**Title:** Quantized Advantages to a Proposed Satellite at L5 from Simulated Full-Field Synoptic Magnetograms

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**Abstract:** The dependency the Earth and its inhabitants have on the Sun is delicate and complex, and at times, dangerous. While all energy on Earth can be traced back to the Sun, its nature is not always benign. Energetic particles and induced currents threaten power systems, satellites, communications, astronauts, etc. These threats are rooted in magnetic activity. At the NSO, we provide 24/7 coverage of the full-disk solar magnetic field used in solar forecasting. However, this coverage only includes data from the Sun':s Earth facing side. Ideally we would like to have constant coverage of the entire solar surface, but we are limited in our solar viewing angle. Our project attempts to quantify the advantages of full-disk magnetograms from a proposed satellite at L5. With instrumentation at L5 we would have an additional 60 degrees of solar surface coverage previously unseen from Earth. These 60 degrees crucially contain the solar longitudes that are about to rotate towards Earth. Using a full-surface flux-transport model of the evolving solar photospheric field, we created a simulation of full-disk observations from Earth and L5. Using standard solar forecasting tools we will quantify the relative accuracy of the Earth-Only and Earth-plus-L5 forecasts relative to the ``ground truth'' of the full surface field model, the ideal case. Our results will gauge exactly how much polar coverage is improved, contrast the spherical multipoles of each model, and use a Potential-Field Source-Surface (PFSS) magnetic field analysis model do some additional inspection.