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Ciclo Hablemos de Física, Facultad de Ciencias Físicas (UCM)*

The Physics of Climate Change

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Abstract

Over the industrial period the surface temperature of the Earth has increased by about 1°C. Overwhelmingly scientists are of the opinion that this is largely due to the effect of gases released into the atmosphere by human activities. How can we be sure that this is the case? Does it matter? What can we say about the future? This talk will outline the evidence for climate change, in temperature and other measures, both globally and regionally. These will be set in the context of natural variations in climate, what is well known and what less certain. The climate reflects a delicate balance between the energy coming in from the Sun and the heat energy leaving the planet for space, and the talk will describe how this can be disrupted by increasing concentrations of “greenhouse gases”, especially carbon dioxide (CO₂). It will be shown how basic physics can be used to construct computer models of the climate which can then be employed to investigate climate processes and what increasing CO₂ levels may mean for the future. The talk will conclude with a discussion around different approaches to tackling climate change and where the world is heading following the United Nations climate change negotiations in Paris in Nov/Dec 2015.