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Global Warming and Climate Change Science

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Global climate change has emerged as a major scientific and political issue within a few short decades. Scientific evidence clearly indicates that this change is a result of a complex interplay between a number of human-related and natural earth systems. While the complexity of the earth-ocean-atmosphere system makes the understanding and prediction of global climate change very difficult, improved scientific knowledge and research capabilities are advancing our understanding of global climate change resulting from rising atmospheric levels of radiatively important (mostly heat-trapping) gases and particles. The effects of climate change can be assessed with climate models, which account for complex physical, chemical and biological processes, and interactions of these processes with human activities, especially the burning of fossil fuels along with land use changes. This presentation begins with a discussion of the current understanding of the concerns about climate change, and then discusses the role climate models in scientific projections of climate change as well as their current strengths and weaknesses.