SO/PHI data request form

(Cruise phase + first science orbit; SO/PHI-Team internal version)

Solar irradiance variability from the position of the SO spacecraft

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Science case

- The exact nature of solar irradiance variability is of interest for the relevance to the influence of the Sun on the Earth's climate and to the solar-stellar connection.
- Solar irradiance variability at rotational to cycle timescales is dominantly driven by its surface magnetism.
- At rotational timescales, solar irradiance fluctuates with the emergence and evolution of active regions and their passage across the solar disc with solar rotation.
- Based on this knowledge, sophisticated models have been developed at MPS to reconstruct solar irradiance variability from full solar disc magnetograms and continuum images, including that from SDO/HMI.
- Our objective is to incorporate SO/PHI full-disc magnetograms and continuum images into these models so to reconstruct solar irradiance variability as apparent from the spacecraft's unique orbit.
- The HMI-based and PHI-based reconstructions, representing solar irradiance variability as apparent from two different positions, will offer us an invaluable opportunity to examine the exact role played by active region evolution and by solar rotation in driving the rotational variability in solar irradiance.

Requirements/data

- Type of solar feature: Full solar disc.
- HRT or FDT: FDT.
- Physical parameters needed (available: B_LOS, vector B, v_LOS, I_c, raw data): B_LOS and I_c recorded at the same time or at least as close as possible.
- Total length of observation: Full duration of cruise phase and first orbit or at least as many 30-day sequences (i.e. solar rotation period) as practically possible.
- Cadence (maximum 1 dataset/min): 1 dataset/day.
- Total number of datasets: 1 dataset/day for as long as practically possible.
- Full frame or partial frame: Full frame.
- Full resolution or binned data: Full resolution.
- Noise level: Default.