

Constraining solar irradiance changes using ozone and temperature observations

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Solar cycle changes in irradiance play an important role in variability in the stratosphere, particularly for ozone: the magnitude of solar irradiance changes is critical to determine the size of the ozone response. However, the magnitude of the solar cycle irradiance change is highly uncertain and, even after decades of observations, it is not well-constrained.

It is possible to infer information about the magnitude of solar cycle changes from the ozone and temperature behaviour, which strongly depends on the solar irradiance. Both ozone and temperature observations, through Bayesian inference, provide information about the likely solar irradiance variability. But by combining the two variables together, much stronger constraints on possible solar cycle changes can be found. We report our findings and show what this approach can provide for our understanding of solar cycle irradiance changes.