

The End of the Road: Signatures of Solar Cycle Death and Potential Impacts on Dynamo Modeling

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Abstract

We use an array of synoptic observations to identify the "death" of activity bands that belong to the 22-year magnetic activity cycle of the Sun. The termination point is extremely abrupt - a matter of days - and signals to the remaining activity bands at mid-latitude that it is time to grow in activity and produce the next sunspot cycle. We demonstrate that the timescales involved and discuss the implications of those times on the amount of flux in the convection zone that would be required to deliver the message in such a short time. The numbers obtained appear to put the current paradigm of dynamo modeling under extreme duress. Interestingly, these signatures of death and birth also leave an imprint on the terrestrial atmosphere - we will provide a few examples that appear to be correlated.