

Climate crisis: What physics predicted 50 years ago is now reality

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“Climate change is physics”, as the 2021 Nobel Prize in Physics has highlighted to the broader public. A hierarchy of physically based models of the atmosphere and ocean, which have been developed since the mid 1960s, has predicted fingerprints of climate change that we now observe worldwide. Warming in the troposphere and cooling in the stratosphere, warming of the ocean, and the accelerating melting of glaciers and polar ice sheets leading to sea level rise are testimony to these changes that are unprecedented in human experience. We recall some of the seminal research of Syukuro Manabe and Klaus Hasselmann, two of the three laureates of the Nobel Prize in Physics 2021, and put them into the broader context of research carried out in climate and environmental physics at the Universities of Bern and Heidelberg. Taken together, the physical science basis has been essential, not only for the UN Framework Convention on Climate Change but also for the Paris Agreement.