SOHO Intercalibration Joint Observing Programme 2

INTERCALIBRATION 2

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Progress:

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Objective: Intensity calibration of CDS, EIT, SUMER and UVCS through tranfser of SEM data.

Conditions Necessary to Run: Requires, at minimum, participation of SEM, EIT and CDS throughout.

Scheme: We have an absolute measure of the integrated Sun 304Å intensity from the SEM instrument. Using EIT we project the SEM calibrated intensity to a small region on the Sun which is being monitored by CDS. In this way, an absolute measure of the 304Å intensity is given for CDS. If SUMER (and UVCS if possible) monitor the same region, by the use of invariant line ratios we project the calibration to longer wavelengths for comparison to SUMER and UVCS. To cater for the potential influence of transient activity, observations should be made over several tens of minutes at least.

There are three phases to this operation: Phase1 - EIT sensitivity mapping, Phase 2 - SEM/EIT/CDS projection, and Phase 3 - CDS/SUMER/UVCS co-incident scans.

The first phase of the operation, which need not always be run, is designed to map the EIT sensitivity using a full Sun CDS raster. This would provide a better projection in the second phase. The third phase is designed to provide a full CDS and SUMER spectral (quiet Sun) read out as soon after the SEM/EIT/CDS projection as possible, to provide as complete a data-set as possble for invariant ratio projection. The intensity invariant ratios are not specified in the text below: CDS and SUMER should return as full a spectral range as possible so that invariant lines from various sources (e.g. H. Mason, R. Thomas or any yet to be developed) may be used - even in hindsight.

Pointing:

Phase 1: SUMER and UVCS not involved. CDS maps full Sun while EIT takes full Sun images.

Phase 2a: SEM and EIT "see" the full Sun. CDS should be directed to a relatively quiet area.

Phase 2b: CDS, SUMER, and possibly UVCS, produce complete spectra over a chosen region of the Sun, for as complete a comparison as possible.

Frequency: This scheme should be run about once per month, to keep a regular monitor. Phase 1 should not be run every time!

Operating Details:

- **SEM**

Phase 1: No participation.

Phase 2a: Monitor the Sun for a period of up to 250 minutes during the campaign.

Phase 2b: No participation.

- **EIT**

Phase 1: Full-field, full-resolution 304 A images, 60 s exposure, Rice (lossless) compression. Max. time to complete 22 min. Fit within LASCO/EIT synoptic plan during CDS scan period. NOTE WARNING IN CDS SECTION.

Phase 2a: Same parameters as Phase 1. Use one image per hour for 5 hours.

Phase 2b: No participation required. Some co-incident observation would, however, be useful.

- **CDS**

Phase 1: Grazing incidence, with 4x240 arcsec slit, raster over 4x4 arcmin field with 10 sec exposures. Thus, 60 locations at 11 min. Extract only 256-338Å band. Repeat for 81 repointings, to cover full-Sun, starting with the image centred on N960 arcsec, E960 arcsec, stepping in 240 arcsec steps to N960, W960 (9 locations). The repeat the same strip, down 240 arcsec etc... (960, -960; 960, -720; 960, -480; 960, -240; 960, 0; 960, +240; 960, +480; 960, +720; 960, +960 - repeat at N-S levels of 960, 720, 480, 240, 0, -240, -480, -720, -960). Total duration = 15 hours. CDS Study = ICAL2_1. ** NOTE: THE 304Å LINE IS VERY BRIGHT. TO AVOID MCP SENSITIVITY DAMAGE WE DO NOT RECOMMEND RUNNING PHASE 1 AT THIS TIME. **

Phase 2a: Grazing Incidence, with 2x2 arcsec slit, raster area 2x2 arcminutes, 30x30 locations, 10 sec exposure at each. Duration 169 minutes. Start at onset of SEM campaign and repeat 2 times. Total duration = 338 minutes. No data compression required. CDS Study = ICAL2_2A.

Phase 2b: Grazing Incidence, 4x4 arcsecond slit, raster over 1x1 arcmin area, 15x15 locations, 10 sec exposure at each. Repeat 4 times. Duration 170 minutes. CDS Study = ICAL2_3.

- **SUMER**

Phase 1: No participation.

Phase 2a: No participation.

Phase 2b: 1x300 arcsec slit, Raster area: 60x300 arcsec - centred on CDS field 80 locations - 0.76 arcsec step - accumulate over every 4 steps 20 sec exposure (5 step per sec). Duration 6.67 minutes. Repeat 20 times with 20 wavelength ranges from 800-1600Å. (Udo - is this possible or allowed????).

- **UVCS**

UVCS may not be able to participate since this operation is on the disc. If it can, we anticipate using the 14arcsec x 40 arcmin slit, rastering over 140arcsec x 40 arcmin - centred on CDS field. This is 10 locations - 80 sec exposure at each. Total duration = 13.33 minutes. Repeat over the 150 minutes, cycling through the UVCS wavelength ranges.