

SO/PHI-FDT, first data release. L2 level, first version.

The data release includes L2 SO/PHI-FDT datasets from 31 January 2022 until 20 September 2022 and from 27 October until 11 December 2022.

All datasets have been processed with the on-ground FDT pipeline, and are corrected for ghost and fringe artefacts. In addition, a polarimetric crosstalk correction that allows a variation of the crosstalk along the image (2D plane), to account for a gradient over the disk, was applied. In spite of these corrections, weak residual signatures of ghost and fringe artefacts, which are most pronounced in Stokes U, remain. In some cases a ringing around active regions in Stokes Q leads to slightly stronger fringes in the azimuth and in rare cases in the B field magnitude. In B, a remnant of the filtergraph cavity map affects all datasets. Finally, depending on the available calibration observations, it is not always possible to remove the effect of a dust grain present in the optical path and defects of the Etalon (mostly showing as dots in the continuum images).

For the above reason, at this point in time only the continuum intensity (observable identifier: *icnt*, computed by the RTE inversion) and the longitudinal magnetic field (observable identifier: *blos*, computed from magnitude and inclination) data are released to SOAR. The criteria for release to SOAR is that the data are of high enough quality to be suitable for scientific exploitation.

The other observables, including the measured continuum as well as the full vector magnetic field data and the Stokes L2 parameters of the released time range, need to be treated with caution for scientific studies. In order to access the observables currently not released to SOAR we warmly invite you to get in touch with the PHI team (sophi_support@mps.mpg.de).

The datasets uploaded to SOAR are part of the synoptics programs, which had been run in LTP 6 (before and after the RSWs), LTP 7, LTP 8, and LTP 9 (see [here](#) for details on LTPs). In addition, the uploaded data is part of the following [SOOPs](#) of LTP9:

- RSW 5: CH_Boundary_Expansion
- RSW 6: Eruption Watch, AR heating

An overview of the released data, including quicklook thumbnails and information about the quality of each released data set, is available [here](#). We suggest consulting that web site before using the data set for scientific applications.

If any publications are produced to which SO/PHI data contribute in any way, we would request you to cite the relevant instrument paper:

Solanki, S. K., del Toro Iniesta, J. C., Woch, J., et al. 2020, A&A, 642, A11, DOI: [10.1051/0004-6361/201935325](https://doi.org/10.1051/0004-6361/201935325);

Please also add the following acknowledgment:

“Solar Orbiter is a space mission of international collaboration between ESA and NASA, operated by ESA. We are grateful to the ESA SOC and MOC teams for their support. The German contribution to SO/PHI is funded by the BMWi through DLR and by MPG central funds. The Spanish contribution is funded by AEI/MCIN/10.13039/501100011033/ and European Union “NextGenerationEU”/PRTR” (RTI2018-096886-C5, PID2021-125325OB-C5, PCI2022-135009-2, PCI2022-135029-2) and ERDF “A way of making Europe”; “Center of Excellence Severo Ochoa” awards to IAA-CSIC (SEV-2017-0709, CEX2021-001131-S); and a Ramón y Cajal fellowship awarded to DOS. The French contribution is funded by CNES.”

We would appreciate receiving a copy of any publication you produce that profits from SO/PHI data.

We would be glad if you can report to us any problem or issue encountered in using SO/PHI data. This will also help us to improve the data reduction for future releases. Please contact sophi_support@mps.mpg.de.

Further information is given at:

<https://www.mps.mpg.de/solar-physics/solar-orbiter-phi>