Diary of a Wimpy Cycle

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The cause of the low and extended minimum in solar activity between Sunspot Cycles 23 and 24 was the small size of Sunspot Cycle 24 itself – small cycles start late and leave behind low minima. Cycle 24 is small because the polar fields produced during Cycle 23 were substantially weaker than those produced during the previous cycles and those (weak) polar fields are the seeds for the activity of the following cycle. Here we discuss the observed characteristics of Cycle 24 and contrast them to the characteristics of previous cycles. We present observations and Magnetic Flux Transport simulations with data assimilated from SOHO/MDI and SDO/HMI that help to explain these differences and point the way to predictions of future activity levels.