SOHO Intercalibration Joint Observing Programme 04

SUMER/CDS/EIT/MDI ALIGNMENT CALIBRATION

Author(s): R.A. Harrison (CDS), K. Wilhelm and I. Büttner (SUMER), J.-P. Delaboudiniere (EIT)

Progress:

Draft Scheme	From CDS/SUMER Blue/Red Books
Discussion at SICWG	June 13 1994
Detailed Plan	August 10 1994
Distributed to PI Teams	August 11 1994
Minor Revisions	November 4 1994
Revision	February 5 1995

Objective: CDS, SUMER, EIT, MDI co-alignment calibration.

Conditions Necessary to Run: Requires at least two instruments pointed to a region of quiet Sun, possibly adjacent to the limb.

Scientific Case: Periodically, we must check the relative alignment between SUMER, EIT, the NIS/GIS components of CDS and MDI. Much of the interdisciplinary interpretation of SOHO data will depend on a good alignment calibration. The study has two phases, the first is for SUMER/CDS-NIS alignment, the second for EIT/SUMER/CDS-GIS. Common lines in each phase provide the link between the NIS and GIS components for the inter-CDS alignment check. The CDS/SUMER common line selections are chosen to minimise SUMER refocusing activities (i.e. two bands).

Pointing: The target region should be quiet Sun and should include a portion of the limb to aid alignment with MDI in particular.

Frequency: This scheme should be run about once per month.

Operating Details:

- **CDS**

Phase 1: NIS, Raster area 30x240 arcsec, Slit 2x240 arcsec, 15 raster locations, exposure time 20 sec. Total duration = 300 seconds. Extract 5 lines, 21 pixels across each (NIS/GIS common lines Fe XIV 334.17Å, Fe XIII 320.80Å, Mg VIII 313.74Å; CDS/SUMER common line He I 584.33Å) [20 sec extraction time - cadence = 350 seconds (incl. overheads].

Phase 2: GIS, Raster area 30x30 arcsec, Slit 2x2 arcsec, 225 raster locations, exposure time 10 sec. Total duration = 2250 seconds. Extract all data - (lines of interest - NIS/GIS common lines Fe XIV 334.17Å, Fe XIII 320.80Å, Mg VIII 313.73Å; CDS/EIT common lines Fe IX 171.07Å, Fe XII 195.12Å, Fe XV 284.16Å, He II 303.78Å; CDS/SUMER common line Ne VIII 770.40Å) [13 sec extraction time - cadence = 2968 seconds (incl. overheads].

Operation = Phase 1, Phase 1, Phase 2, Phase 1, Phase 1, Phase 2, Phase 1, Phase 1, Phase 2 = 183 minutes total.

CDS Study ID: ALIGN

- **SUMER**

Phase 1: Raster area 30x300 arcsec, Slit 1x300 arcsec, 80 steps of 0.38 arcsec, 11s dwell time at each = 880s. One raster only. Line selection - He I 584.33Å (pixel 850).

Phase 2: Raster area 30x300 arcsec, Slit 1x300 arcsec, 80 steps of 0.38 arcsec, 11s dwell time at each = 880s. Three rasters of total duration 2640s. Line selection - Ne VIII 770.41Å (pixel 100).

Operation = Phase 1, Phase 2, Phase 1, Phase 2, Phase 1, Phase 2 = 176 minutes total.

- **EIT**

Raster area 8x8 arcmin - centred on CDS/SUMER fields of view (10:1 compression - 2.5 arcsec resolution) all four bands. 60 second accumulation plus 4 min extraction time. Repeat 32 times - total duration = 160 minutes.

- **MDI**

Record the supergranulation at 6768Å for comparison to SUMER He I images. At least two images covering the CDS/SUMER area should be produced within the 160 minute period.