Topic 10: Climate Models

Provide a definition of a "scientific model"

List at least ten aspect of the climate system that are included in modern climate models

How has horizontal and vertical spatial resolution of climate models improved?

How is the spatial resolution of global and regional climate models different? Why?

Why are we able to model at such a higher resolution today than just ten years ago?

Explain, using examples, how climate models can be tested?

How can climate models be used to tease apart how important different variables have been to driving temperature change across the planet?

Why is "retrodiction" the "bread and butter" of climate model testing?

Three major types of "input scenarios" have been used in climate model projections since the beginning of the 21st century. How are they different, how are they similar?

Explain why bringing global emissions to a constant level will NOT result in an immediate stabilization of either GHG concentrations, nor global temperatures.

What do scientist call the amount of temperature gained AFTER stabilizing emissions?

In order to stabilize or even reduce global temperatures quickly, what do we actually have to do with our emissions?

Why does a complete cessation of greenhouse gas emissions likely NOT bring on an immediate significant drop in temperature?

Briefly discuss how actual current emissions differ from pledged emission, and those needed to stay below 1.5 degrees Celsius by 2100.