

Seeing Spots! Exploring the variability of sunspot tilt angles of sunspot cycles in observations and a supercomputer model.

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Sunspots are an observable portion of the solar dynamo, or the process by which the sun generates its magnetic field. The solar cycle, the cyclical variation of number of the number sunspots, has an 11-year period. However, it is highly irregular in terms of amplitude, period and hemispheric pattern.

This project explores the origin of irregular tilt angle scatters within the solar cycle. I have calculated tilt angles from observational data to discern for myself both the patterns found in sunspot tilt angles and its level of scatter.

I then explore how these patterns are currently introduced to the dynamo code to model the sunspot cycle, and study how changing the level of scatter in the tilt angle affects the modeled-solar cycle. Based on preliminary results at different levels of tilt angle scatters, I conclude that the tilt angle variation is not a primary cause of the irregularity in the solar cycle.