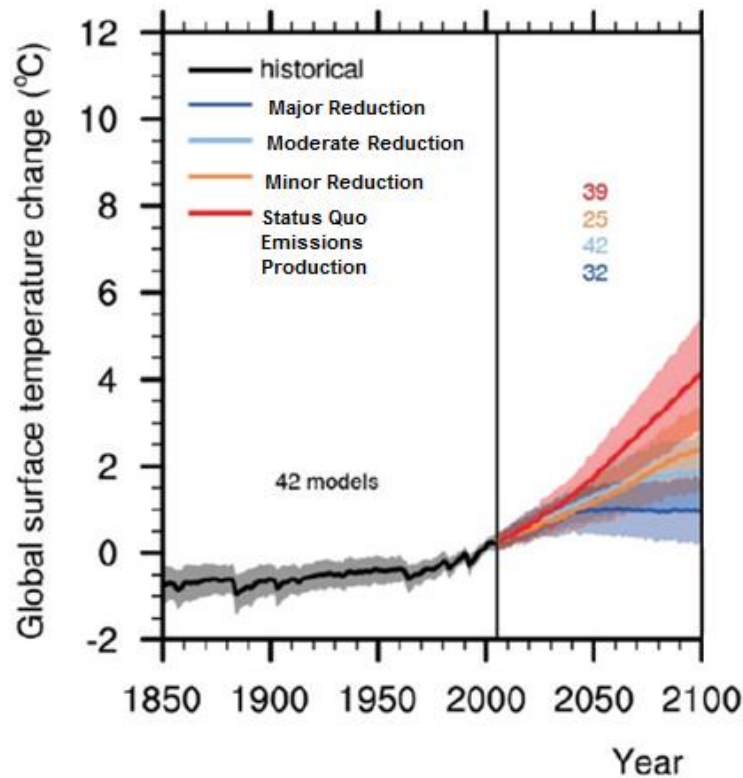


Global Climate Simulations Under Each Emissions Scenario

The following graph details the projected rise in global surface temperature under each of the four emissions scenarios from 2006 to 2100.

Figure 1: Global Surface Temperature Increase Simulation under each Emission Scenario¹



The solid lines in Figure 1 show the average number or mean change in temperature the ensemble (group) of global climate models is projecting. The shaded areas show the range of projection data from the ensemble model output. The numbers on the graph highlight how many models are working inside each ensemble grouping. For example, from 39 models, the average increase in global surface temperature relative to the 1986-2005 period under the status quo emissions scenario is approximately 4^o C with a range of 2.6^o C – 4.8^o C at 2100.

¹ Graphic adapted from the Intergovernmental Panel on Climate Change, 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

Understanding the Global Emissions Scenario Assumptions

The Government of Canada signed on to the Paris Agreement in December 2015. The latest Intergovernmental Panel on Climate Change² report explains each emission scenario relative to the Paris Agreement pre-industrial global temperature rise goals.

The assumptions underlying each of the emissions scenarios are as follows:

GHG Status	Assumptions ³	Compliance with Paris Accord	Confidence level: global surface warming exceeds 1.5 ⁰ C by 2100 ⁴	Confidence level: global surface warming exceeds 2.0 ⁰ C by 2100 ⁴
Status Quo or Current Emission Rates	Land use, population and economic growth, energy consumption, and emissions production continue at currently increasing rates.	No	Likely = High	Likely = High
Minor Reduction	Emissions double by 2060 then dramatically fall, but remain well above current levels. Population growth peaks around 10 billion. Energy consumption increases until 2060 then stabilizes. Oil consumption remains high and other sources play a smaller role than in the moderate and major reduction scenarios.	No	Likely = High	Likely = High
Moderate Reduction	Emissions peak around 2050 and at 50% more than 2000 levels, with a decline over 30 years to stabilize at half of than 2000 levels. In this scenario, total energy consumption is slightly higher than the major reduction emissions scenario but the sources are more diverse including renewables, nuclear power, and fossil fuels. Change in land use patterns include cropping and grassland area declines and increases in reforestation.	No	Likely = High	More likely than not = Medium

² Intergovernmental Panel on Climate Change. (2014). *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

³ Furphy, D. (2013) *What on earth is an RCP? A quick guide to the carbon dioxide emissions scenarios used by the IPCC Assessment Report 5*. Retrieved from <https://medium.com/@davidfurphy/what-on-earth-is-an-rcp-bbb206ddee26>

⁴ The italicized terms in the above statements have specific scientific meanings. A confidence rating is based on the level of evidence (robust, medium, and limited) and the degree of scientific agreement (high, medium, and low) a statement has. Combined these two factors create five confidence levels.

Major Reduction	Emissions peak by 2020 and all countries, developing and developed, initiate climate policies and concentrated actions to reduce fossil fuel reliance in the next few years. Global population increases to a peak of just over 9 billion and global economic growth is high. Oil use declines, but other fossil fuel uses increase offset by capture and storage of carbon dioxide. Renewable energy sources increase, but remain a lower percentage of the global energy mix.	Yes	Unlikely = Medium	Unlikely = Medium
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