

## **The Next Five Decades Under the Sun**

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The IPCC considers the Sun to be a minor player in recent century-long global warming, the consensus reached after several decades of multi-disciplinary research. But how robust is this consensus? In this overview we will try to condense the complicated series of arguments to reveal the minimal foundations upon which the arguments are made. We then focus on how decadal to millennial solar variations, induced by familiar yet poorly understood hydro-magnetic effects, can be constrained by solar and stellar data in the absence of credible models based upon first principles. Finally, we argue that new solar and stellar observatories combined with machine learning methods will enable the present generation of scientists to predict with more confidence the solar-terrestrial effects that are of concern to modern society.