

SO/PHI data request form

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

Helioseismic far-side imaging: validation & calibration with SO/PHI

Dan Yang

Max Planck Institute for Solar System Research

Science case (stay on one slide):

Please also state, why is PHI needed; why is the science unique?

- Helioseismology has long been used to monitor active regions on the Sun's far-side (w.r.t Earth view), which is an important component for accurate space weather forecasting. The best way to validate this technique would be a direct comparison with magnetograms and continuum images from the far-side of the Sun. To-date, SO/PHI is the only instrument that allows such a validation.
- Direct SO/PHI observation of the Sun's far-side would enable an empirical relation between seismic images and magnetic field. Such a relation can be apply to all 25 years' data since SOHO mission. By combining this derived empirical magnetograms with front-side observations, we would have a clearer picture of the Sun's large scale magnetic field.

Requirements/data (use additional slide if needed)

Besides best guess requirements, you may also list minimum requirements on the data

- Type of solar feature: active regions/sunspots
- HRT or FDT: FDT
- Physical parameters needed (available: B_LOS, vector B, v_LOS, I_c, raw data): B_LOS, I_c
- Total length of observation: several days (or more) with large active regions on the far-side
- Cadence (maximum 1 dataset/min): 1 frame per day
- Pointing needs (disc centre, limb, active region location, particular μ): disc center
- Orbit needs (spatial resolution/co-rotation/angle to Earth/angle to other spacecraft): 45 degrees separation (or more) from Earth
- Total number of datasets: at least several frames (the more the better)
- Full frame 2k x 2k or partial frame 1kx1k, 0.5kx0.5: full solar disk
- Full resolution or 2x2, 4x4 binned data: solar diameter larger than 360 pixels
- noise level (default 10^{-3}):
- Co-observations with other instruments: SDO/HMI
- Special requests: None